Primary Containment Devices for your Lab

BSC’s or biological safety cabinets are designed to provide personnel, product and environmental protection when appropriate practices and procedures are followed. BSC’s use high efficiency particulate air (HEPA) filters in order to filter out potentially harmful particulate material during activities which are conducted in the equipment. Any procedures which create infectious aerosols that are harmful must always be conducted in a BSC. HEPA filters are designed in such a way as to provide 99.97-99.99% efficiency at 0.3 micrometers. This size is considered to be the most difficult size to filter from a system. These filters are not designed to filter vapors and should never be used attempt vapor removal.

Due to the high performance level of HEPA filters it is imperative that these filters be challenged and tested on a routine basis. This is a very specific test which takes a known concentration of mono-dispersed particulate material and introduces it upstream to the filter. A forward light scattering photometer then measures the concentration. This allows the technician to determine if the filter is leaking and if so how much. It also allows the technician to “see” where the leak occurs and if it can be repaired or if a new filter should be installed.

In addition to HEPA filters, BSC’s make use of very specified air flow parameters in order to function properly. These air flow parameters are so regimented that any deviation from the set range could potentially allow the operator or others in the lab to be exposed to the harmful material used in the equipment. Also, the parameters are designed in a way that product protection is afforded. Whether it is material that the researcher wants to remain sterile and contaminant free or the material is harmful to humans and the researcher wants to contain it, the BSC provides this protection level. Special instruments and techniques are used to measure the air flow parameters. Often calculations have to be made which determine this. The air flow parameters are set by the National Sanitation Foundation in their Standard #49 as well as the manufacturer and must be followed during the certification process.

UAB is fortunate to have on staff individuals in the Department of Occupational Health and Safety Biosafety Division which are highly experienced in testing biological safety cabinets. In addition to testing the biosafety cabinets, these individuals are experienced in making repairs on the equipment. This would include filter and blower replacement if necessary as well as electrical repairs.
At least annual certification is required if the equipment is used for materials that are known human pathogens or potentially contain human pathogens. Routine certification is also required if regulatory groups require it. Such regulatory groups may include but are not limited to CAP and CLIA.

Certifications may be scheduled by calling 5-5035 and scheduling a time when the technician can come by your lab between normal business hours and perform this necessary work.