

Environmental Health & Safety Policy Manual

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Policy # EHS-300.07

**Biological Material Vacuum Aspiration Procedures**

**1.0 PURPOSE**

Wide varieties of biohazardous materials are used throughout the LSU Health Sciences Center and are commonly manipulated or transferred using vacuum systems. These procedures serve as general guidance for safely using these systems and protecting the house vacuum systems from contamination.

**2.0 SCOPE**

These procedures address the proper use of all vacuum systems with biological materials.

**3.0 RESPONSIBILITIES:**

**3.1 Principal Investigators/Supervisors shall:**

- Develop and maintain workplace-specific procedures for aspiration of biohazardous or infectious materials.
- Use the proper aspiration setup as detailed in this policy.
- Report any vacuum incidents involving biohazardous materials immediately to Environmental Health and Safety. Follow incident/accident reporting procedures outlined in [EHS - 400.06, Incident/Accident Reporting and Investigation Policy](#).

**3.2 Employees shall:**

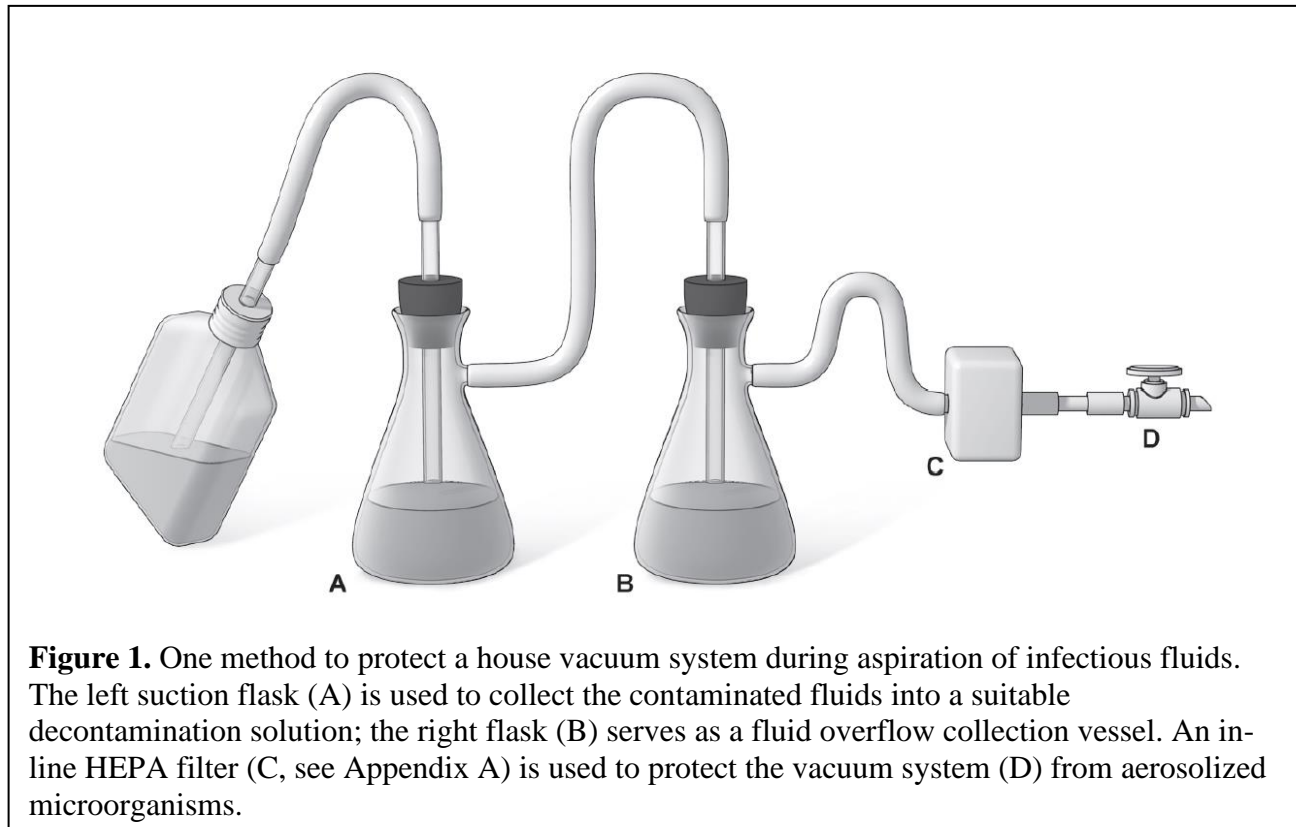
- Be trained on the proper use, handling, and spill response procedures regarding aspiration of biohazardous materials per [EHS – 300.2, Biological Spill Response Procedures](#).
- Wear personal protective equipment and use spill control equipment in the proper manner.
- Report all biohazardous spills to their supervisor.

