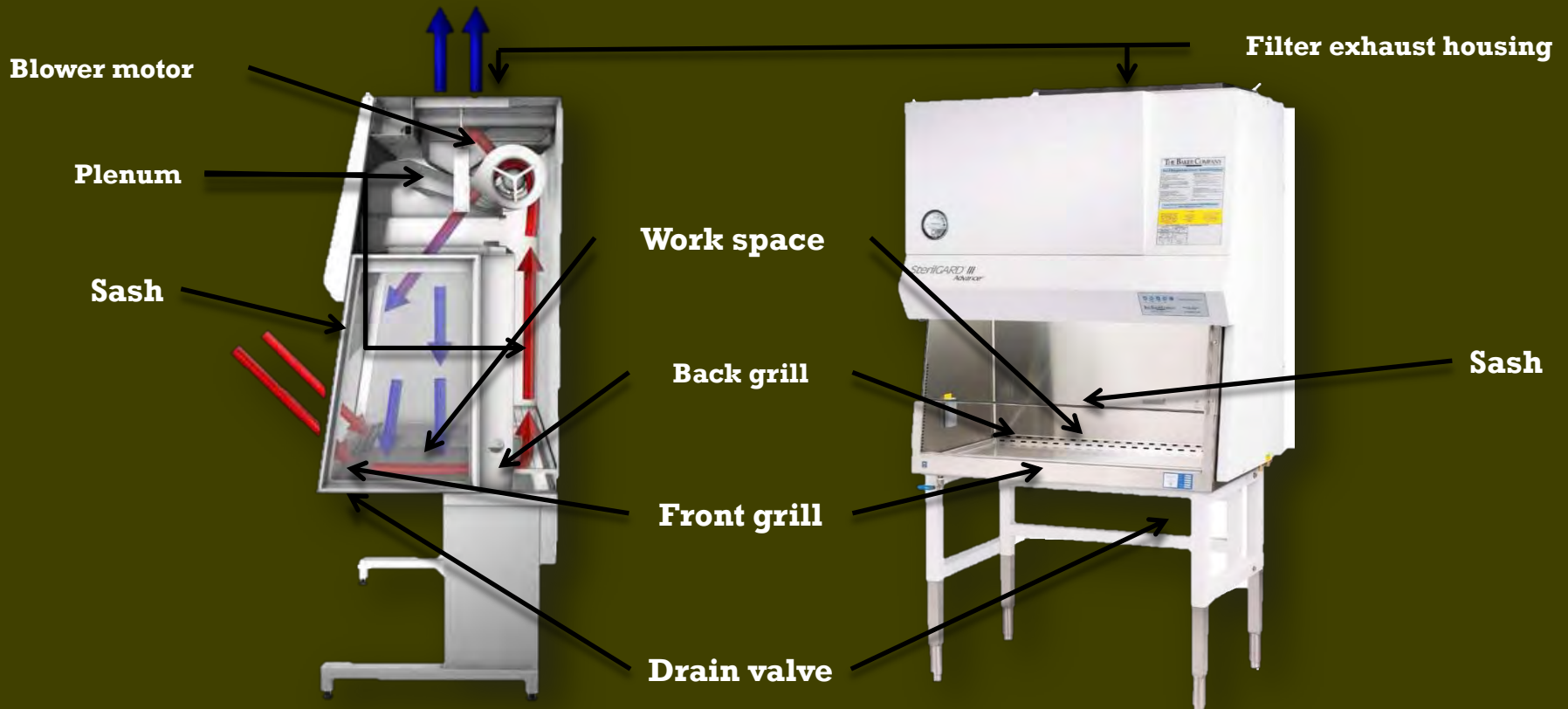
