

## ACC Science Biohazard Policy for Faculty and Lab Technicians

**Sources** – The information used to compile this policy came mainly from *Biosafety in Microbiological and Biomedical Laboratories*, 4/e, 1999. Centers for Disease Control and Prevention and National Institutes of Health HHS Publication No. (CDC) 93-8395. Additional material was taken from the *CRC Handbook of Laboratory Safety*, 5/e, 2000. A. Keith Furr. CRC Press. College policies concerning the Universal Precautions were taken from the ACC Student Handbook, 2002-2003, page 25.

### 1. General CDC Guidelines:

The prevention of injury from exposure to pathogenic organisms in science laboratory classrooms is based on three basic factors: 1) the techniques that are used to handle the microorganisms, 2) the safety equipment (primary barriers) that are available to prevent contact with the microorganisms, and 3) the design of the laboratory facility to prevent or minimize the spread of the microorganisms (secondary barriers). Specific requirements related to these factors were taken from Section III – Laboratory Biosafety Level Criteria of *Biosafety in Microbiological and Biomedical Laboratories*, 4<sup>th</sup> edition (Appendix --- of the ACC Science Safety Plan).

- 1.1. Laboratory practice and technique: ACC employees (faculty, science lab technicians, hourly employees, work-study employees) and students will use standard microbiological techniques.
- 1.2. Safety equipment: Primary barriers prevent or minimize exposure to microorganisms. Examples are: personal protective equipment (e.g. - gloves, goggles, lab coats or aprons) and equipment such as biological safety cabinets or laminar flow hoods. ACC employees (faculty, science lab technicians, hourly employees, work-study employees) and students will use primary barriers that are appropriate to the biosafety level and method of handling of the biohazardous organisms or materials used in the lab activity.
- 1.3. Facility design: Activities using microorganisms will be conducted in facilities that meet the minimum guidelines described in *Biosafety in Microbiological and Biomedical Laboratories*, 4<sup>th</sup> edition. If appropriate facilities do not exist for organisms at a given Biosafety Level, then organisms from that level will not be used in ACC science classes.

### 2. ACC Biohazard Use Safety Policy based on CDC guidelines:

- 2.1. ACC employees (faculty, science lab technicians, hourly employees) and students will use the procedures specified by CDC/NIH for biosafety level-specific practices, equipment and facilities in addition to basic safety procedures specified in the ACC Science Safety Plan. **Organisms used at ACC will be restricted to those appearing on a master list maintained by the Biology**

**Safety Officer based on input from instructors and lab technicians. All micro-organisms must be purchased from approved vendors. No organisms may be brought into ACC facilities from other sources (other schools, health departments, etc.).**

a. Biosafety Level 1 organisms (defined and characterized strains of viable microorganisms and cell cultures not known to consistently cause disease in healthy adult humans) are appropriate for undergraduate teaching laboratories and require the use of standard microbiological practices.

recommended primary barriers:

- a lab coat or apron
- gloves
- protective eyewear

required secondary barriers:

- restricted access to rooms in which microorganisms are used or stored
- a sink for hand washing

recommended secondary barrier:

- post biohazard signs on doors

b. Biosafety Level 2 organisms as well as human-derived body fluids\*, tissues or primary human cell lines that may contain an undetected infectious agent\* require the use of standard microbiological practices. Open bench practices are acceptable if the risk of splashes and aerosols is low. Biological safety cabinets must be used if there is a potential for creating aerosols or if high concentrations or large volumes of infectious organisms are used. Procedures that may produce splashes or aerosols must be performed in primary containment devices. Extreme precaution is required with the use and disposal of sharps. Individuals who are immune compromised may be at a higher risk and should take extra precautions as advised by the instructor.

\*If human-derived body fluids, tissues or primary human cell lines that may contain an undetected infectious agent are used, refer also to *OSHA Bloodborne Pathogen Standard* (ACC Science Safety Plan Appendix --).

required microbiological practices:

- procedures for handling microorganisms that minimize splashes or the formation of aerosols

**required primary barriers:**

- a lab coat or apron
- gloves
- face protection or goggles

recommended primary barriers:

- biological safety cabinet

**required secondary barriers:**

- restricted access to rooms in which microorganisms are used or stored

- a sink for hand washing
  - post biohazard signs on doors
- c. Biosafety Level 3 and Level 4 organisms will not be intentionally used in any ACC science activity.
- d. No uncharacterized clinical specimens (e.g. – blood, urine, sputum) will be intentionally used in any ACC science activity. A student working on his/her own body fluids is not considered to be a violation of this policy.
- e. Cultures or specimens donated to ACC by agencies (such as the Texas Department of Health) will be restricted to organisms that are already on the approved list OR they must be cleared in advance by the Biology Safety Officer.
- f. Before an organism not already on the master list can be obtained or used in a class or activity, the organism must be approved by the Biology Safety Officer.

## 2.2. Disposal

- a. Microorganisms, cell cultures, body fluids, and any materials that have been contaminated by contact with them, must be made non-infectious by autoclaving before disposal.
- b. Contact the Risk Management Office for sharps disposal information.

## 2.3 Faculty, lab technicians, hourly employees, work-study employees, biotechnology interns, and students directly involved with using microorganisms will receive specific training in the prevention of exposure to microorganisms and actions to take in case of exposure.

