

Get the Facts About Needlepoint Bipolar Ionization

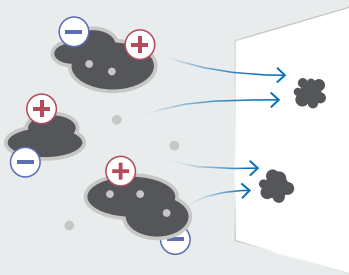
HVAC Air Purification

Plasma Air's Needlepoint Bipolar Ionization Technology reduces particulate matter, odors, bacteria, and viruses and is independently proven safe and effective for continuous use. All Plasma Air products have been validated to the highest of industry standards - UL 2998 for zero ozone emissions and UL 867 safety certified.

What Is Ionization?

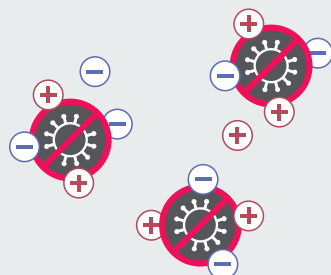
Ionization of air occurs naturally in our world and is strongest around crashing ocean waves, waterfalls, mountains, and electrical storms – the freshest air available. Scientists, engineers, and manufacturers worldwide have harnessed this power using bipolar ionization-based products for indoor air quality needs.

Bipolar ionization produces a natural climate rich in positive and negative oxygen ions. The negative ions contain an extra electron while the positive ions are missing an electron resulting in an unstable condition. In an effort to restabilize, these bipolar ions seek out atoms and molecules in the air to trade electrons, which, over time, can neutralize bacteria and virus cells, odorous gases, and VOCs.



1

Airborne particles are charged by the ions causing them to cluster and be caught in filters



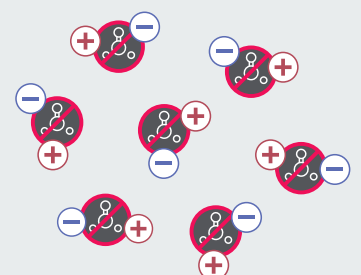
2

Bacteria and viruses bond with oxygen ions and are inactivated



3

Many odorous gases and aerosols oxidize with oxygen ions and are neutralized



4

Oxygen ions cause a reaction with VOCs breaking down their molecular structure



“...there was no evidence of ionization harming humans.”

The Safety of Bipolar Ionization

There is a substantial amount of scientific research supporting the safe use of ionization. An extensive list of peer-reviewed articles on the topic exists. In particular, the 2018 Jiang Paper, "Negative Air Ions and Their Effects on Human Health and Air Quality Improvement," reviewed 263 peer-reviewed articles on the subject. Jiang concluded that there was no evidence of ionization harming humans.

Moreover, independent lab tests and real-world installations consistently show that needlepoint bipolar ionization technology – does not increase ozone, carbon dioxide, VOCs, nitrogen dioxide, or fine particles. This technology significantly reduces the amount of harmful pollutants in the air to levels much lower than found in most outside air. In particular, the Plasma Air 600 Series was shown to reduce MS2 Bacteriophage (SARS-CoV-2 surrogate virus by 99%) in independent testing.

What does UL 2998 validation mean and how does Plasma Air meet its requirements?

Many IAQ products on the market produce ozone, or byproducts of ozone, which can cause respiratory irritation and even lung damage, ironically, exactly what the products are meant to prevent. As the IAQ industry grew, in 2018 the Underwriters Laboratories (UL) created a long-awaited validation for zero-ozone air cleaning devices. Consequently, UL 2998 is now an environmental claim procedure with validation that assures contractors and consumers of zero-ozone in air cleaners.

UL 2998 qualification: Products must demonstrate they emit less than the maximum ozone concentration limit of 0.005 ppm (5 ppb) which is below quantifiable level for ozone testing. This is 10-fold less than permitted under the test standard UL 867, which allows concentrations of 0.05 ppm (50 ppb).

Plasma Air's needlepoint bipolar ionization technology has been tested for safety by UL and Intertek and meets applicable engineering standards specified by ASHRAE.

600 Series	AutoClean	7000 Series	BAR
<p>• ZERO OZONE EMISSIONS – MEASURED OZONE EMISSIONS FROM PLASMA AIR 600 SERIES CONTROL PANEL DURING 24 HOUR TESTING EXCEEDED 0.005 PPM AS TESTED BY UL 867 UL.COM/RCV</p>	<p>• ZERO OZONE EMISSIONS – MEASURED OZONE EMISSIONS FROM PLASMA AIR AUTO CLEAN 1000 SQUARE FOOT RANGE DOOR FOOT LOCKS EXCEEDED 0.005 PPM AS TESTED BY UL 867 UL.COM/RCV</p>	<p>• ZERO OZONE EMISSIONS – MEASURED OZONE EMISSIONS FROM PLASMA AIR 7000 SERIES CONTROL PANEL DURING 24 HOUR TESTING EXCEEDED 0.005 PPM AS TESTED BY UL 867 UL.COM/RCV</p>	<p>• ZERO OZONE EMISSIONS – MEASURED OZONE EMISSIONS FROM PLASMA AIR BAR CONTROL PANEL DURING 24 HOUR TESTING EXCEEDED 0.005 PPM AS TESTED BY UL 867 UL.COM/RCV</p>

The CDC's position on bipolar ionization is as follows: If you are considering the acquisition of bi-polar ionization equipment, you will want to be sure that the equipment meets UL 2998 standard certification which is intended to validate that no harmful levels of ozone are produced.