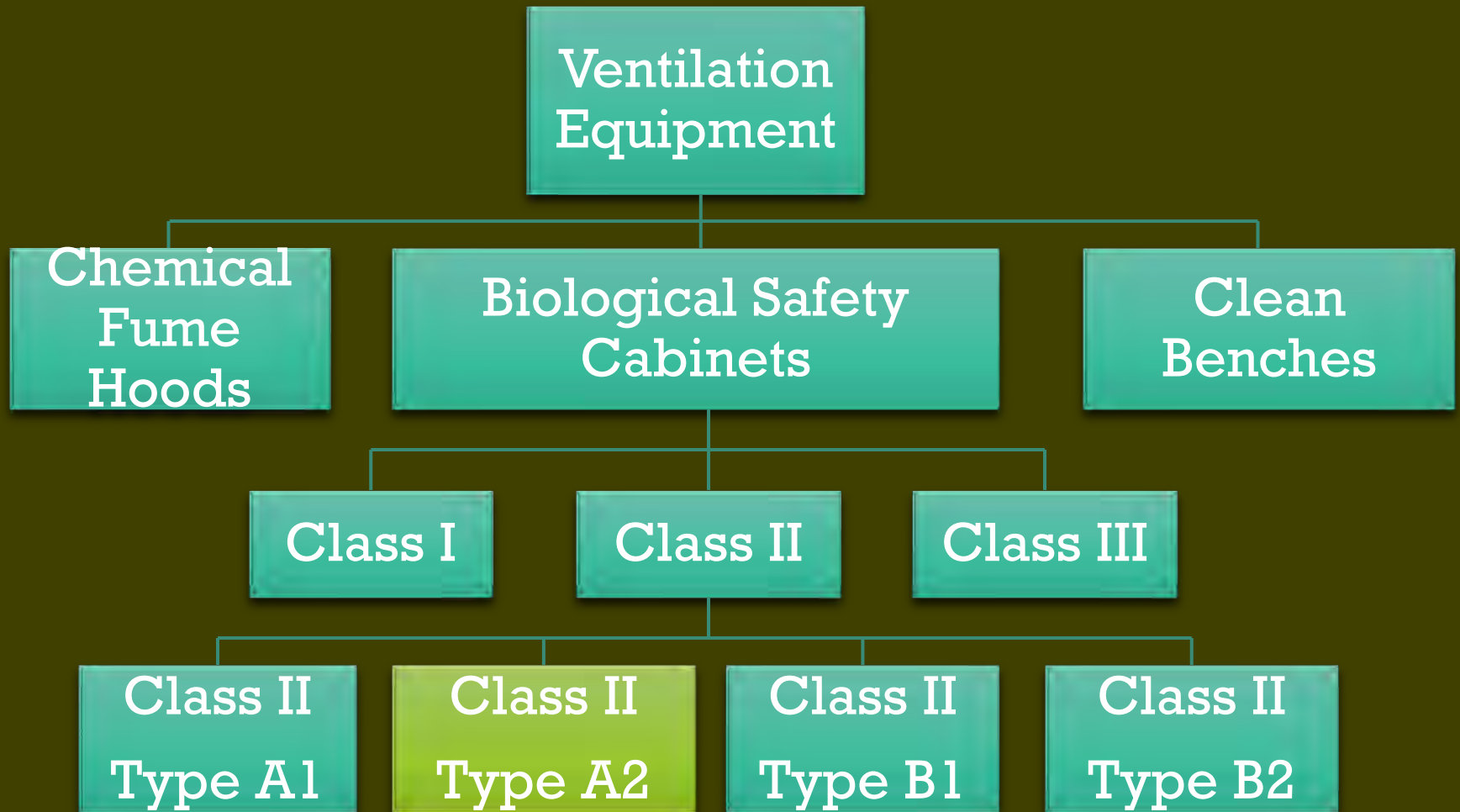


