

OCCUPATIONAL HEALTH AND SAFETY UPDATE

The following is the final installment of a series of articles offered by the Occupational Health and Safety Committee. This series was intended to assist laboratories prepare for the safety component of the College of Physicians and Surgeons Laboratory Accreditation Program.

The Laboratory Safety Manual should include written policies and procedures providing information on the safe handling of biological hazards, biological safety cabinets and management of contaminated waste.

Biologic Hazards Safety

1. Universal Blood and Body Fluid Precautions must be practiced for all laboratory activities. It is assumed that all blood or body fluids are potentially infectious. Universal Precautions, now expanded and referred to as Standard Precautions, are specifically intended to protect the health care worker from the transmission of blood borne pathogens from patients.
2. Protective clothing, which is appropriate to the task undertaken should be worn at all times when in the laboratory.
3. Laboratory workers whose duties take them out of the laboratory should NOT wear laboratory coats or gowns out of the laboratory. Gowns or coats used in the laboratory should be removed when the worker leaves. If personnel desire to wear coats out of the laboratory, it is desirable to have laboratory coats of a different color. A policy forbidding wearing of protective clothing outside of the laboratory should be enforced.
4. Gloves must be provided by the employer. These should be of proper size and material (latex or vinyl) and be available at the workstation. Gloves are not intended to provide protection from puncture wounds, but are intended to cover defects of the skin on hands or when hand contamination with body fluids is anticipated. A written policy stating when gloves are to be worn should be in place.
5. Counter tops and surfaces that may have been contaminated with blood or fluid capable of transmitting blood borne pathogens should be cleaned using an appropriate cleaning agent and water as necessary (e.g. after each procedure, after treatment of each patient/client, at the completion of daily work activities, and after any spill). Surfaces then should be disinfected with a suitable chemical germicide. Loose or cracked work surfaces should be replaced.
6. A written procedure for the clean up of spills using personal protective equipment and an approved decontamination method must be available.
7. Antisiphon devices should be plumbed into any water outlet where there is a possibility of backflow of contaminated water into the facility water system. If a hose is attached to an outlet, it may end up submerged in contaminated water when the tap is turned off, allowing a

certain amount of fluid to be drawn back into the outlet by vacuum pressure. This will be prevented if an antisiphon device is present on the water outlet.

Biological Safety Cabinets

1. A biological safety cabinet is required for the safe manipulation of specimens, that may create aerosols containing moderate to high-risk microorganisms. It acts as a primary barrier to contain and dispose of the hazardous agents in a safe manner.
2. Specimens for fungus culture should be handled in a biological safety cabinet. All mycobacteriologic (AFB) specimens and cultures should be handled similarly. After each use all interior surfaces must be sprayed or swabbed with appropriate disinfectant and allowed to air dry.
3. The biological safety cabinet should meet the minimum requirements for the work performed in it. There are three classes of biological safety cabinets available, therefore, the laboratory should select the appropriate hood for the anticipated hazard.

Class I – protect operator

Class II – protect operator plus specimen

Class III – protect operator plus specimen, complete containment

4. The safety cabinet must be certified annually to ensure that the filters are functioning properly and that air flow rates are appropriate.
5. Safety cabinets vented to the outside should be designed without connection to other systems, with proper sealing and with the exhaust vent in a safe location relative to ventilation intake systems.
6. The cabinet work surface must be decontaminated on a daily basis. Spray or swab all interior surfaces with appropriate disinfectant and allow to air dry.
7. The cabinet should be appropriately situated to avoid/minimize air turbulence. Fans, heating, and air conditioning registers can disrupt air flow patterns if located adjacent to the cabinet. Proper placement in the laboratory is important to attaining the maximum containment capability of the equipment.
8. The cabinet must be uncluttered so as not to compromise its effectiveness. Improper placement of materials or equipment within the work chamber will impair the airflow, effecting the containment capability.
9. The cabinet must have a mechanism to signal when it is inoperative.