

BIOSAFETY CABINET FUNCTION AND POLICY UPDATE PRESENTATION

**MIT CAB/ESCRO MEETING
SEPTEMBER 17, 2015**

OVERVIEW

- HEPA filter overview
- Biological safety cabinet overview
- Risk assessment
- Data on Exhaust HEPA failure rates
- Biosafety recommendation on changes to CAB policy

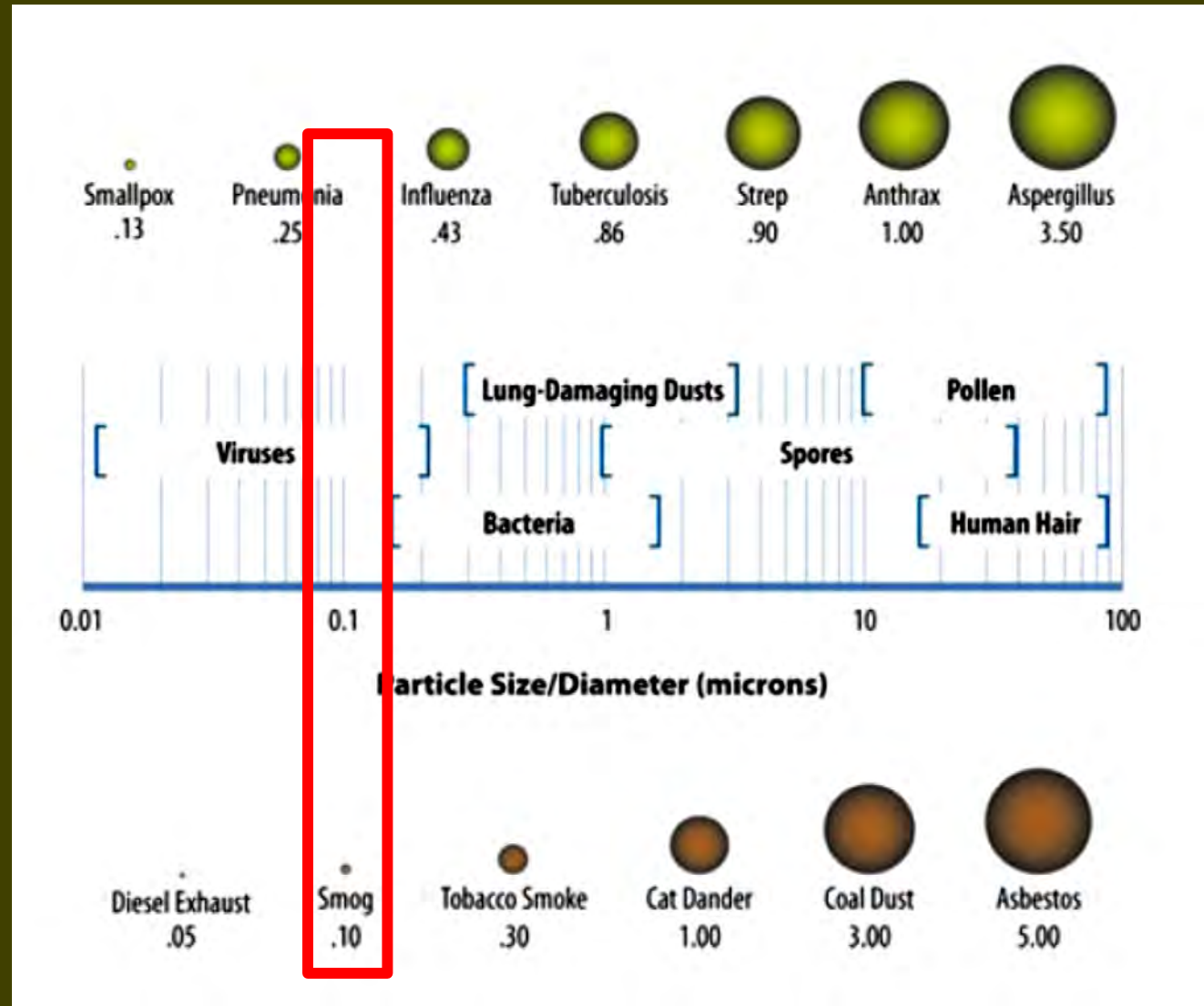
WHAT IS AN AEROSOL?

