

Frequently Asked Questions

What is CIMR® Infection Control Technology?

CIMR Infection Control Technology continuously disinfects (while patients, staff and visitors are present) viruses, bacteria, mold, and other fungi by producing 0.02 parts per million (ppm) of hydrogen peroxide gas from oxygen and water vapor in the air. This process is different from the aqueous vaporized process. Aqueous vaporized process takes liquid hydrogen peroxide and vaporizes it into the air. The aqueous vaporized process results in hydrogen peroxide levels over OSHA limits for occupied areas.

At the heart of CIMR Infection Control Technology is a photo catalytic process that produces gaseous hydrogen peroxide. The technology is effective against microbes both in the air and on surfaces because the hydrogen peroxide molecules have both localized positive and negative charges; they are literally drawn to viruses and bacteria by electrostatic attraction. It works by creating 0.02 ppm of hydrogen peroxide gas from the oxygen and humidity already in the air. The hydrogen peroxide gas is then supplied to the areas where it diffuses everywhere that air travels, disinfecting microbes in places that other technologies cannot even reach.

For example, the gaseous hydrogen peroxide generated by CIMR first sanitizes the air ducts, then sanitizes the air and exposed surfaces, and over time the gaseous hydrogen peroxide diffuses into every crack and crevice that air can penetrate, disinfecting microbes in places that other processes or wipe downs and chemical disinfectants cannot reach. CIMR Infection Control Technology can inactivate and reduce the viability of microorganisms greater than 95% in as few as two hours.

What is the advantage of using CIMR Infection Control Technology?

Since CIMR Infection Control Technology uses gaseous hydrogen peroxide disinfection process to deliver aggressive infection control strategies to combat various types of contamination. Additionally, CIMR Infection Control Technology provides:

- Massive cost avoidance
- Lower cost of prevention
- Lower cost of remediation or sanitization
- Rapid return on investment
- Reduces the risk of spreading or cross contaminating people or building
- Low up-front cost compared to other chemicals and systems
- 24-hour protection
- Stabilization of areas before remediation can begin
- Low maintenance; replace cell or light every three years
- Better indoor air quality for workers and clients
- Less employee absenteeism

What does CIMR Infection Control Technology Do?

CIMR Infection Control Technology provides excellent indoor air quality by disinfecting existing microbial contamination then continues to safeguard the protected area against the introduction of new viruses, bacteria, mold, and other fungi. CIMR Infection Control Technology first sanitizes air ducts; then sanitizes the air and exposed surfaces in the protected areas; then over time, hydrogen peroxide gas in the air treated by CIMR Infection Control Technology diffuses into every crack and crevice that air can penetrate, disinfecting microbes in places that other processes cannot reach.

Pat Fields with A1 Environmental had this to say, “by putting in CIMR Infection Control Technology we have had two call backs and that were due to water leaks in the barracks and then the problem was very limited, not like the old days when mold would be everywhere, and we would have to do a major remediation and tear out.”

CIMR Infection Control Technology provides 24-hour protection which can reduce the spread of germs, pollen, and mold allowing patients, workers, clients, and families the opportunity to live and work in a pleasant environment.

Advantages of the CIMR Infection Control Technology include:

- **Stabilization**
 - Rapid response by attacking organic viruses, bacteria & mold (e.g., Lamar University & Spindletop Museum) following catastrophic events
- **Sanitization**
 - Purifying and eliminating contaminants without major demolition
- **Prevention**
 - Prevents reestablishment of mold, bacteria & viruses – 24-hour protection

Dr. Carlene A. Muto an infectious disease specialist and Sandra Silvestri, BSN, RN, CIC, both of the University of Pittsburgh Medical Center (UPMC), presented the results of their six-month study of CIMR at the Fifth Decennial International Conference of Healthcare-Associated Infections, March 18-22, 2010.

The University of Pittsburgh Medical Center is a 766-bed tertiary care facility. The Cardiac Thoracic Intensive Critical Care (CTICU) consists of two units: CT10 & CT11, each with 10 beds and similar populations. During July 2008, CIMR Infection Control Technology was installed in CT11. This technology continuously disinfects viruses, bacteria, mold, and other fungi by producing 0.02 ppm of hydrogen peroxide (H₂O₂) gas from oxygen and water vapor in the air.

