



SPG Ions v/s PCO

What is an ion you may ask?

An ion is a molecule that is positively or negatively charged, meaning that it has electrons to give or needs electrons to become uncharged, thus becoming stable.

SPG technology generates the same ions as Mother Nature creates with lightning, waterfalls, ocean waves, and the like.

It's Mother Nature's way of cleansing the air naturally and creating a healthy environment.

Mother Nature uses energy and shear to break apart molecules.

The only difference between SPG technology and Mother Nature is that SPG technology does it without developing detectable ozone.

3rd party testing by Intertek/ETL to the UL 867 ozone chamber test confirmed ozone levels less than 0.00PPM!

Ions do not like being ions; they want to be uncharged atoms or molecules.

Charged atoms and molecules will react with closely associated atoms and molecules to gain electrons or give up electrons and thereby reach a stable un-ionized state.

If an electron deficient ion like an oxygen or nitrogen atom is in close proximity to a virus, bacteria, mold spore, etc., it will bond with, and remove, the hydrogen molecule from that virus, bacteria or mold spore, rendering it incapable of replicating; think of it like giving the bacteria, virus or mold spore birth control.

They can no longer reproduce or replicate and will eventually die.

The corona of energy created by SPG technology also breaks down the Volatile Organic Compounds (VOC's), Odor and Smoke molecules.

The cold plasma (bi-polar ions) produced by SPG technology will agglomerate particles, making them larger and easier to filter.

It will reduce static electricity.

And finally but not least, it will create the ions necessary for life.

Each living thing on this planet requires the ions that Mother Nature produces in order to live healthy.

Man has degraded the level of these ions through pollution and the creation of indoor air spaces that mechanically reduce these ions. SPG technology will help return these indoor air spaces to the quality Mother Nature intended.

Typical outdoor concentrations of ions are 50-100 ions per cubic centimeter in polluted metropolitan areas.

Concentrations in clean outdoor air near waterfalls, high in mountains, and where the ocean meets the beach are around 5,000 ions per cubic centimeter. SPG technology is designed to replicate the ion levels in the cleanest of environments by increasing the indoor levels

over 2,000 ions per cubic centimeter.

No matter how much outside air you bring into your home or building, without SPG technology, you will never achieve the level of ions required to kill pathogens, control odors and reduce particles.

Photocatalytic Oxidation (PCO) technologies chemically manufacture ions using UV radiation shined onto either Titanium Dioxide (TiO₂) or a combination of TiO₂ and other metals to create a catalytic reaction.

The Centers for Disease Control (CDC) provided Current Intelligence Bulletin 63 to inform the general public as well as requesting any manufacturers using TiO₂ to inform their employees and clients of the cancerous risks involved with TiO₂. Why would you want a product in your HVAC system that has the potential to release TiO₂ into the air, being inhaled by occupants, and possibly cause tumors and cancer?

TiO₂ is possibly the new asbestos and no authority is willing to state what will or will not cause cancer; it's best to avoid it.

The superoxide ions, hydroxyl ions, peroxides and ozone PCO technologies create are highly reactive, unstable molecules, referred to as ROS (reactive oxidative species).

The problem with using PCO technologies is that they rely on indoor air chemistry to produce a desired result.

If this technology kills bacteria, virus, mold etc. through oxidative reactions (cidal reactions – bactericides), it will also attack human tissues and cells.

Furthermore, the chemical reactions that take place are not predictable or complete. ASHRAE created a research project to study the bi-products from PCO processes and the research was not favorable to the technology.

Research has shown instead of creating innocent byproducts like CO₂ and water (as claimed by the PCO manufacturers), they create an array of undesirable byproducts like formaldehyde and ultrafine particles.

There is a well-developed body of research into the chemical reactions of indoor VOC's and ozone.

These reactions create particles not conducive to good health.

One such VOC is terpenes (scents of orange, lemon, citrus, etc).

Terpenes are found in perfumes, air fresheners, shampoo, furniture polish, baby wipes, household cleaners, etc., and when combined with ozone or hydroxyl ions (byproducts of the PCO process) they lead to a chemical soup of bad indoor air.

The American Lung Association states "the long term effects of ozone are aggravated asthma, bronchitis, emphysema, accelerated aging of the lungs, diminished lung capacity, decreased lung function and early death".

SPG technology has been 3rd party tested, produces ions that are already in our environment, and creates no ROS or undesired



byproducts like the PCO technologies.

“There are now no odors at all down in the basement even after we’ve had water in there several times since we installed the units.

No odor, upstairs either.

No mold/mildew, no odors, no allergies!

We love gathering at the family home and enjoying the farm together.”