GREEN INITIATIVES

by John Hammond

Now More Than Ever, You Need to Be Monitoring the Air Quality in Your Facility

2020 has ushered in a new set of circumstances when it comes to the air quality of public facilities. It's hard to make decisions on Covid-19 without knowing the quality of the air in our spaces. Is it safe to allow people in? Is there anything we can do to make the spaces safer?

The Solution is Two-Fold:

Synergistic technology for air and surface purification coupled with indoor air quality monitors to track the performance of your filtration efforts. All air filtration systems are not created equal. Make sure that the one you select fits the following criteria.

Does it Utilizes a Process Called Flocculation?

Photocatalytic Oxidation (PCO) flocculates (causes fine particles to bind together) inert particles—most of which are positively charged by sending out negatively charged ions. These ions attract the oppositely charged particles, which causes them to clump, gain mass, and fall from the breathing space.

Does it Utilize Molecular Dissociation?

Through molecular dissociation, Volatile Organic Compounds (VOCs) and odor molecules are broken apart at the molecular level, forming sub-molecules which are also broken apart until this cascading effect leads to the most basic elements of harmless CO2 and water vapor.

Does it Produce Cluster Ions?

PCO produces cluster ions that actively seek out bacteria and viruses to bind with. This attachment punctures their membrane and allows the hydrogen to be pulled out. Because hydrogen is their lifeline, the bacteria and viruses are rendered inactive.

It Is Active?

Be sure that your air and surface purification technology is active, not passive. It should have the ability to clean both air and surfaces in occupied spaces. This dual function is imperative in a world of COVID-19.

Active cleaning methods also include the production of bipolar ionization, plasma, low-level hydrogen peroxide, superoxide ions, hydrogen peroxide ions, and other types of oxidizing molecules all of which work to actively reduce pathogens in the air and on surfaces.

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It Utilizes Photocatalytic Oxidation (PCO)

Photocatalytic Oxidation is a process that involves a light-activated catalyst reacting with organic pollutants to oxidize them. Essentially, these pollutants undergo a chemical reaction that transforms them into non-toxic substances.

The History of PCO

Fifteen miles above the earth, the sun's light strikes water vapor, releasing hydrogen and oxygen from their molecular bond. Thus begins a miraculous process that has been at work since the earth was formed, making up nature's air purification system. The hydrogen and oxygen are now free to form new alliances, but it is the pairing of a single hydrogen atom and a single oxygen atom that forms a hydroxide radical, which is nature's silver bullet.

This new unstable molecule seeks equilibrium by stealing atoms from neighboring molecules, thereby destroying them in the process. In the great plan, the victim is methane, which is one of the Earth's pollutants. This hydroxide radical, however, is equally able to destroy the pollution of man's own making (mold, viruses, etc.) by attaching itself to these pollutants, puncturing the atomic membrane, and stealing its hydrogen atom, rendering the pathogen inactive.

By stealing atoms from these pollutants, the hydroxide radicals rearrange their chemical structure to form harmless molecules such as water, carbon dioxide, simple hydrogen, and oxygen. These molecules in turn begin to form new hydroxide radicals.

Human-driven Photocatalytic Oxidation was developed by NASA to eliminate the buildup of ethylene given off by plants. Growing plants in space was critical to both the International Space Station and Mars missions. PCO has proven to not only break down ethylene gas but also more than 10,000 other airborne VOCs and neutralizes bacteria, viruses, and molds. In photocatalytic oxidation, chemical-free oxidizers attach themselves to pathogens, puncture the cell walls of the organism, and remove the hydrogen from the pathogen. Hydrogen is essential for the organism to live.

The PCO system works by using an electrical discharge, creating positive and negative ions surrounded by water and releasing them into the air. These safe, natural, cleaning oxidizers effectively inactivate pathogens in the air and surfaces.

Air Quality Monitors

Purifying the air in your facility is the first step, but without data driving your building operations, you will have no insights to make informed decisions. Indoor air quality monitors were designed to help you monitor what matters. Combined with a synergistic technology for air and surface purification, indoor air quality monitors are imperative to understanding the safety of the air you breathe, the efficiency of your ventilation, and the performance of your filtration efforts. Be sure to choose a monitoring device that meets the criteria listed below.

Is it wireless? To test and monitor the performance of your synergistic technology, you should utilize wireless air monitoring devices to monitor the conditions inside your facility and to seamlessly integrate with back-net systems.

Can it identify pathogens that range from 0.1 to 2.5 pm? Particles in this size range tend to be biological pathogens, including the common cold, Flu, and COVID-19 particulates.

Does it incorporate Smart IAQ sensors to seamlessly integrate into your facility, putting the power of key IAQ data in your hand? Shareability gives executives the tools to make informed decisions about workplace safety solutions—a key to staying in business in the age of COVID-19.

Finally, ensure that the system you choose is adaptable to different environments such as:

- Large Areas Overhead Devices
- HVAC Devices
- Free Standing Devices
- Mobile Devices
- Wearable Devices

Knowledge is power. You can only address air quality issues when you know about them. Be a leader in your industry. Show the world that you care by creating healthy workplace and learning environments and minimizing liabilities by incorporating intervening technology into current protocols. Show the world that you care.

ABOUT THE AUTHOR: John Hammond is the founder of Inspired TEC, LLC and has been in the Air and Surface Purification Industry for over 25 years. He is passionate about anything that affects the health and welfare of those who spend time in public spaces. He lives in Indianapolis with his wife, Norma, and their Golden Retriever, Maizy.

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