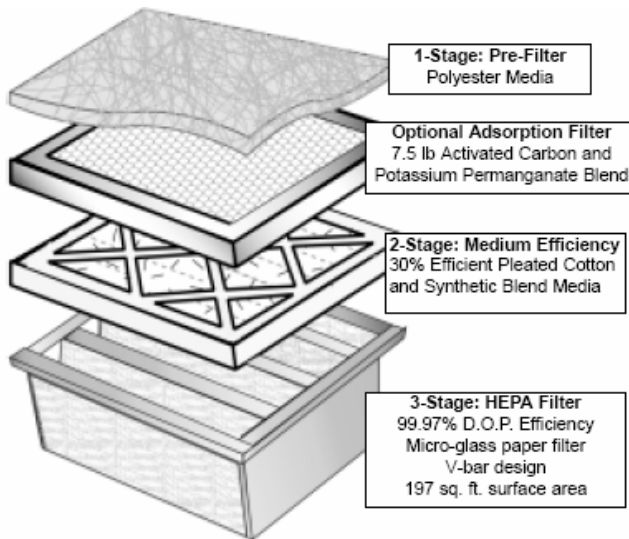
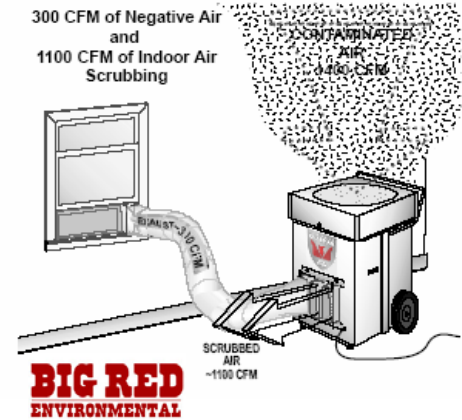


Particle Removal and Air Scrubbing

Air is composed of gases, microscopic and sub-microscopic particles, and varying amounts of water vapor. The air particles can be solid or liquid, organic or inorganic, visible or invisible, and harmless or toxic.

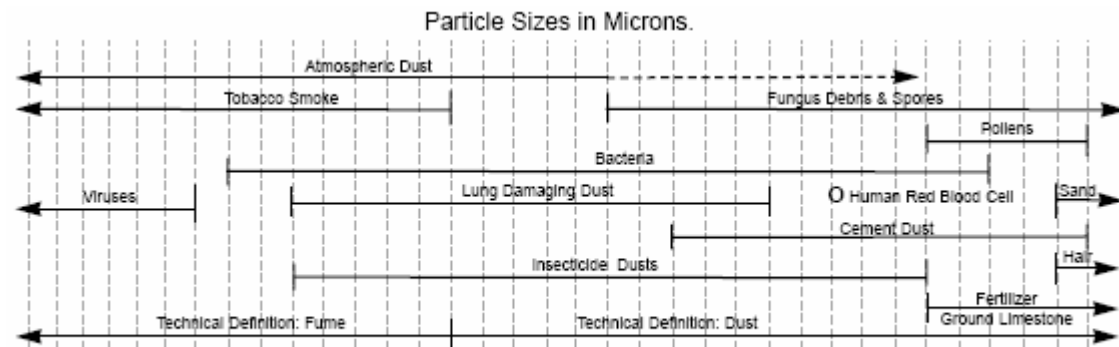
Air particle concentrations can be expressed in different ways including: the quantity (number) of particles, the mass (size) of particles, and the weight (density) of particles. A cubic foot of "clean" air will contain over a million particles; "dirty" air contains well over 30 million particles. Over 95% of the total weight of the particles in a cubic foot of air will be found in less than 1% of the total quantity of particles.

Air particles between 1 to 10 microns will settle in still air, however, regular air currents can keep them airborne for substantial periods of time. Particles between .1 to 1 microns will eventually settle in perfectly still air, but remain airborne in normal conditions. Particles smaller than .1 microns behave like gas molecules and may remain airborne permanently. When inhaled, air particles between 8 to 10 microns are normally captured in the upper respiratory tract, particles between 2 to 8 microns are trapped in the conducting air ways to the lungs and are cleared through swallowing or coughing.



The particles smaller than 2 microns are normally drawn into the lungs.

The Big Red HEPA System has a multiple stage filter design.



Information Source: ASHRAE Handbooks: 1996 HVAC Systems and Equipment, 1997 Fundamentals. Published by the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

figure 4

Positive Air to Protect an Area

In some situations, it may be necessary to protect an area from contamination. This is achieved by pressurizing the area with “scrubbed” air. The “scrubbed” air will flood the area and prevent contaminated air from entering. The intake duct can also be used to clean air from an area that is too small to accommodate the Big Red Air Scrubber. Scrubbing the air from a contaminated crawl space is an example of this application.

