Biosafety Terms Defined

**Aerosols**: colloids of liquid or solid particles less than 10 µm in diameter suspended in gas.

**Autoclave**: a device designed to sterilize equipment or biological waste using heat, steam and pressure within a chamber.

**Biohazardous Agent**: broadly, biohazardous agent refers to any viable infectious, pathogenic, or toxin-producing agent, prion, toxin, or nucleic acid construct including genetic locus, gene combination, gene, nucleic acid sequence, gene vector, expressed foreign (recombinant-derived) protein, or transformed or otherwise genetically manipulated host that has potential to affect the health of humans, animals, plants, or ecosystems.

**Biohazardous Material**: material such as tissues or environmental samples that harbors or potentially harbors biohazardous agents.

**Biological Barrier**: an impediment (naturally occurring or introduced) to the transmission, infectivity, or survival of a biohazardous agent.

**Biological Safety Cabinet (BSC)**: an enclosed chamber that uses laminar and directional air flow and HEPA filtration to contain aerosolized biohazardous agents and materials and to protect the user, the local community, and the environment from contamination. The BSC differs from the chemical fume hood because the biological safety cabinet uses laminar air flow and HEPA filtration. The BSC differs from "clean benches" (commonly known as "laminar flow hoods") because air exits the clean bench outward toward the user, and this device is therefore unsuitable for work with any type of hazardous material.

**Biological Safety in Microbiological and Biomedical Laboratories (BMBL)** [1] (direct link to a PDF of the BMBL) [2]: the standard reference (published by the US Centers for Disease Control) on safe handling and containment practices for human infectious agents.

**Biological Use Authorization (BUA)**: the protocol prepared by the Principal Investigator that documents proposed work with biohazardous agents, materials, or recombinant DNA at UC Davis, identifies the risks inherent to the work, and identifies measures intended to reduce the risk to an acceptable level. The protocol is a "BUA application" until it is approved by the IBC and signed by the IBC chair. It then becomes an authorization to conduct the work detailed in the BUA.
**Biological Safety**: the collection of handling and containment procedures, guidelines, and precautions that protect humans and the environment from exposure to biohazardous agents or materials.

**Biological Safety Level (BSL)**: the suite of laboratory practices, techniques, safety equipment and laboratory facilities appropriate for the operations performed and the hazards posed by the particular experiment involving biohazards or biohazardous materials. The National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) define four levels of laboratory biological safety and four levels of animal biological safety that correspond roughly to the Risk Group for each agent. NIH also defines four levels of plant biological safety for containment of recombinant plants that correspond to the risk each recombinant system or recombinant species type poses to the environment.

**Biosafety**: synonymous with Biological Safety.

**Bloodborne Pathogens (BBP)**: pathogenic microorganisms that may be present in human blood or other human source materials and can cause diseases in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and the Human Immunodeficiency Virus (HIV). Analogous or homologous pathogens such as SIV may also exist in nonhuman primate blood and other tissues.

**Bloodborne Pathogen Standard** [3].

**Centers for Disease Control and Prevention (CDC)** [4]: a division of the US Department of Health and Human Services concerned primarily with the control and eradication of human disease. The CDC is headquartered in Atlanta, Georgia.

**Clinical Laboratory**: a workplace where diagnostic or other screening procedures are performed on blood or Other Potentially Infectious Materials (OPIM).

**Containment**: the confinement of a biohazardous agent that is being cultured, stored, manipulated, transported or destroyed in order to prevent or limit its contact with people and the environment. Methods used to achieve this include physical and biological barriers and inactivation by physical or chemical means.

**Decontamination**: the removal or neutralization of biohazardous agents or the use of physical or chemical means to remove, inactivate or destroy living organisms on a surface or item so that the organisms are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.

**Diagnostic Specimen**: any human or animal material including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluids being analyzed for purposes of diagnosis. ([CDC Interstate Shipment of Etiologic Agents - PDF][5])

**Disinfection**: a process by which viable biohazardous agents are reduced to a number unlikely to produce disease in healthy people, plants or animals. A disinfectant or disinfection process is considered to be
effective if its use results in a $10^6$ reduction in the microbial population on the treated surface or materials.