PARTS OF A BIOLOGICAL SAFETY CABINET

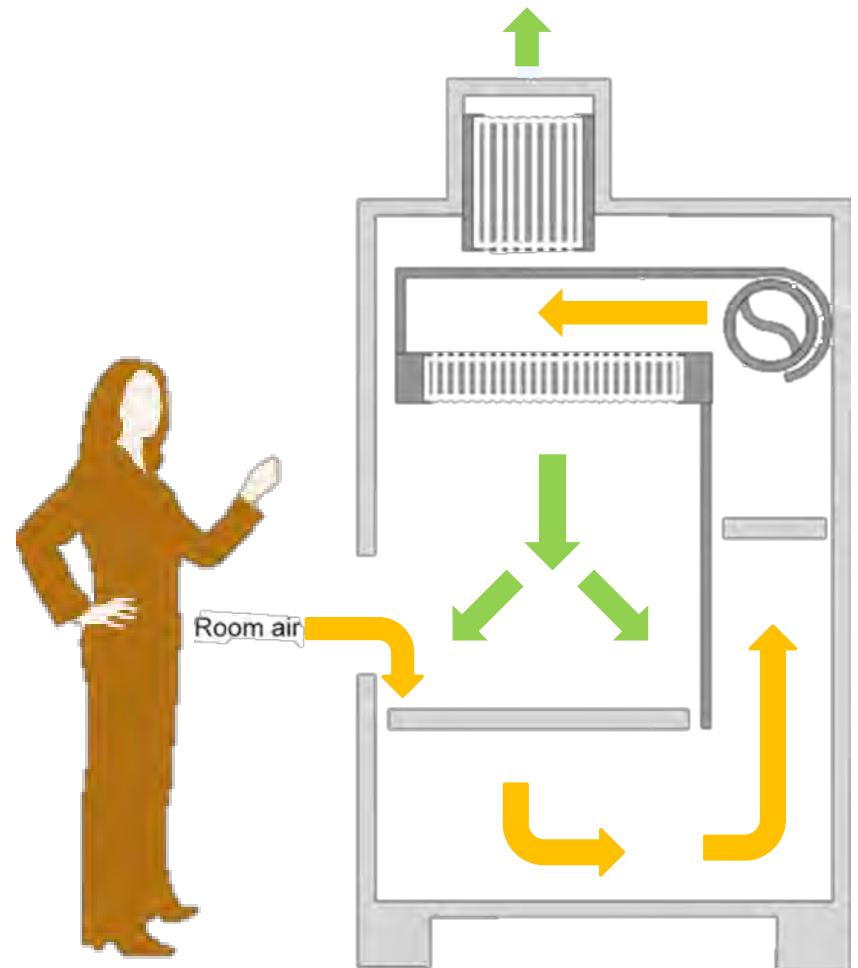


TYPES OF CONTAINMENT (VENTILATION) EQUIPMENT



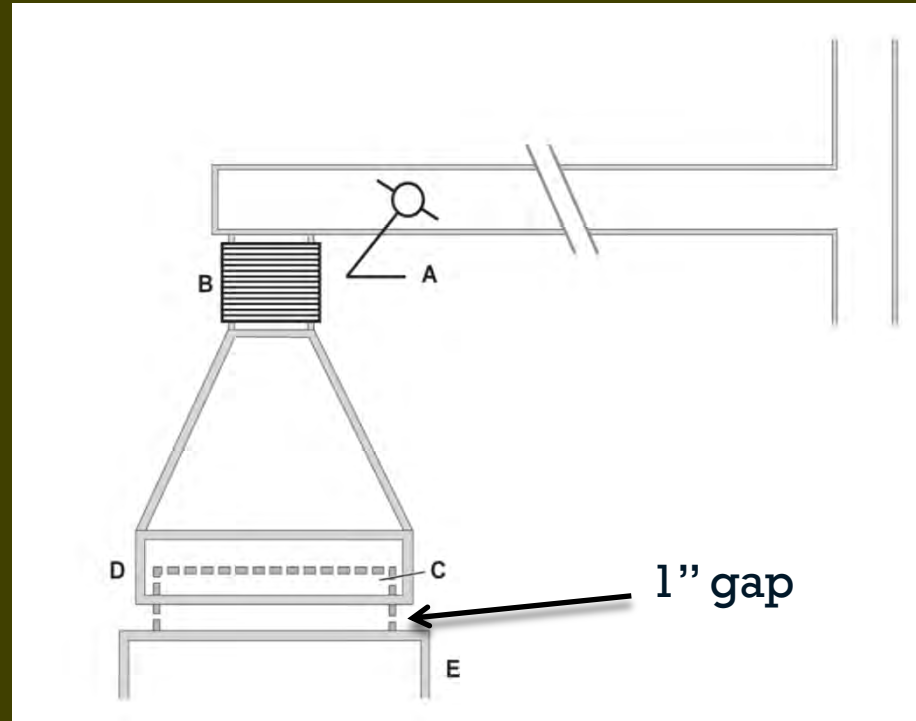
CLASS II, TYPE A2 BIOSAFETY CABINET

- ❑ Recirculates 70% of HEPA filtered air to work surface
- ❑ Exhausts 30% of HEPA filtered air to room.
- ❑ Use with:
 - ▣ Biohazardous materials
 - ▣ Cell culture
- ❑ Do NOT use with:
 - ▣ Volatile toxic chemicals
 - ▣ Radionuclides