**3.3 Environmental Health & Safety (EHS) shall:**

- Provide technical assistance and product selection guidance for safe and proper use of house vacuum systems and local vacuum pumps.
- Inspect aspiration apparatuses during routine laboratory inspections.

## 4.0 PROCEDURES

Vacuum-assisted devices can present implosion hazards under pressure and risk of infectious aerosol generation. The CDC/NIH Biosafety in Microbiology and Biomedical Laboratory (BMBL) recommends using the system shown in Figure 1 for BSL-2 laboratories and above.



**Figure 1.** One method to protect a house vacuum system during aspiration of infectious fluids. The left suction flask (A) is used to collect the contaminated fluids into a suitable decontamination solution; the right flask (B) serves as a fluid overflow collection vessel. An in-line HEPA filter (C, see Appendix A) is used to protect the vacuum system (D) from aerosolized microorganisms.

### 4.1 House Vacuum System and General Procedures

- The house vacuum system should be protected as recommended by Figure 1.
- Aspirations can create aerosols, and should be performed inside a biological safety cabinet (BSC) at BSL-2.
  - Store the collection and overflow Buchner flasks inside the cabinet if there is enough space.
  - If collection flasks must be stored outside the cabinet on the floor, place the flask in secondary plastic containment out of the way of foot traffic. Consider replacing glassware with appropriate plastic vessels.
  - Position hoses so that they are secured and will not knock over glassware.
- The HEPA filter shall be treated with a hydrophobic chemical to reduce

microbe growth. See Appendix A for product selection. HEPA filters must be replaced every six months, or as blockages occur.

- An appropriate amount of fresh bleach or other disinfectant shall be kept in the collection and overflow vessels to disinfect collected infectious fluids. Discard the collection vessel when it is  $\frac{3}{4}$  full of liquid.
- Volatile or flammable chemicals shall not be aspirated into the house system. Contact EHS immediately if any infectious fluids are aspirated into the house system.
- Aspiration flasks must be capable of handling sufficient vacuum and be fitted with the correct stopper. Inspect the system regularly and replace any chipped or damaged glassware immediately. Use tubing of sufficient strength that will not become kinked or cause vacuum pressure to build. Tubing can be disinfected by aspirating a small volume of bleach.

#### **4.2 Laboratory Vacuum Pumps**

- Stand-alone or local vacuum pumps may be necessary for rooms that do not have access to house vacuum supplies. Choose the proper vacuum pumps for the planned experiments and set up the fluid aspiration traps as in Figure 1.
- Local vacuum pumps may need to be used for special chemical procedures. If special vacuums are used for volatile chemical procedures, these must be vented to a chemical fume hood.
- Submit a work request using <http://bob.lsuhscc.edu/> to have vacuum oil disposed of by EHS.

#### **5.0 TRAINING**

All persons working with vacuum flask aspirations should be trained on this policy as a part of their [laboratory-specific training](#).

#### **6.0 REFERENCES**

- Centers for Disease Control and Prevention – BMBL 5<sup>th</sup> Edition
- Biological Safety, Practices and Principles, 4<sup>th</sup> Edition

#### **7.0 APPENDICES**

Appendix A - Vacuum Line HEPA Filter Examples

Vacuum-line HEPA Filter Examples

EMD Millipore Millex™ Filters: Inlet and Outlet, 1/8 NPT – Part # SLFG75010



Thermo Fisher Catalog # SLFG75010

Whatman™ HEPA-Vent Filter – Part # 67235000



Thermo Fisher Catalog # 09-744-79