

How Ultraviolet (UV) Light Works



micro-organisms. Ultraviolet light possesses just the right amount of energy to break organic molecular bonds. As micro-organisms pass by the UV rays radiated from the ultraviolet lamp, this bond breakage translates into cellular or genetic damage for micro-organisms, such as germs, viruses, bacteria, fungi (like molds), etc. This results in the destruction of the

UV Lamps Reduce Worker Sickness

This study tested 771 employees in three different office buildings. The UV lights, which were installed in the ventilation system, were operated in three cycles of four weeks on, twelve weeks off. Measurements showed a 99% reduction of germs on irradiated surfaces inside the ventilation system.

During some weeks, there was a 40% reduction in respiratory symptoms, and a 30% reduction in mucous problems in individuals examined. When the lights were activated, muscle complaints among nonsmokers were reduced by 50%, and work-related breathing problems decreased by 60%.

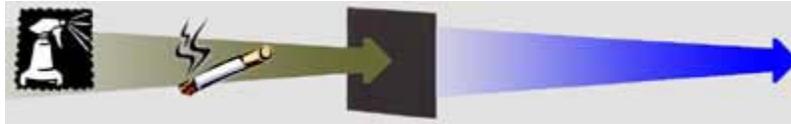
- **The U.S. government** now specifies that UV light should be used in air handling units to **improve indoor air quality in government buildings**, by controlling airborne and surface microbial growth.
- The **Air Institute of Respiratory Education** suggests UV lights be used in buildings for indoor air quality purposes, and states that may be the **final line of defense against those diseases** that have developed resistance to drugs, such as tuberculosis and others.
- According to the **Aerobiological Engineering Dept. at Penn State University**, the ultraviolet component of sunlight is the main reason microbes die in the outdoor air. The die-off rate in the outdoors varies from one pathogen to another, but can be anywhere from a few seconds to a few minutes for a **90-99% kill of viruses or contagious bacteria**.
- The **Centers of Disease Control (CDC)** **recommends UV lights** in homeless shelters to prevent the spread of disease, particularly TB (tuberculosis).

A study by **Air & Waste Management Association** found the combination of a HEPA air filter and germicidal UV lamp reduced bacteria by 80% in a 3072 cubic foot chamber

About Activated Carbon Air Filtration

Activated carbon air filters are the most effective type of filter against chemicals, gases, cigarette smoke and other odors.

How Activated Carbon Air Filters Work



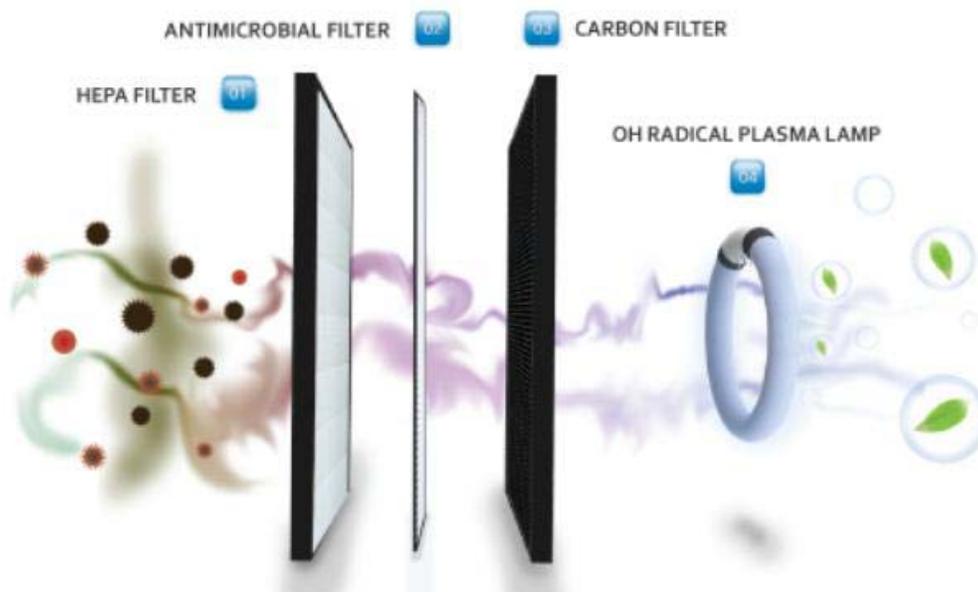
Activated carbon air filters consist of a vast system of pores of molecular size. These pores are highly adsorbent, forming a strong chemical

bond/attraction to odorous, gaseous, and liquid contaminants.

Activated Carbon Air Filter Facts

- Activated carbon air filters trap odors and chemicals in highly absorbent granules (or pores), which look like a hard scrub brush.

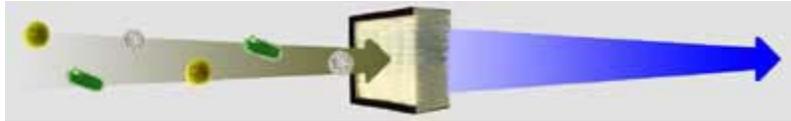
Activated carbon is a charcoal that is treated with oxygen in order to open up millions of tiny pores between the carbon atoms, resulting in a highly adsorbent material



About HEPA Air Filtration

HEPA air filters are largely considered the most effective type of air filter for solid particles, such as dust and other allergens.

How HEPA Air Filters Work



HEPA air filters are made from very tiny glass fibers that are made into a tightly woven paper. This creates a filter

consisting of a multitude of very small sieves that can capture extremely small particles, including some biological agents. Once trapped, contaminants and particles are not able to flow back into circulation, due to the highly absorbent pores of the HEPA air filter.

HEPA Air Filter Facts & Studies

- HEPA air filters **remove 99.97%** of particles down to 0.3 microns in size, almost 300 times smaller than the width of a human hair.
- HEPA air filters were **developed by the Atomic Energy Commission** during the second World War. They were originally designed to remove radio active dust from their plants.
- HEPA air filters are **recommended by the U.S. Dept. of Homeland Security**.
- **Journal of Hygiene** study found that ionizers increase efficiency of HEPA air filters. The Multi-Tech offers an ionizer in addition to its True HEPA filter.
- A study by **Air & Waste Management Association** found the combination of a HEPA air filter and germicidal UV lamp reduced bacteria by 80% in a 3072 cubic foot chamber.