- Stable suspension of particles in a gas.
- Particles - solid or liquid (droplets)
- Gas - in this case mostly air

particles	Aerosol	Droplet
Size	< 5 μm	> 5 μm
Visibility	Invisible	Often visible
Travel distance	> 3 ft	< 3ft
Behavior	Similar to a gas, will not settle, removed by the HVAC system	Gravity will cause droplets to settle on surfaces

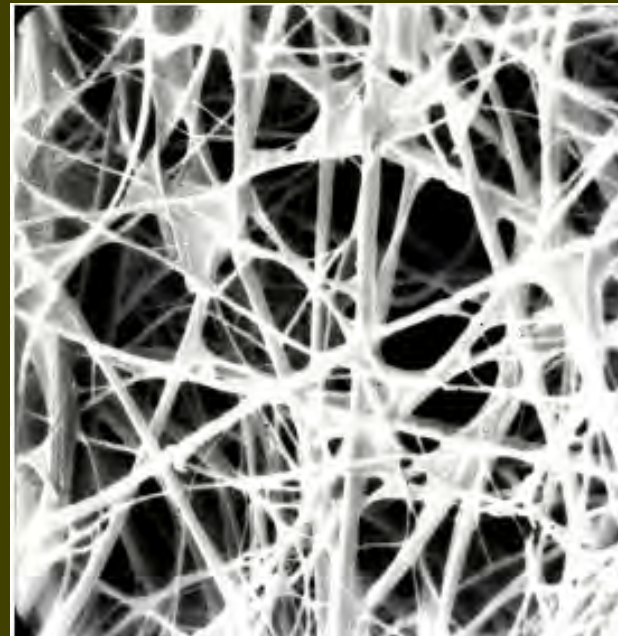
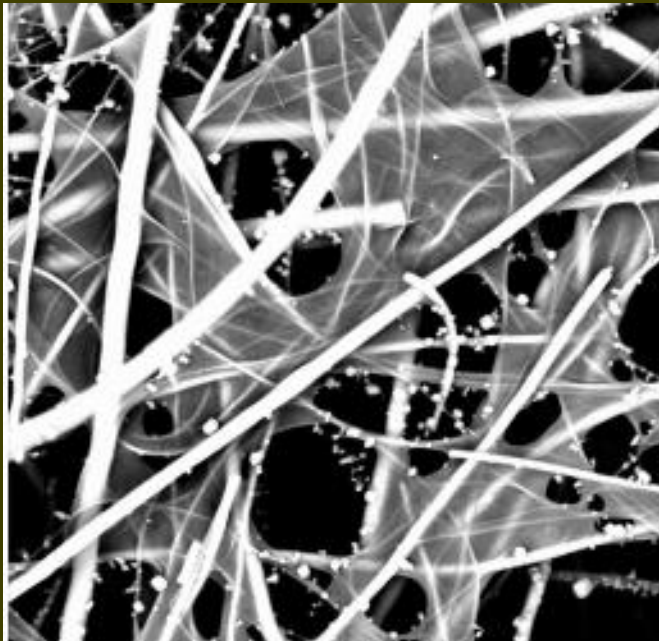
PARTICLE SIZE AND MPPPS (MOST PENETRATING PARTICLES)

The particle size that most greatly penetrates a filter is a function of filter media construction, aerosol density and air velocity.

