`How Negative Ions and Activated Ions Clean the Air

"Electronically emitting nature's most powerful air-cleansing agents over a large area."

Why negative ions and low-level activated ions ?

Negative ions and *ozone* are **nature's most powerful air-cleansing agents**. There is nothing in the world more effective in taking allergens and contaminates out of the air we breathe. Unfortunately, due to the tight construction of today's homes and buildings, they are unable to take effect within indoor environments.

Negative ions and ozone are **created by nature**, and found at their most **optimal levels where the air is most pure and healthy**. These places typically include up in the mountains, near waterfalls, where lightning has just occured, in open meadows away from "the city", and the ocean shore by the crashing waves.

Negative Ion Facts

- Approved by the **U.S. FDA** (Food & Drug Admin.) as an approved allergy treatment.
- Ionization is mandatory in many **European and Russian Hospitals**.
- In March of 1999, **Good Housekeeping Magazine** had its engineers test an ionizer by using a smoke test, and found that it cleared out the smoke in a tank.
- A recent study by the **U.S. Dept. of Agriculture** found that ionizing a room led to 52% less dust in the air, and 95% less bacteria in the air (since many of the pollutants found in the air reside on floating dust particles).

“It really works well. I can even have an occasional cigar and the odor is completely gone the next morning.” - ***M. Demcho, Ohio***

What are negative ions?

Negative ions are electrically-charged particles in the air that **remove airborne contaminates** from the air we breathe, and have a **rejuvinating effect** when interacting **with physiological systems** (such as the respiratory system).

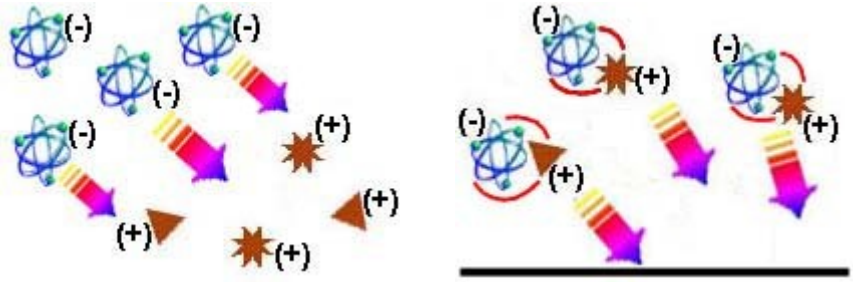
(Have you ever noticed that how refreshing the air is when you are in the **mountains**, or by a **waterfall**? Or how revitalized you feel?

The explanation for this is that there are usually at least **2,000 negative ions per cubic centimeter** (which is optimal) in these environments. On the other hand, there are only a couple hundred negative ions per cubic cm. in the typical indoor environment.

The reason indoor environments lack the electrical "nutrients of the air" that we need is that today's **"air-tight" homes and buildings** prevent them from treating the air inside.

Plus, most homes and buildings are in urban settings and other places where the earth is covered by mostly **concrete and asphalt**. Large amounts of concrete and asphalt, and other structures fabricated by man tend to disrupt the air's electrical balance in areas where they reside.

How do negative ions remove pollutants from the air?



Negatively-charged negative ions attach themselves to contaminates and allergens, which are positively-charged. The newly-formed larger particles are then able to fall to the ground, and out of the air we breathe.

Most floating contaminates and allergens are positively charged, and of course, negative ions are negatively charged. In environments where high densities of negative ions exist, they are able to **reverse the charge of floating contaminates** to a negative charge.

This results in a **magnetic attraction** among the floating pollutants in the air, causing them to aggregate, or **clump together**.

As a result, they become **too heavy to remain floating in the air**, and fall harmlessly to the ground, where they cannot find their way into your respiratory tract.

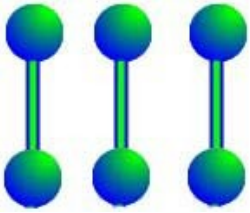
At this point, even if they are inhaled before falling out of the air, these now larger particles are **able to be intercepted by the "filters"** of the upper respiratory tract, due to their increased size.

Of course, without a continual generation of negative ions, some of these enlargened pollutants can find their way back into the air. IPS ***air purification systems*** are **designed for continual use**, ensuring pollutants stay out of the air you breathe.

Some studies suggest that negative ions also have a biological effect on bacteria and viruses, **killing them on contact** in many cases.

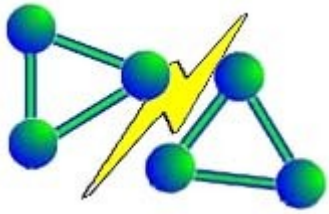
How does Activared Ion work?

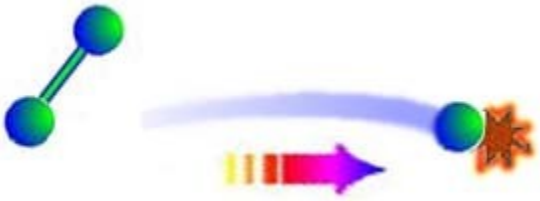
Activated Ion oxidizes airborne pollutants, then reverts to oxygen, leaving behind cleansed and refreshened air.
Here's how this process works:



Oxygen Molecules

Activated Ion Molecules converted from oxygen *(right)* as a result of an electrical charge, such as that provided by lightning, or EnviPro Air Neutralizer





One oxygen atom splits off to oxidize pollutant, leaving behind breathable oxygen and purified air.

Activated is **highly reactive**, so it interacts with most contaminates and allergens it encounters. As the element with the **second highest oxidation potential** (next to flourine), activated Ion proceeds to destroy the pollutant through oxidation.

ASHRAE *(American Society of Heating, Refrigeration, and Air Conditioning):*

"Activated Ion controls surface mold on packages and walls, and reduces scale development and decay. The presence of activated . . . . significantly reduces the occurrence of mold."

RSES *(Refrigeration Service Engineers Society):*

"Activated Ion is one of the purest and most powerful oxidants and germicides known."

Effectiveness of Activated Ions or Ozone

Typical Applications of Ozone include:

- Purification of drinking water
- Hospital labs and operating rooms
- Morgues
- Cafeterias
- HVAC systems
- Deodorization of air in inhabited places
- Food and plant preservation
- Treatment of industrial liquid waste

Is Ozone Safe?

Although some groups claim that ozone is harmful, proof of its safetiness and usefulness at moderate concentrations have prevailed in hearings before the FTC. Plus, millions of ozone air purifiers have been sold in the United States over the years, but there are no specific cases where an ozone air cleaner has been linked to any kind of harm or injury.

Why ozone is mistakenly given a bad name.

Ozone can only be harmful only when occurring at extremely high concentration. However, at lower levels it serves as a powerful purification element without harmful side effect. It's also a powerful purification agent in large doses, but can also act as a lung irritant in higher concentrations.

Ozone Levels and their Effects *(ppm = parts per million)*	
0 ppm	Most indoor environments - windows closed
.001 ppm	Most indoor environments - windows open
.003-.01 ppm	Low range at which average person can smell ozone
.02-.05 ppm	Range in which ozone occurs in healthy outdoor environments. Typical level produced by ozone generators.
.05 ppm	Maximum recommended by ASHRAE in an air conditioned and ventilated space. Also maximum under FDA regulation for ozone.
.1 ppm	Maximum allowed by OSHA in industrial work areas.
.2 ppm	Prolonged exposure of humans in occupational and experimental conditions produced no apparent ill effects.
.3 ppm	Level at which nasal and throat irritation will appear.