University of California
Environment Health and Safety
Radiation Safety Update
San Francisco

Proper Use of Vacuum to Aspirate Radioactive Fluids

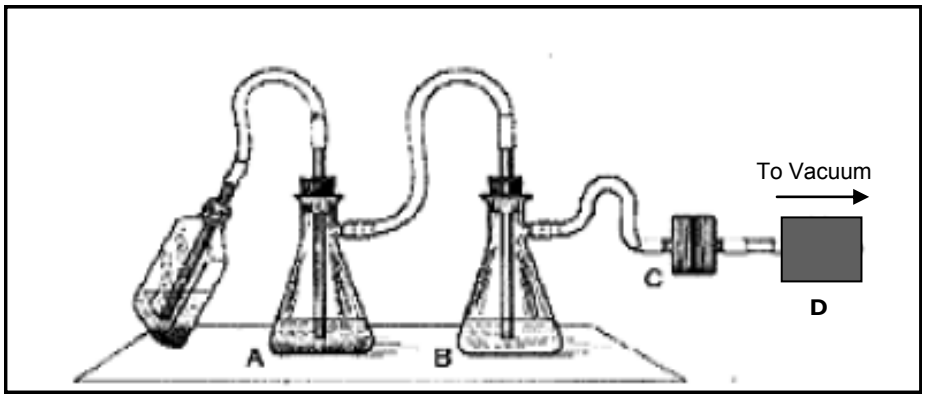
Preventing Contamination

The aspiration of radioactive media and other radioactive solutions is a laboratory procedure. When these procedures are undertaken, specific engineering controls are needed to protect vacuum systems. Information to prevent radioactive contamination of the UCSF vacuum system is below. [Note: For biological agents, the typical contamination control of the vacuum system is use of an inline HEPA filter. Be aware that the same HEPA filter may not protect the vacuum systems against radioactive contamination.]

Engineering Controls for Protecting Vacuum Systems from Radioactive Contamination

When aspirating radioactive liquids, the vacuum source must be protected by using an in-line activated carbon filter. A Whatman's Vacu-Guard™ 150 filter is designed for this purpose. It is available through Fisher (or similar vendors). The recommended set-up for protecting the vacuum system from radioactive contamination is shown in the diagram on the below. Additionally, for liquids being aspirated containing particulates or infectious agents, a HEPA filter is placed in front of the activated carbon filter.

Recommended Set-up for Protecting Vacuum Systems



Whatman Vacu-Guard™
150 Activated Carbon Filters

- ***A. Collection Flask with tube extending to bottom of flask***
- ***B. Overflow Collection Flask with tube extending to bottom of flask***
- ***C. HEPA Filter***
- ***D. Activated Carbon Filter***

House Vacuum Concerns

EH&S strongly discourages the use of the house vacuum to aspirate radioactive fluids even when the proper engineering controls are used. Instead, EH&S recommends using a pipette aid for aspirating smaller volumes and a laboratory vacuum pump with the set-up shown above for aspirating larger volumes.

Pipette Aid

Vacuum Pumps