University of Kansas Lawrence Campus
Laboratory Safety Manual
Part III – Biosafety Plan

2) Standard Operating Procedures/Practices in Laboratories Using Biohazards at Biosafety Levels I or II.

2.1) Introduction and Review of the "Seven Basic Rules of Biosafety"

(Source: National Research Council, " Biosafety in the Laboratory")

Note: Since all of Part I is part of the Biosafety Plan, review the standard operating procedures to be followed by Authorized Users of Biohazards includes all of Part I with special emphasis on the Standard Operating Procedures of Part I-chapter 2. The document referenced above identifies "seven basic rules of biosafety." These rules are identified and referenced in 2.1.1.

2.1.1) References identifying the "seven basic rules of biosafety" Authorized Users shall:

2.1.1.1) Carefully follow the seven basic rules of biosafety as stated in I-2.6.3; I-2.5.3.11 & I-2.6.5, I-2.5.3.6; I-6.2.1.4; I-2.5.3.10 & I-3.6; I-2.5.3.7; I-2.5.3.5; and I-2.5.3.4.

2.1.1.2) Special comments concerning "sharps" (covered by I-2.5.3.6 & I-6.2.1.4).

Authorized Users shall:

a) Restrict the use of needles and syringes or any other "sharps" to those procedures for which there are no alternatives; use all "sharps" carefully to avoid self-inoculation; and dispose of "sharps" in leak- and puncture-resistant containers.

b) Use only needle-locking syringes or disposable syringes with needle as an integral part of syringe for injection or aspiration of Biohazards.

c) Avoid handling used needles to the extent possible and exercise special care when that is not possible.

d) Place contaminated sharps in a hard-walled container for transport to a processing area for decontamination, preferably by autoclaving.

2.2) Biosafety-Specific Standard Operating Procedures/Practices (Levels I and II)

Note: In this Part, "contaminated" refers to "contamination with Biohazards (infectious biological agents)." If materials or animals are contaminated with chemicals or radioactive materials as well, the appropriate Standard Operating Procedures of Part II and IV shall be followed as well.

If all Standard Operating Procedures cannot mutually be followed, judgment will need to be exercised on which hazard is the greatest. Contact EHS for clarification and assistance.

2.2.1) Need for restricted or controlled access

The Authorized Laboratory Supervisor (ALS) shall:

2.2.1.1) Evaluate the need for restrictions on access to the laboratory during critical operations within the laboratory, instruct the Authorized Users and Authorized Occupants concerning the nature of those restrictions and include those instructions in the laboratory specific Standard Operating Procedures.

Note: This includes an evaluation of the need to inform visitors, authorized occupants, and even authorized users of special risk factors. There may be immunization requirements. Some individuals may be susceptible to allergic reactions to dander, animals, and other materials in the laboratory and others may be especially susceptible to infection. All these factors may need to be considered in establishing the level of control that is needed. See also 3.3.4.2 & 3 of this Part III.

Authorized Users and Authorized Occupants shall:

2.2.1.2) Follow the instructions given by the Authorized Laboratory Supervisor concerning access restrictions.

2.2.2) Disinfection and/or Sterilization and Aseptic Techniques

The Authorized Laboratory Supervisor/Unit Safety Coordinator shall:

2.2.2.1) Establish effective sterilization/disinfection procedures for the infectious biological agents used in their laboratory.

Note: Appropriate procedures to be used with equipment, instruments, glassware, and laboratory bench tops, etc., must be developed. Examples of types of sterilization that may be used are given in section 6.4

2.2.2.2) Train Authorized Users in these procedures and provide these in writing as part of the laboratory-specific procedures.

2.2.2.3) Enforce the use of such procedures by Authorized Users.

Authorized Users shall:

2.2.2.4) Use aseptic techniques when protection from Biohazards (infectious agents) is required.

Note: Aseptic techniques are required for good research results, but they are also important in protection as well. Inoculation loops and other similar tools must be sterilized not only before use but also after use to avoid the dispersal of infectious agents.