- a. additional training requirements:
- i) for prevention of exposure to microorganisms:
    - proper handling, labeling and storage of microbes
    - standard microbiological techniques
    - general safety policies including but not limited to:
      - wash hands before and after each lab session
      - disinfect bench before and after lab
      - keep backpacks, extra clothing and extra books off the lab benches and off the floor
  - ii) what to do in case of exposure (spill)
    - procedures for handling biohazard spills
  - iii) safe use of lab equipment
    - proper use of Bunsen burners
    - proper use of electrical equipment such as power supply boxes
  - iv) proper disposal procedures

b. source of training:

	lab technicians	faculty	students
proper use of PPE	Haz Com training	Haz Com training	in class training
handling and storage of microbes	Department-specific training	Department-specific training	in class training
standard microbiological techniques	Department-specific training	n/a	in class training
general safety policies	Department-specific training	Department-specific training	in class training
use of emergency eyewash and shower	Haz Com training	Haz Com training	in class training
use of Bunsen burners	Department-specific training	n/a	in class training
disposal techniques	Department-specific training	Department-specific training	in class training

2.4. limited access to facilities

a. dedicated microbiology labs

- i) Access to microbiology laboratory classrooms will be limited to trained biology faculty, lab technicians, hourly workers and work-study students under the direction of biology lab technicians, students currently enrolled in a microbiology course, College personnel as assigned by facilities or campus managers (custodial, repair, contractors or vendors), and lab coordinators.
- ii) Access to microbiology preparation areas will be limited to faculty currently teaching microbiology, trained lab technicians, hourly workers and work-study students under the direction of biology lab technicians, College personnel as assigned by facilities or campus managers (custodial, repair, contractors or vendors), and lab coordinators. Students are not permitted in microbiology preparation areas.

b. shared (Biology, Chemistry, Biotechnology) microbiology labs

- i) Access to shared microbiology laboratory classrooms will be limited to trained science faculty, lab technicians, hourly workers and work-study students under the direction of science lab technicians, students currently enrolled in courses scheduled in the lab room, college personnel as assigned by facilities or campus managers (custodial, repair, contractors or vendors), and lab coordinators.
- ii) Access to shared microbiology preparation areas will be limited to trained science faculty, lab technicians, hourly workers and work-

study students under the direction of science lab technicians, college personnel as assigned by facilities or campus managers (custodial, repair, contractors or vendors), and lab coordinators. Students are not permitted in microbiology preparation areas.

c. All ACC employees working in a dedicated or shared microbiology laboratory classroom or preparation room will have the following training (additional specific requirements apply to faculty, staff and students directly involved in microbiology classes – see section 2.2)

Hazardous Communication  
Hazardous Waste  
Blood-Borne Pathogens, In-depth  
Department-specific training

### 3. Use of living vertebrate animals in the laboratory

- 3.1. Animals used in lab activities will be purchased from a reliable vendor, not wild-caught.
- 3.2. Students shall not handle living vertebrate specimens being used in lab exercises unless the animal has been previously anesthetized or pithed by a lab technician or by the instructor. (Chick embryos used in cell culture do not require this precaution.)
- 3.3. Employees and students shall wear appropriate PPE when handling living animals or their tissues.

### 4. Universal Precautions

*“ACC requires College faculty and students participating in clinical and laboratory programs that require the handling of blood, blood products, or body fluids to observe the universal precautions and safety guidelines prescribed by the U.S. Public Health Service. Students in clinical and laboratory experiences will be supervised by College faculty members who will monitor compliance with the precautions and guidelines prescribed by the U.S. Health Service” ACC Student Handbook, 2002-2003, page 25.*

4.1 This is a summary of the Universal Precautions (*OSHA Blood borne Pathogen Standard, ACC Science Safety Plan Appendix --.*)

- Consider all body fluids (saliva, blood, urine) as potentially infected.
- Wear gloves when handling blood or other body fluids.
- Depending on the nature of the lab activity and the possibility of contamination of mucous membranes (eyes, nasal passages, or mouth) or the presence of cuts or

abrasions of the skin, other protective barriers such as gowns, masks, or eyewear may be appropriate.

- Place lancets and other sharp items in puncture-resistant containers for disposal.
- Contaminated surfaces (lab tables) should be cleaned and disinfected with a germicidal spray or 10% bleach solution.
- Disposable contaminated materials not placed in a sharps container should be placed in a biohazard bag and autoclaved before disposal.
- Contaminated items that are not disposable should be soaked in a 10% solution of chlorine bleach before being washed.

#### 4.2 For ACC labs in which students use their own blood:

- a. Students should not participate in the lab if they have  
a bleeding disorder  
a blood-borne infectious disease (HIV, hepatitis, etc.)  
any other condition that contraindicates drawing their blood from a finger  
puncture
- b. Students will work alone and handle only their own blood.
- c. Students will clean the lab bench with the appropriate disinfectant before and  
after the lab activity.
- d. Students will wear gloves during the entire lab except while performing finger  
punctures.
- e. Students will use individually packaged, retractable, disposable lancets.
- f. Students will follow disposal procedures as directed by the instructor.