

BIPOLAR IONIZATION

Ionization is effective at reducing, or in some cases eliminating, the most common airborne pollutants. The pollutants that are affected include particulate, mold, mildew, bacteria, pollen, VOC's and odors. Ions occur naturally in the atmosphere in various densities. Unfortunately, in today's industrialized locations with increased factory emissions, car emissions, and other pollutants, naturally occurring ions are at insufficient levels. See Figure 1. From the chart, you can see that ion levels at mountain elevations are much higher than those at lower elevations and in cities. The worst ion levels occur inside buildings in these cities.

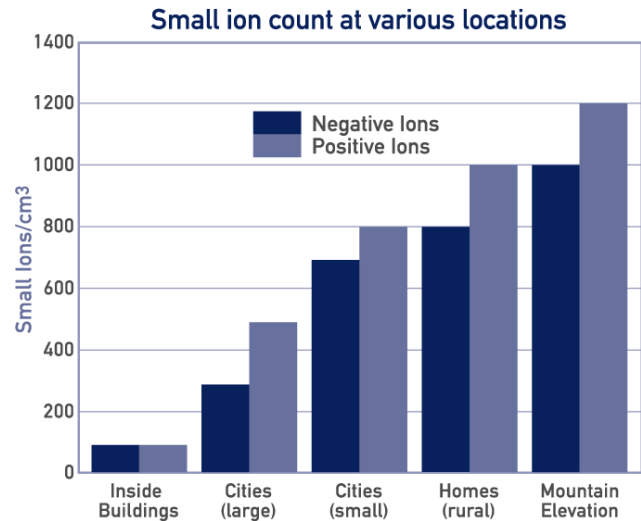


Figure 1

Bipolar ionization essentially reproduces mountain air ion densities indoors. It revitalizes naturally

occurring oxygen ions thereby bringing the ion levels up to that of a healthy environment. Ions are distributed via the central duct system and saturate the conditioned space. These ions act to reduce airborne particulate, neutralize mold, mildew, bacteria, and VOCs and odors in a balanced bi-polar environment.

The methods by which the ions reduce these pollutants vary depending on the contaminant.

Particles: There are various types of airborne particles including dust, dust mites, smoke, pollen, dead skin, mold spores, and many others. Particles are removed from the air when they form ionic bonds with charged ions created by the Plasma Air products. These charged particles agglomerate or cluster together forming larger and heavier particles. Some of these larger and heavier particles fall to the floor and are easily removed by regular housekeeping and some are returned to the filter through the central duct system. Because these particles are now larger, the system filter will be able to capture them more effectively.

Mold and bacteria: In order for mold and bacteria to survive, their cells have to continuously divide and replicate. Ions adhere to the cells' wall. When the cells attempt to divide, these ions disrupt the replication process by penetrating the cell's split zone essentially causing cell oxidation. When the bacteria or mold cannot replicate, its growth is impeded.

Volatile Organic Compounds: VOCs are emitted as gases from certain solids and liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. They are emitted by thousands of different products. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment such as copiers and printers, graphics and craft materials including glues and adhesives, permanent markers, and photographic supplies. Activated oxygen molecules act to break down VOCs by creating chemical reactions resulting in less harmful VOCs.