**Engineering Controls**: devices that isolate or remove biohazardous agents from the workplace. Examples of engineering controls are sharps containers, self-sheathing needles, negative air flow, and biological safety cabinets.

**Exposure Incident**: contact with blood or OPIM that results from the performance of an employee’s duties.

**High Efficiency Particulate Air (HEPA) filter**: a disposable, extended, pleated-medium, dry-type filter with (1) a rigid casing enclosing the full depth of the pleats, (2) a minimum particulate removal of 99.97% for thermally generated monodisperse dioctylphthalate (DOP) aerosols with a diameter of 0.3 µm and (3) a maximum pressure drop of 1.0 in wg when clean and operated at rated airflow capacity.

**Inactivation**: any process that destroys the ability of a specific biohazardous agent to self-replicate.

**Infectious agent**: an organism or other biological entity capable of causing pathogenic disease following infection in humans, animals, and plants. Examples include viruses, metazoan parasites, prions, chlamydia, rickettsia, and infectious bacteria and fungi.

**Institutional Biosafety Committee (IBC)**: the Institutional Biosafety Committee sets campus policy for work with biohazardous agents and biohazardous materials, and evaluates Biological Use Authorizations. The IBC reviews and approves Biological Use Authorization applications that involve work with recombinant DNA, work with infectious agents (human, animal, or plant), or both.

**Medical Waste Management Act (MWMA) [6]**: California Health and Safety Code, Sections 117600 - 118360.

**National Institutes of Health (NIH) [7]**: the division of the US Department of Health and Human Services that is the primary Federal agency for conducting and supporting medical research.

**NIH Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines) [8]**: the document published by NIH that classifies the different types of research involving recombinant DNA, sets containment requirements, and provides the framework for project review, authorization, and monitoring at the government and institution levels.

**Occupational Safety and Health Administration (OSHA) [9]**: the main federal agency charged with the enforcement of safety and health legislation.

**Other Potentially Infectious Materials (OPIM)**: human source materials such as certain body fluids, cells, cell lines, and tissues that could reasonably be suspected of harboring human bloodborne pathogens.

**Personal Protective Equipment (PPE)**: specialized clothing or equipment worn by an employee for protection against a hazard. Examples of PPE include face masks, goggles, safety glasses, lab coats, wraparound gowns, protective gloves, shoe covers, and respirators.
**Recombinant DNA (rDNA):** defined as either (1) molecules constructed outside living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell or (2) DNA molecules that result from the replication of those described above.

**Risk Group (RG):** based on the NIH definition; one of four levels of risk a biological agent presents to human health. Infectious agents are ranked in ascending order of biohazard so that agents that are considered to represent minimal risk are usually grouped in Risk Group 1, and agents that represent the greatest hazard are in Risk Group 4. Work with RG-4 agents is currently prohibited at UC Davis.

**Select agent:** specific microbial agents or toxins that could be "weaponized" and that represent serious threat to human health or to agricultural commodities. See the complete select agent list at the [National Select Agent Registry (NSAR) website](http://safetyservices.ucdavis.edu/biological-safety-staff-listing) [10].

**Sharps:** instruments, tools or items that have rigid, acute edges, protuberances or corners capable of cutting, piercing, ripping or puncturing such as syringes, blades and broken glass. Items that have the potential for shattering or breaking are also considered sharps.

**Sterilize:** the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**Universal Precautions:** as defined by CDC, a set of precautions designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens when providing first aid or health care.

**Zoonosis:** A disease that can be transmitted from an animal species to a human

**Contact**

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**More information**

**External links**

1. [Biological Safety in Microbiological and Biomedical Laboratories (BMBL)](http://safetyservices.ucdavis.edu/biological-safety-staff-listing) [1]
2. [Direct Link to a PDF of the BMBL](http://safetyservices.ucdavis.edu/biological-safety-staff-listing) [2]
5. [CDC Interstate Shipment of Etiologic Agents - PDF](http://safetyservices.ucdavis.edu/biological-safety-staff-listing) [5]
7. National Institutes of Health (NIH) [7]
8. NIH Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines) [8]
9. Occupational Safety and Health Administration (OSHA) [9]
10. National Select Agent Registry (NSAR) website [10]

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Links