Containments Elements: 1) Lab practices and techniques; 2) Safety Equipment identified as primary barriers, and 3) Facility Design or secondary barriers.

Containment Methods The term containment is used to describe safe methods for managing infectious agents in the laboratory environment. The purpose of containment is to reduce exposure of laboratory workers and others to potentially hazardous agents and to prevent their escape into the outside environment. The three elements of containment are laboratory practice and technique, safety equipment, and facility design.

Laboratory Practice The most important element of containment is strict adherence to standard microbiological practices and techniques. Persons working with infectious agents or infected materials shall be aware of potential hazards and shall be trained and proficient in the practices and techniques required for safely handling such material. When standard laboratory practices are not sufficient to control the hazard associated with a particular agent or laboratory procedure, additional measures may be needed involving safety equipment and facility design.

Safety Equipment (Primary Barriers) Safety equipment includes biological safety cabinets, enclosed containers, and other engineering controls designed to prevent or minimize exposures to hazardous biological materials. The use of vaccines may in some cases provide an increased level of personal protection.

Biological Safety Cabinets (BSC's) The biological safety cabinet is the principal device used to provide containment of infectious splashes or aerosols. There are three types of biological safety cabinets: Class I, Class II, and Class III.

Class I is an open-fronted, negative-pressure, vented cabinet with HEPA-filtered exhaust. It may be equipped with a front closure and gloves for use as a glove box. The inward face velocity is a minimum of 75 linear feet per minute. Suitable for work with low- or moderate-risk biological agents, it provides protection for personnel and the environment but not for the product.

Class II cabinets are open-fronted laminar-flow cabinets with a minimum inward face velocity of 75 linear feet per minute. Class II design resembles that of a fume hood but with HEPA-filtered, recirculated mass airflow within the workspace. Exhaust air is also filtered. Class II cabinets provide protection for personnel, product, and the environment. They are designed for work with low- or moderate-risk biological agents.

Class III cabinets provide the highest level of protection. Class III is a totally enclosed glove-box cabinet of gas-tight construction. The cabinet is maintained under negative air pressure of at least 0.5 inches of water gauge. Supply air is drawn into the cabinet through HEPA filters, and the exhaust air is filtered by two HEPA filters in series before it is discharged to the outside. Generally, the ventilation system is separate from the facility's ventilation system. Class III cabinets are suitable for high-risk biological agents.

Biological safety cabinets used to protect workers from hazardous biological agents shall be tested and certified after installation and before use, any time they are moved, and at least annually. The department head shall provide annual certification and maintain certification records for the department. Testing shall meet the criteria in National Sanitation Foundation Standard Number 49. The biological safety cabinet shall be decontaminated prior to certification or performance tests.