

All Hazard Receipt Facility Containment Line

Primary Containment

The Primary Containment Line (Class I BSC Bleaching Station, Class III BSC Glovebox, and Class II BSC) is key in ensuring the safety of the Principle Investigators. The sample receiving process shall consist of a line of primary containment equipment integrated and connected with a Class I BSC Bleaching Station, Class III BSC Glovebox and Class II BSC so samples do not leave a higher containment until rendered safe for handling in the next lower containment level, then eventually into the laboratory. Samples are moved in a linear direction “dirty” to “clean” via a 3 door pass-through box that are HEPA and HEGA filtered with built in or integral decontamination ports.

Bleaching Station

Bleaching Station (Class I BSC) with airlocks

The Bleaching Station shall provide protection for the operator by maintaining a minimum 100 lfpm (0.5 m/s) inward airflow through the front opening in the sash. The system shall provide environmental protection by filtering exhaust air prior to discharge into the environment. The bleaching station will be equipped with HEPA and HEGA filters, as samples may contain chemical warfare agents. As bleach is corrosive to stainless steel, the interior surfaces of the bleaching station is coated, preventing pitting and damage.

Concept of Operation: Samples entering the laboratory from the field are passed directly into the bleaching station via a pass through box from the outside of the building. Inside the bleaching station the following tasks will be performed. Starting with external decontamination and then the removal of outer packaging. Next, is the initial scanning for hazards and ending with the data logging. The chain-of-custody paperwork will enter the facility via a separate pass-through to prevent possible contamination.

Direct sample entry via a pass-through into the containment line minimizes the possibility of contaminating the laboratory.

Glovebox

Glovebox (Class III BSC) with airlocks

The Class III Biological Safety Cabinet (Glovebox) is the safest means of handling unknown hazardous agents. Because there is a physical barrier between the hazard and the operator, there

is minimal likelihood of contact. Exhaust air will be HEPA and HEGA filtered to provide environmental protection. All air entering the Glovebox shall be filtered thereby providing protection from cross contamination and a low probability that hazardous materials will escape containment.

Samples shall enter the Glovebox from the bleaching station via an airlock. Inside the Glovebox, screening shall take place to identify the sample. Minute samples are rendered safe enough for analysis in the Class II BSC. If required, additional samples can be packaged for transfer to other laboratories for confirmation.

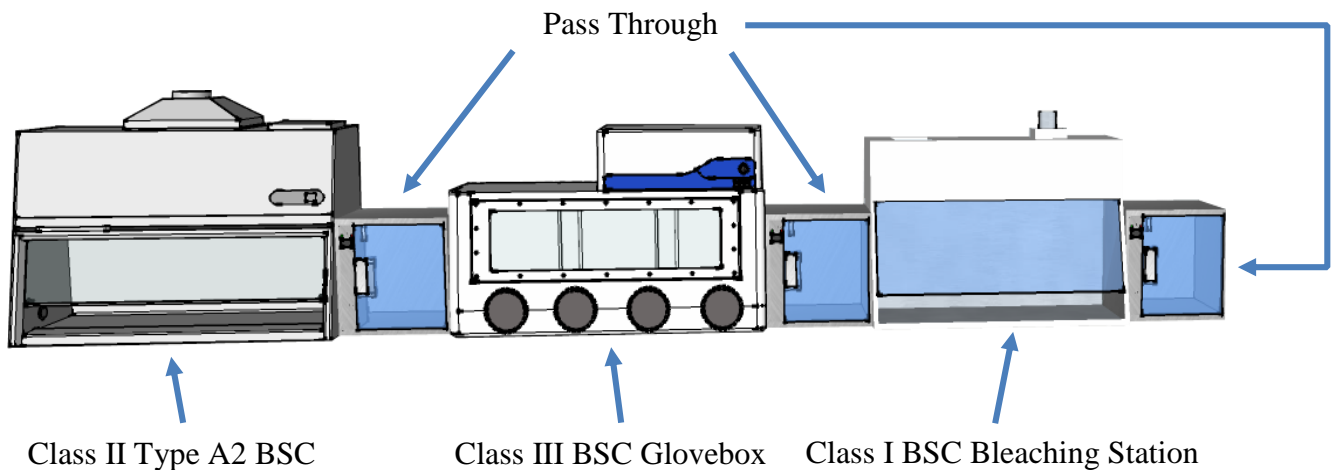
Sample material rendered safe enough for manipulation in Class II containment are passed through an airlock to a Class II, Type A2 BSC.

Custom Class II Type A2 Biological Safety Cabinet

(Class II, Type A2) Biological Safety Cabinet with an airlock

A Custom Class II, Type A2 Biological Safety Cabinet shall be constructed in accordance with definitions for this type of equipment as defined in the Biosafety in Microbiological and Biomedical Laboratories 5th Edition (BMBL).

After analytical work is performed in the Class II BSC, properly packaged evidentiary samples and other materials can be passed out of the Analytical Area via a 3-door airlock to the outside of the building or brought into the facility for storage in an ultralow freezer or autoclaved.



Standards Governing HEPA and HEGA filter.

1. MIL-PRF-32016 test method for absorber charcoal media to absorb aerosol with a minimum residence time of 0.25 seconds.
2. MIL-DTL-32101 specifications for ASZM-TEDA Carbon.
3. MIL-STD-282, dioctyl phthalate (DOP) test method for HEPA filter efficiency of 99.97 percent at a 0.3 μm diameter particle size.
4. MIL-F-51079D for HEPA filter medium requirements.
5. MIL-STD-282- T105/EAF1284.