

The Physics of Photoionization in Air

The Theory

The patent-pending AirSource / RGF Photoionization cleaning and disinfection process occurs as a result of the free radical formation that develops when ozone gas reacts with a high-intensity broad spectrum UV light on a trimetallic target (copper, silver and titanium). The resulting advanced oxidation gasses disperse into the air.

The cleaning and disinfection process occurs as a result of the free radical formation that accompanies the decomposition of the oxidation gases, which is accelerated by high-intensity targeted UV light. Some of the ozone (O_3) breaks down into oxygen gas (O_2) and free oxygen molecules (O), and some of the hydro-peroxides break down into ultrapure water and a free oxygen molecule. These free oxygen molecules are very reactive. They will not re-form hydro-peroxides and ozone, as these are not preferred states.

Some free oxygen molecules bond together to form pure oxygen (O_2) gas. Others react with organic contamination in air. The oxygen molecules will react with organic compounds and cause them to break down. In addition, the other ozone gas and hydro-peroxides provide additional oxidation.

The Process

The concept of a Photoionization cell involves the production of Advanced Oxidizers (peroxides, gases, ions and particles). These oxidizers leave the cell and travel through the building by Brownian Motion and normal air currents. Brownian Motion is simply the random movement of air molecules as they collide into one another.

The advanced oxidizers created by AirSource are considered friendly oxidizers as they revert back to oxygen and hydrogen after the oxidation occurs. Therefore, as the friendly oxidizers encounter airborne organics (bacteria, mold, odors, gases, etc.), they are consumed by the oxidation reaction and revert back to oxygen and hydrogen. Should the oxidizers be dispersed in a sterile room, they will be “stored” in the room as an airborne oxidizer and travel until they find an organic host.

The Application

A very clean building will permit the airborne oxidizers to travel considerable distance without being consumed by an organic oxidation. In such a case, the building will be stabilized in 2 to 3 days. If the building is a sick building, the AirSource 3000 will require more time, perhaps a week, to produce sufficient oxidizers to treat all parts of the building.

It should be noted that even though a room or house reaches stabilization, ozone levels will not increase beyond .02 ppm (parts per million), well below the safe FDA or OSHA levels.

Technological Advantages of the AirSource 3000

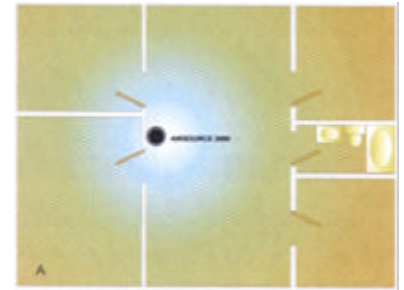
The AirSource 3000 treats ALL the air (and surfaces) in your home or office. Filters and electrostatic precipitators are “passive” and only treat the air that travels through the unit. When using a filter or electrostatic precipitator, you have to hope that the pollutant will reach the unit before getting into your lungs.

Simple oxidation units, such as ozone generators, often produce ozone in excess of the safe levels determined by the FDA and OSHA. Furthermore, those units can produce harmful, irritating gases such as oxides of nitrogen.

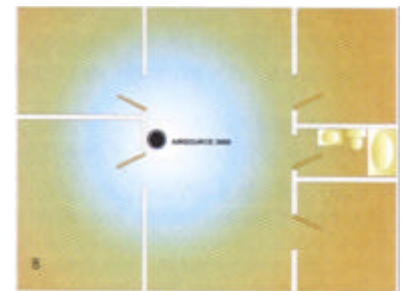
There are NO FILTERS to clean or replace when you own an AirSource 3000. Over time, the cost of filters can exceed the cost of the unit that requires their use. The annual cost of operating the AirSource 3000 is minimal: just \$39 for a replacement bulb and trimetallic plate that is replaced only once each year.

The AirSource 3000 contains patent-pending electron generation technology that causes particulates of all sizes to “agglomerate” and fall from the air all over your home or office. Filters only remove what reaches the unit and only those particulates that are larger than the holes in the filter. Because the air must be forced through the filter, such units including the HEPA filter units are very noisy.

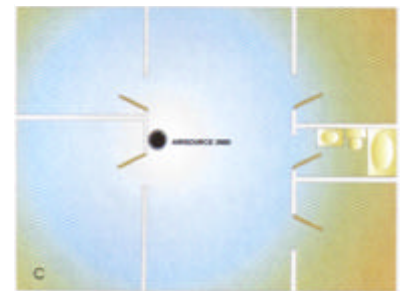
The AirSource 3000 comes with a 3-year limited warranty (parts and workmanship).



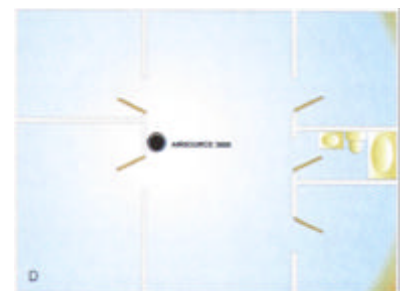
8 Hours - 1 Day



1 - 2 Days



2 - 4 Days



3 - 6 Days