2.2.2.5) Isolate equipment and glassware potentially contaminated with Biohazards (infectious agents) and appropriately mark/label such materials until sterilization/disinfection is accomplished.

Note: This means that such equipment and glassware must be kept in a "reserved area that is appropriately labeled" and in appropriate containers.

2.2.2.6) Sterilize or disinfect contaminated equipment/glassware in an expedient fashion using the procedure stipulated in the laboratory-specific Standard Operating Procedures.

a) Use appropriate protective clothing and equipment in handling contaminated items.

b) Use sterilization equipment as specified by equipment manuals and/or laboratory-specific Standard Operating Procedures.

c) Use appropriate protective equipment and/or laboratory-specific procedures in loading and unloading autoclaves to protect against accidents.

2.2.2.7) Disinfect work areas at the end of an experiment or the end of the day, whichever comes first, using the laboratory-specific disinfection procedures. (Note: This is the minimum frequency. Judgment is to be used in deciding whether the frequency should be greater.)

2.2.2.8) Disinfect work areas after any known contamination episode or suspected episode.

2.2.3) Fluids with Biohazards (cultures, tissues, body fluids, etc.)

The Authorized Users shall:

2.2.3.2) Collect, handle, process, and store fluids with biohazard agents in leak-proof containers provided by the Authorized Laboratory Supervisor.

2.2.4) Biohazard Waste

Authorized Users and Authorized Laboratory Supervisors shall:

2.2.4.1) Follow the requirements and procedures of chapter 6 of this Part (III) and applicable portions of chapter 6 of Part I.

2.2.5) Special Requirements in the Use of Animals

Personnel/students/visitors are not Authorized Users of live animals until they have had the training required by this Laboratory Safety Manual and that required by the Policies and Procedures of the Animal Care Committee

Authorized Users shall:

2.2.5.1) Handle and care for animals and associated equipment and materials as specified by the "policies and procedures" of the Animal Care Committee.

Note: The latter specify the responsibilities for cleaning cages, the disposition of bedding materials, etc.

2.2.5.2) Not permit animals in the laboratory other than those being used in the experiments.

2.2.5.3) Appropriately decontaminate cages, preferably by autoclaving, before they are cleaned and washed. (Note: This applies to Authorized Users who have been approved or instructed to perform this function.)

2.2.5.4) Put on surgical-type masks before entering animal rooms housing nonhuman primates.

2.2.5.5) Use laboratory coats, gowns, or uniforms in the animal room and remove them before leaving the animal facility. ("Should" for Animal Biosafety Level I and "shall" for Animal Biosafety Level II)

2.2.6) Shipping and Transporting Biohazard Agents/Organisms

Authorized Users and Authorized Laboratory Supervisors SHALL NOT:

2.2.6.1) Ship or transport biohazard agents/organisms without prior consultation with EHS concerning DOT, EPA and other regulations that must be satisfied. Only someone with training in these regulations may prepare and send shipments or transport them.

2.3) Biosafety-Specific Standard Operating Procedures/Practices (Levels III and IV)

Any work designated or meeting the criteria of biosafety level III or IV must be performed under much more stringent safety procedures and controls. At the Lawrence Campus, biosafety level III or IV requires a written EHS Safety Authorization. Currently, biosafety level IV work is prohibited on the KU-Lawrence campus due to the lack of a proper level IV facility.

Authorized Laboratory Supervisors shall:

2.3.1) Obtain a written EHS Safety Authorizations with the associated Laboratory-Specific Safety Plans for biosafety level III or IV work in accordance with the requirements of Part III: Section 3.7 and Part I: Section 3.9 before initiating any level III or IV work.

Authorized Laboratory Supervisors, Users and Occupants shall:

2.3.2) Comply with all procedures, practices and conditions stipulated by the level III or IV Laboratory-Specific Safety Plans.