



CIMR® – Continuous Infectious Microbial Reduction

The Problem

Viruses, Infectious Bacteria, and Fungi continue to be a worldwide threat to the health of humans and many life forms on earth. Current infection control protocols continue to struggle against these threats, as the world becomes more interconnected and interdependent.

An Innovative and the Most Comprehensive Strategy

CIMR works by creating 0.02 parts per million (ppm) of a true non-aqueous (dry gas) hydrogen peroxide (H₂O₂) gas from the oxygen and humidity that already exists in the air. The system requires no consumable supplies other than the water vapor and oxygen from the air. CIMR system produces no ozone. The continuously produced hydrogen peroxide rapidly oxidizes VOCs and kills biological compounds in the air and on surfaces. The hydrogen peroxide concentration produced is one fiftieth, which well below the OSHA permissible exposure limit for hydrogen peroxide of 1.00 ppm.

The hydrogen peroxide gas then diffuses everywhere air travels, continuously disinfecting microbes in places that other technologies cannot reach e.g. floor-to-ceiling, all surfaces, material and ambient air to include areas seen and unseen. The hydrogen peroxide molecules have both localized positive and negative charges; they are literally drawn to viruses and bacteria by electromagnetic attraction. Microbes are then destroyed with the CIMR system. CIMR does not create ozone and is safe for humans and animals

CIMR's rapidly inactivates and eliminates viruses, bacteria, germs, fungi, and molds as well as other volatile organic compounds (VOCs). CIMR has been proven effective against many infectious micro-organisms, including Norovirus, E-Coli, H5N8 Virus, MRSA (Methicillin Resistant Staphylococcus Aureus), Streptococcus (Strep), Pseudomonas, Swine Flu (H1N1), nonresistant Staphylococcus Aureus, Listeria Monocytogenes, Stachybotrys Chartarum (Black Mold), Candida albicans, Fungi CNS, Aspergillus, and Bacillus Subtilis.

CIMR's hydrogen peroxide gas for infectious microbial reduction is an extremely significant leap forward in the fight against pathogens that must be stressed. We know of no other technology that is continuous 7/24/365, ozone-free, and safe to use constantly in the presence of humans, animals, and other life forms. CIMR is the most comprehensive technology available and oxidizes the smallest known microbes. With over 5,000 installs CIMR is a proven and safe technology available today.

CIMR Advantages over Existing Technologies in Use

- ✓ Preemptively seeks and destroys infectious microbes
- ✓ Continuously working
- ✓ Safe – produces .02 ppm H₂O₂ molecules which is 1/50th of OSHA safe limit
- ✓ Kills even the smallest micro-organic pathogens – viruses, bacteria, mold, VOCs and odors
- ✓ Kills germs in the air and on every surface, seen and unseen
- ✓ Through oxidation, microbial pathogens are decomposed and rendered harmless
- ✓ Filtrates everywhere air can travel
- ✓ Odorless
- ✓ Kills fungi/mold
- ✓ Easily installed into HVAC systems
- ✓ Low maintenance
- ✓ Does NOT produce ozone

Current Technologies and Solutions

Current technologies include air filtration, electronic air filters/plasma, hydrogen peroxide misting systems (aqueous), chemical misting systems (aqueous), ozone (O3) systems, ionic technology, ultraviolet lights, and chemical disinfectants. Additionally, the CDC published infection control guidelines that individuals and organizations strive to follow.

Each of the current technologies and solutions has limitations, in that all filtration systems (standard, HEPA, electronic, electronic plasma, etc.) are passive technologies, in that these products rely on the air and pathogens to travel to the system. They will have no effect on the pathogen that does not make it to the system. Non-electronic systems will not kill the smaller pathogenic particulates which will pass through because of their microscopic size.

The tables below presents some of the major limitations of current technology solutions. All these strategies have significant flaws, as documented in multiple studies conducted in the U.S. and around the world.

Technology Solution	Major Limitations
Air Filtration	<ul style="list-style-type: none"> - Passive, relying on pathogens to travel to the filter - Fails to kill smaller particulates - Surfaces are not decontaminated - Ongoing cost with filter replacement and/or maintenance - No HVAC decontamination feature
Electronic Air Filters/ Plasma	<ul style="list-style-type: none"> - Passive, relying on pathogens to travel to the filter(s) - Surfaces are not decontaminated - Ongoing cost with filter replacement and/or maintenance - No HVAC decontamination feature
Hydrogen Peroxide Misting Systems	<ul style="list-style-type: none"> - Overly aggressive - Not safe in areas occupied by humans or other life forms - Not continuous - No HVAC decontamination feature - Relies on human programming and deployment - Labor costs - Ongoing costs of chemicals
Chemical Misting Systems	<ul style="list-style-type: none"> - Overly aggressive - Not safe in areas occupied by humans or other life forms - Not continuous - No HVAC decontamination feature - Relies on human programming and deployment - Labor costs - Ongoing costs of chemicals
Ultraviolet Lights	<ul style="list-style-type: none"> - Limited effect on moving air - Only line of sight protection - Distances decrease effectiveness
Ozone Systems	<ul style="list-style-type: none"> - Overly aggressive in decontamination mode - Not safe in areas occupied by humans or other life forms in contamination mode - Not safe at lower levels - Banned from use in many locations - Does not self-regulate

Technology Solution	Major Limitations
Ionic Technologies	<ul style="list-style-type: none"> - Does not kill pathogens - No HVAC decontamination feature - Surfaces are not decontaminated - Air is not decontaminated
Chemical Disinfectants (Janitorial)	<ul style="list-style-type: none"> - Not continuous - No HVAC decontamination feature - Subject to human error - Chemical dilution issues - Protocol compliance issues - Labor costs - Ongoing costs of chemicals - Ongoing supply costs
CDC Guidelines	<ul style="list-style-type: none"> - Subject to human error - Protocol compliance issues

Select Studies

Multiple studies have examined the effectiveness of CIMR technology in a variety of settings; three of these are briefly described below.

The UPMC study found that the Hospital-Acquired Infection (HAI) rate was reduced by 48%; the Vancomycin Resistant Enterococci (VRE) Rate was reduced by 56% and the Methicillin Resistant Staph Aureus A (MRSA A) was low in both time periods in both units (CIMR & Control).

The Biosecurity Laboratory Food Safety Systems found that CIMR® technology is effective at reducing populations of Methicillin Resistant Staphylococcus aureus and Listeria monocytogenes on stainless steel surfaces.

The Kansas State University and Sandia Laboratories found that within 24 hours, 96.4% to 99.9% microbial reduction was noted of surfaces contaminated with Staphylococcus aureus, E-Coli, Listeria monocytogenes, Candida albicans, Streptococcus, and Pseudomonas and thereafter new microbe reduction was virtually instantaneous. Based on the results of this study, the CIMR® system has the potential to reduce sources of microbial contamination in health care and other indoor air environments.