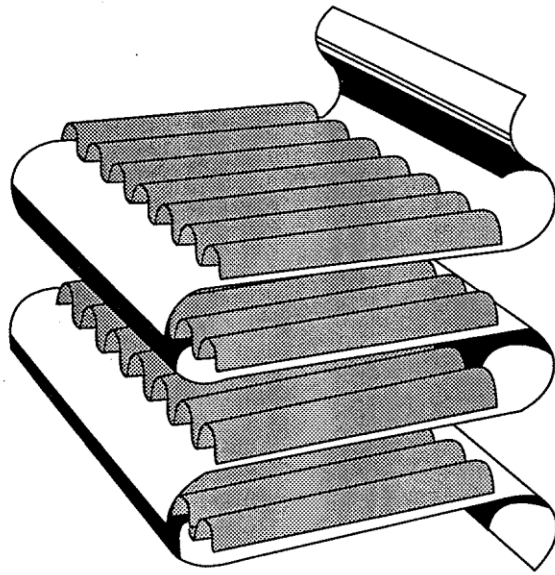


WHAT IS AN HEPA FILTER?

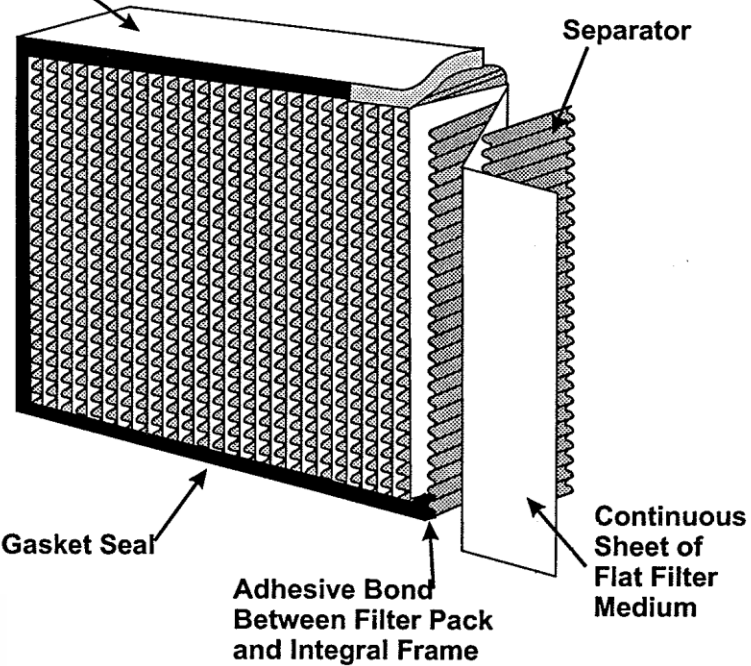
- HEPA (High Efficiency Particulate Air or Arrestance) Filter
- Porous media, usually fiberglass
- Fibers randomly oriented in the mat
- Most of the mat is air (>90%)



