Do you have a biosafety question and you’re not sure who to ask? Send your questions to the “Ask the Experts” column and I’ll get them answered for you. Drawing from my own experience or that of other experts in the field, we’ll try to compile a thorough and comprehensive answer to your question. Please e-mail your questions to jkeene@globalbiohazardtechnologies.com or Co-Editor Barbara Johnson at barbara_johnson@verizon.net or Co-Editor Karen B. Byers at karen_byers@dfci.harvard.edu.

Do HEPA Filters in the Exhaust of BSL-3 Facilities Have to be Decontaminated if the Filter Housings are Equipped with the “Bag In/Bag Out” (BIBO) Features?

The original HEPA filter was designed for use in the atomic energy sector in the 1940s and has since been found useful not only in the energy industry, but also in the chemical and biological industries. The BIBO capability is necessary with filters used for capture of chemical and radioactive particulates because there generally is no way to decontaminate the filter or the filter housing. The use of the BIBO feature provides some protection against potential exposure to the hazardous substances captured on the filter, but not complete protection. It is important to note that there is a maximum level of potential exposure to various chemicals and to radioactive materials below which normal healthy individuals may be exposed without adverse effects. The procedures used to remove filters from housings with the BIBO features are generally sufficient to protect personnel from exposure to these hazards since the potential exposure should not exceed the threshold limit values.

On the other hand, filters used for protection against the exposure of personnel and the environment to infectious agents can and must be decontaminated prior to removal from the filter housings. With infectious agents the potential for infection after exposure, to even small numbers of such agents, may be significant. The result of the exposure (infection) is dependent upon a number of factors, including but not limited to: numbers of organisms, route of exposure, and susceptibility of the exposed individual. All of these variables are unknowns when accessing the filters for removal and therefore must be considered to be of some significance with regard to the health and well-being of the personnel involved with the removal.

Since some exposure to the contaminated filter during the BIBO removal process is generally inevitable, and since there is no known standard “threshold limit value” for infectious agents, it is important to minimize/eliminate the potential for exposure to these agents by decontaminating the filter housing and the filters prior to removing the filters from the housing. While the procedure for the removal of HEPA filters from the filter housing using the BIBO feature is appropriate when dealing with those filters used for chemical and radiological particulate removal, the BIBO feature is not appropriate for removal of the filters from the exhaust filter housing of a biocontainment facility. These filter housings must be decontaminated prior to opening for filter removal. Once a validated decontamination procedure has been performed, the filters are considered decontaminated and can be removed and disposed of in accordance with local regulations.

Should the Filters from Biocontainment Laboratories be Disposed of as Hazardous or Regulated Waste?

Disposal of HEPA filters is dependent upon the filter use. All HEPA filters cannot be grouped under one umbrella.

HEPA filters used for hazardous chemical or radioactive material filtration must be treated as the hazardous material for which they were used, because generally a mechanism or process for decontamination or neutralization of the hazardous chemicals or radioactive materials present on the filter does not exist.

If the filter was used for protection from the release of infectious biological particulates and has been decontaminated using a validated and documented decontamination technique, then the filter is no longer contaminated and in most states can be designated as “normal trash.”

This is another example of what we all try to get across to people: Do the risk assessment. If the filters have been used only for the capture of biologicals, as would most likely be the case in those filters from biosafety cabinets and biocontainment laboratory exhaust, then the filter can be decontaminated in situ and disposed of in the normal trash, unless local regulation requires further treatment. However, if the filter comes from an exhaust system connected to chemical or radiological fume hoods, then it may contain particulates of hazardous chemical or radioactive material and must be treated as that particular hazard would be treated for disposal.

Get all the information before you make a decision.