

PROTECTING BUILDING OCCUPANTS FROM ANTHRAX ATTACKS

The potential threat of bioterrorism attacks using anthrax has raised the question of what can be done with the air filtration system to increase protection of building occupants.

Even though a desire to install HEPA filters is an obvious consideration, it is not recommended as a short term solution that could be implemented immediately:

First, commercial and industrial HVAC systems do not seal adequately to provide HEPA filtration. There is too much leakage around the filters in both built up frame banks and side access housings to warrant the use of HEPA filters.

Second, HEPA filters operate at far higher pressure drop than ASHRAE filters and commercial and industrial air handling systems are not designed to handle this level of resistance. The system would not deliver adequate air volume to meet the needs of the building.

Anthrax is a rod shaped spore forming bacteria, 1-1.5 microns in diameter; 4-10 microns in length. This size particle can be very effectively removed with filters other than HEPAs. **A more practical recommendation is to use 95% DOP filters or 90 - 95% ASHRAE filters.** Many central HVAC systems can accommodate the resistance of 95% DOP filters. If not, 90 - 95% ASHRAE filters would be the next best alternative. Either of these filters can also be directly installed in existing air handling equipment with no retrofitting required.

PowerGuard pleats would be an appropriate recommendation for the prefilters to maximize efficiency on one micron particles with an acceptable level of resistance.

Below is a table showing the initial (clean) efficiency of various filters on one micron size particles:

Rated Efficiency	Efficiency on One (1) Micron	Initial Resistance (In. W.G.) @ 500 FPM
HEPA	99.99%	1.0" - 2.0" W.G.
95% DOP	98%	.85" - 1.0" W.G.
95% (ASHRAE)	95%	.55" W.G.
90-95%	90%	.35" - .75" W.G.
80-85%	85%	.30" - .65" W.G.
60-65%	50%	.25" - .45" W.G.
PowerGuard Pleated Filters	55%	.30" - .40" W.G.

Filters Do Not Solve the Problem

Of course, it is necessary to recognize that the filters are only one element in protecting occupants from the effects of anthrax. Filters only serve a purpose if anthrax were to be introduced into the HVAC system. They can only help reduce the risk of exposure to inhalational anthrax, however, the contaminant can enter the building through other sources, such as via packages or envelopes. Anthrax is not contagious from one person to another. The spores must come in contact with the skin or be inhaled to cause an infection.

Maintenance Considerations

Don't overlook the extreme health hazard to the maintenance personnel caused by the contaminated filters. **Do not allow maintenance personnel to change filters that are suspected to be contaminated with anthrax.** Contact the local health authorities for assistance in removal and disposal of the contaminated filters.