HEPA FILTER SYSTEM CONSTRUCTION



Filter Frame

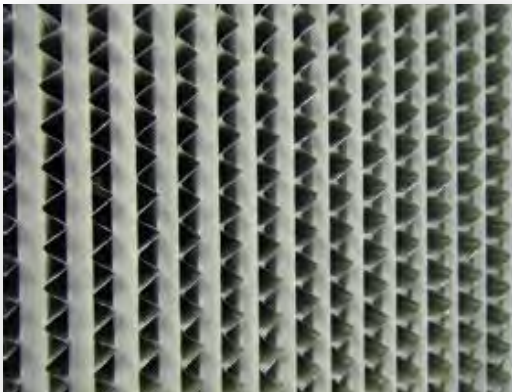


Separator

Gasket Seal

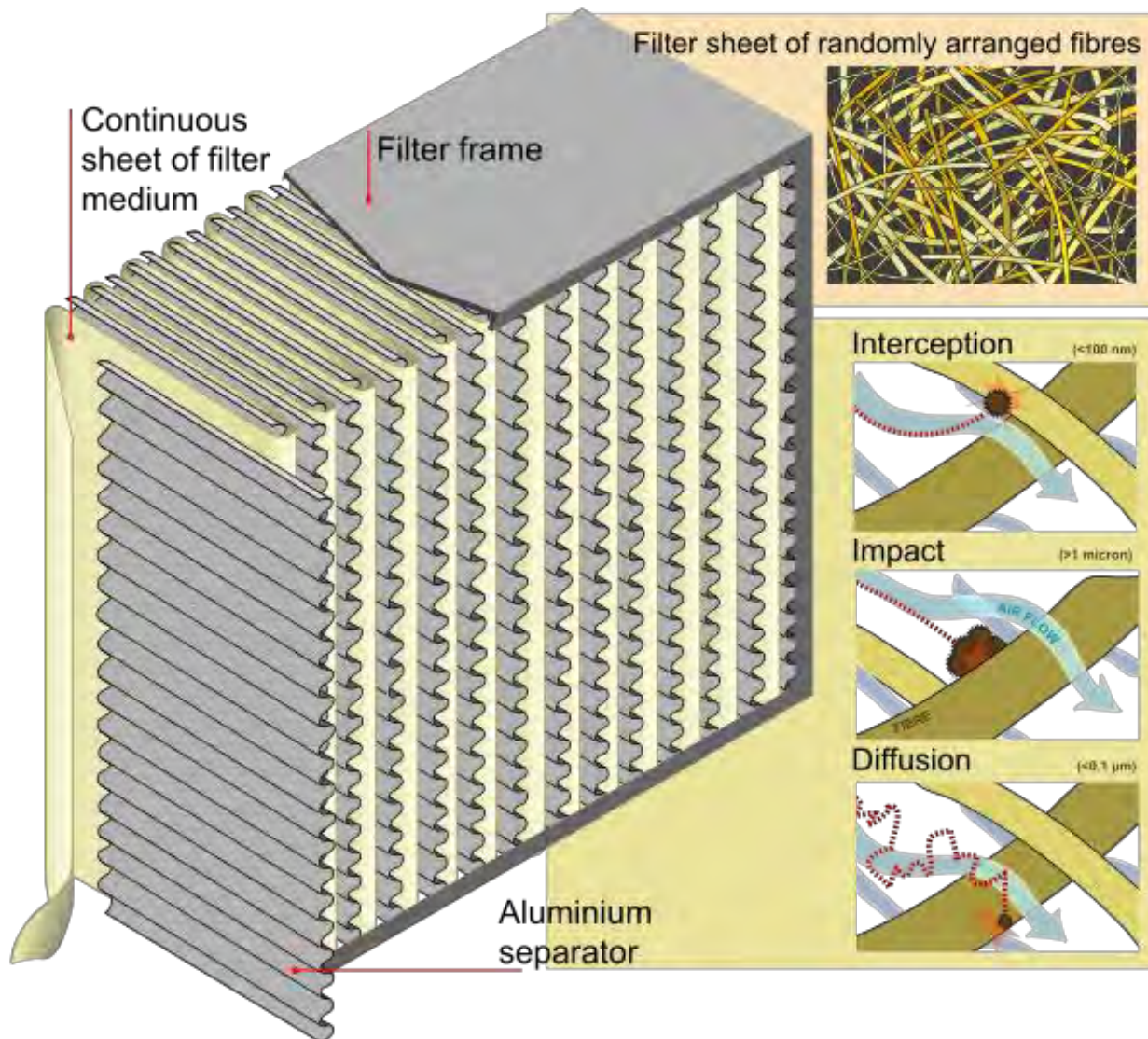
Adhesive Bond
Between Filter Pack
and Integral Frame

Continuous
Sheet of
Flat Filter
Medium



HOW DOES A HEPA FILTER WORK?

MECHANISMS OF FILTRATION



HEPA FILTER REMOVAL EFFICIENCY - ONLY