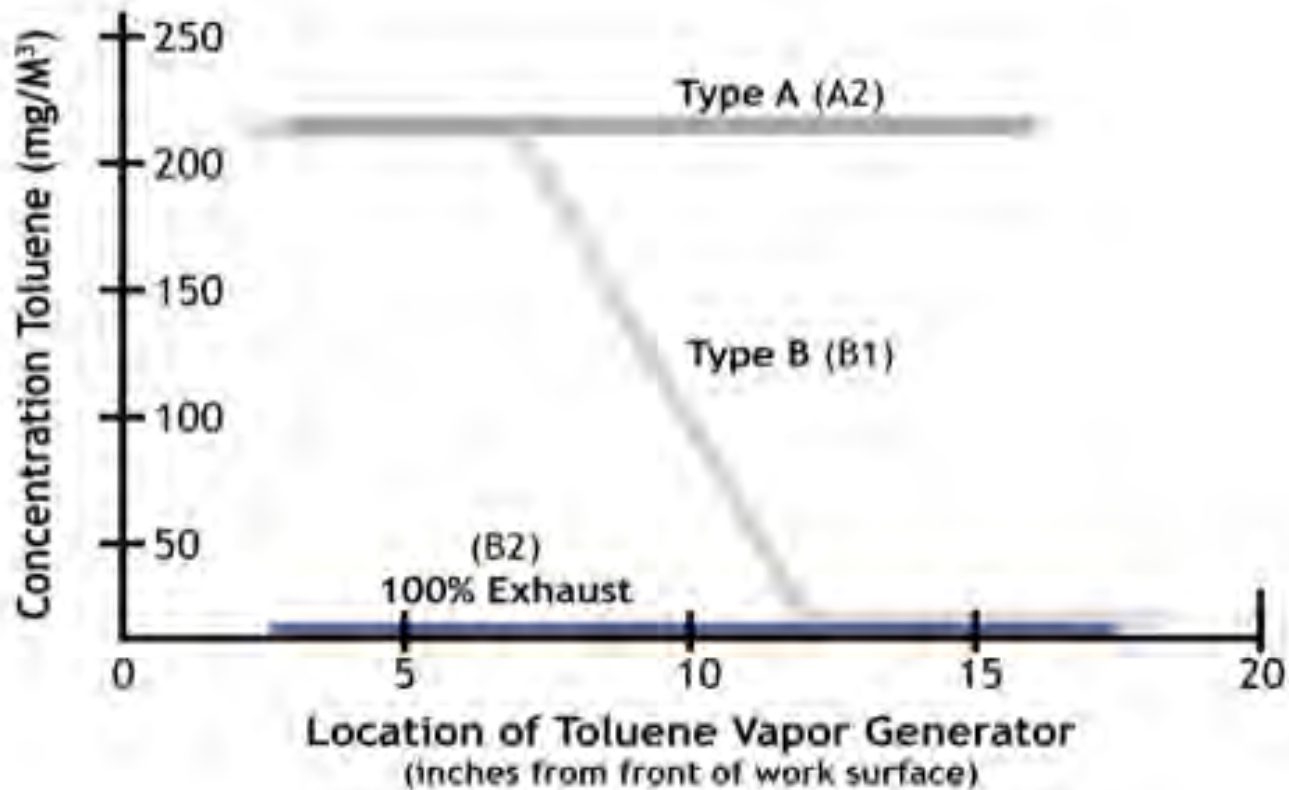
CANOPY (THIMBLE) UNIT FOR CLASS II, TYPE A BSC

- ❑ Proper way to connect Class II, Types A1 & A2 BSCs to building exhaust system
- ❑ Canopy prevents disturbance of internal cabinet airflow
- ❑ 1" gap between canopy and exhaust filter housing
- ❑ Canopy must be removable or design to allow operational testing



- (A) balancing damper
- (B) flexible connector to exhaust system
- (C) cabinet exhaust HEPA filter housing
- (D) canopy unit
- (E) BSC

BSC VAPOR HANDLING



Credits: The Baker Company. Class II Biological Safety Cabinet Vapor Handling
Posted by Becky Metivier on Thu, Jan 31, 2013 @ 09:42 AM

RISK ASSESSMENT

- Class II Type A2 BSC designed to recirculate ~30% of HEPA filtered air
- Risk assessment based on:
 - Biological material hazard analysis and containment requirements
 - Agent used and routes of transmission
 - Procedures and aerosol potential
 - Volume and concentration being used
 - Facilities design and capabilities to support safety equipment
 - Procedures and technical expertise level when potential to produce aerosols



Risk Assessment: Canopies

- Used with “minute” quantities of volatile chemicals or radionuclides
- Special considerations:
 - Engineered exhaust capacity of building
 - Sustainability of facility management/maintenance/repair costs
 - Flexibility to upgrade, downgrade, or move BSC
 - Expert support (facilities, EHS, etc.)



RISK ASSESSMENT: EXHAUST HEPA FILTER FAILURE RATES

- Approximately 1.75% failure rate of exhaust HEPA filters (filter leak/aerosol challenge leak tests)
- Any escape of aerosols through a leak would have to be at or above the Infectious Dose (ID) of the agent to have a Lab Acquired Infection (LAI)
 - Only 30% of air leaves through exhaust HEPA located on top of unit
 - Agent would have to survive desiccation process
 - Existing room air volume would dilute any remaining aerosols
- Very low probability for a researcher to be exposed to agent above the ID

