Employers must ensure that workers are trained and prohibited from engaging in the following activities:

- Mouth pipetting/suctioning of blood or OPIM, 29 CFR 1910.1030(d)(2)(xi);
- Eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses in work areas where there is a reasonable likelihood of occupational exposure to blood or OPIM, 29 CFR 1910.1030(d)(2)(ix); and
- Storage of food or drink in refrigerators, freezers, shelves, cabinets or on countertops or benches where blood or OPIM are present, 29 CFR 1910.1030(d)(2)(x).

Employers must ensure that the following are provided:

- Appropriate PPE for workers if blood or OPIM exposure is anticipated, 29 CFR 1910.1030(d)(3);
- The type and amount of PPE depends on the anticipated exposure.
  - Gloves must be worn when hand contact with blood, mucous membranes, OPIM, or non-intact skin is anticipated, or when handling contaminated items or surfaces, 29 CFR 1910.1030(d)(3)(i).
  - Surgical caps or hoods and/or shoe covers or boots must be worn in instances when gross contamination can reasonably be anticipated such as during autopsies or orthopedic surgery, 29 CFR 1910.1030(d)(3)(ii).
- Effective engineering and work practice controls to help remove or isolate exposures to blood and bloodborne pathogens, 29 CFR 1910.1030(d)(2)(i), CPL 02-02-069 (CPL 2-2-69); and
- Hepatitis B vaccination (if not declined by a worker) under the supervision of a physician or other licensed healthcare professional to all workers who have occupational exposure to blood or OPIM, 29 CFR 1910.1030(f)(1)(i)(A)-(C).

**Labels**

When any blood, OPIM or infected animals are present in the work area, a hazard warning sign (see graphic) incorporating the universal biohazard symbol, 29 CFR 1910.1030(g)(1)(iii)(A), must be posted on all access doors, 29 CFR 1910.1030(e)(2)(iii)(D).

**Engineering Controls and Work Practices for All HIV/HBV Laboratories**

Employers must ensure that:

- All activities involving OPIM are conducted in Biological Safety Cabinets (BSCs) or other physical-containment devices; work with OPIM must not be conducted on the open bench, 29 CFR 1910.1030(c)(2)(ii)(E);
- Certified BSCs or other appropriate combinations of personal protection or physical containment devices, such as special protective clothing, respirators, centrifuge safety cups, sealed centrifuge rotors, and containment caging for animals, be used for all activities with OPIM that pose a threat of exposure to droplets, splashes, spills, or aerosols, 29 CFR 1910.1030(e)(2)(iii)(A);
- Each laboratory contains a facility for hand washing and an eyewash facility which is readily available within the work area, 29 CFR 1910.1030(e)(3)(i); and
- Each work area contains a sink for washing hands and a readily available eyewash facility. The sink must be foot, elbow, or automatically operated and must be located near the exit door of the work area, 29 CFR 1910.1030(e)(4)(iii).

**Additional BBP Standard Requirements Apply to HIV and HBV Research Laboratories**

Requirements include:

- Waste materials:
  - All regulated waste must either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens, 29 CFR 1910.1030(e)(2)(i); and
  - Contaminated materials that are to be decontaminated at a site away from the work area must be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area, 29 CFR 1910.1030(e)(2)(iii)(B).
- Access:
  - Laboratory doors must be kept closed when work involving HIV or HBV is in progress, 29 CFR 1910.1030(e)(2)(iii)(A);
  - Access to the production facilities’ work area must be limited to authorized persons. Written policies and procedures must be established whereby only persons who have been advised of the potential biohazard, who

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meet any specific entry requirements, and who comply with all entry and exit procedures must be allowed to enter the work areas and animal rooms, 29 CFR 1910.1030(e)(2)(ii)(C);

- Access doors to the production facilities’ work area or containment module must be self-closing, 29 CFR 1910.1030(e)(4)(iv);

- Work areas must be separated from areas that are open to unrestricted traffic flow within the building. Passage through two sets of doors must be the basic requirement for entry into the work area from access corridors or other contiguous areas. Physical separation of the high-containment work area from access corridors or other areas or activities may also be provided by a double-doored clothes-change room (showers may be included), airlock, or other access facility that requires passing through two sets of doors before entering the work area, 29 CFR 1910.1030(e)(4)(i); and

- The surfaces of doors, walls, floors and ceilings in the work area must be water-resistant so that they can be easily cleaned. Penetrations in these surfaces must be sealed or capable of being sealed to facilitate decontamination, 29 CFR 1910.1030(e)(4)(ii).

(These requirements do not apply to clinical or diagnostic laboratories engaged solely in the analysis of blood, tissue, or organs, 29 CFR 1910.1030(e)(1).)

Research Animals
All procedures on animals should be performed by properly trained personnel. By using safe work practices and appropriate PPE, 29 CFR 1910.132(a), workers can minimize the likelihood that they will be bitten, scratched, and/or exposed to animal body fluids and tissues.

Possible Injuries/Illnesses
The most common work-related health complaints reported by individuals working with small animals are the following:

1. Sprains;
2. Strains;
3. Bites; and
4. Allergies.

Of these injuries, allergies (i.e., exaggerated reactions by the body’s immune system) to proteins in small animals’ urine, saliva, and dander are the greatest potential health risk. An allergic response may evolve into life-long asthma. Because mice and rats are the animals most frequently used in research studies, there are more reports of allergies to rodents than other laboratory animals. Most workers who develop allergies to laboratory animals will do so within the first twelve months of working with them. Sometimes reactions only occur in workers after they have been handling animals for several years. Initially, the symptoms are present within minutes of the worker’s exposure to the animals. Approximately half of allergic workers will have their initial symptoms subside and then recur three or four hours following the exposure.

Employers should adopt the following best practices to reduce allergic responses of workers:

- Eliminate or minimize exposure to the proteins found in animal urine, saliva and dander.

- Limit the chances that workers will inhale or have skin contact with animal proteins by using well-designed air handling and waste management systems.

- Have workers use appropriate PPE (e.g., gloves, gowns, hair covers, respirators) to further minimize their risk of exposure.

Zoonotic Diseases
There are a host of possible infectious agents that can be transferred from animals to humans. These are referred to as zoonotic diseases. The common routes of exposure to infectious agents are inhalation, inoculation, ingestion and contaminations of skin and mucous membranes. Inhalation hazards may arise during work practices that can generate aerosols. These include the following: centrifugation, mixing (e.g., blending, vortexing, and sonication), pouring/decanting and spilling/splashing of culture fluids. Inoculation hazards include needlesticks and lacerations from sharp objects. Ingestion hazards include the following: splashes to the mouth, placing contaminated articles/fingers in mouth, consumption of food in the laboratory, and mouth pipetting. Contamination of skin and mucous membranes can occur via splashes or contact with contaminated fomites (e.g., towels, bedclothes, cups, money). Some of the zoonotic diseases that can be acquired from animals are listed below.

Zoonotic Diseases – Wild and Domesticated Animals
Wild rodents and other wild animals may inflict an injury such as a bite or scratch. Workers need to receive training on the correct way to capture and handle any wild animals. While they may carry or shed organisms that may be potentially infectious to humans, the primary health risk to individuals