This methodology found that within 24 hours, 96.4% to 99.9% microbial reduction was noted on surfaces contaminated with Staphylococcus Aureus, Escherichia Coli (E. coli), Listeria Monocytogenes, Candida Albicans, Streptococcus, and Pseudomonas and thereafter new microbe reduction was virtually instantaneous. (Kansas State University and Sandia Labs)

A free copy of the study presented by Dr. Muto and Sandra Silvestri is available by contacting Air Quality Technologies at (410) 371-3634.

Is CIMR Infection Control Technology Safe?

Yes, 0.02 ppm of hydrogen peroxide gas is just 1/50 of the amount that OSHA tells us is safe throughout a standard workday. The hydrogen peroxide gas concentration is also self-controlling. (This was also tested by Dr. James L. Marsden at Kansas State University). If hydrogen peroxide gas increases above 0.02 ppm, it starts reacting with itself until the concentration drops back down to 0.02 ppm. CIMR Infection Control Technology Units actually produce much higher concentrations of hydrogen peroxide gas immediately around the units themselves, but the hydrogen peroxide gas reacts with itself so fast that the concentration drops to 0.02 ppm within about an inch of the unit. Also, when hydrogen peroxide gas reacts with itself, it breaks down into non-toxic oxygen and water vapor.

Okay, How Can Such A Small Amount Possibly Be Effective?

Well, there are billions of gas molecules in air. Even at 0.02 ppm (parts per million), there are still 500,000,000,000 hydrogen peroxide gas molecules in a single liter of air at room temperature. That means that hydrogen peroxide gas molecules are only 1.25 to 1.5 microns apart. Bacteria are about one micron in size, so the bacteria cannot move far without running into several hydrogen peroxide molecules. Viruses can be as small as 0.1 microns, but they will still run into hydrogen peroxide molecules if they move just fifteen times their own length.

The real advantage is that hydrogen peroxide molecules do not simply bump into microbes on a random basis; they are actually attracted to the microbes. Like water, hydrogen peroxide has both localized positive charged points (the hydrogen atoms) and localized negative charged points (the oxygen atoms) on each molecule. So, hydrogen peroxide gas molecules are actually attracted to positive and negative charges on the surface of microbes and are drawn to microbes through the air by electrostatic attraction.

Are You Sure CIMR Infection Control Technology is Safe for Long Term Use?

Yes, as we mentioned above, 0.02 ppm of hydrogen peroxide gas is just 1/50 of the amount that OSHA tells us is safe throughout a standard workday. Air containing 0.02 ppm of hydrogen peroxide gas is also safer than outside air containing 0.04 ppm to 0.08 ppm ozone, a much stronger oxidizer. As an added benefit hydrogen peroxide gas helps to control the amount of ozone in incoming air.

Can CIMR Infection Control Technology Help With High Ozone Levels In Our Air?

If CIMR Infection Control Technology Units are placed in the air intakes, as air is brought in from outside, hydrogen peroxide gas will react with the ozone to produce oxygen and water vapor, bringing the ozone concentration down to 0.02 ppm in the incoming air.

What Does The Air Treated By CIMR Infection Control Technology Smell Like?

It is odorless. At 0.02 ppm, hydrogen peroxide gas is undetectable by the human nose, so CIMR Infection Control Technology Units do not produce a smell. CIMR Infection Control Technology will, however, eliminate some smells by disinfecting molds, mildew, and other microbes that produce odors. As odor-producing microbes are disinfecting, they will stop producing new odors, and old odors produced before the disinfection will dissipate over time.

I've Heard About Other Hydrogen Peroxide Systems In The Past. Don't They Have Limitations?

There are other hydrogen peroxide disinfection processes available, and they do have limitations compared to CIMR Infection Control Technology. Other hydrogen peroxide processes vaporize liquid hydrogen peroxide solutions to create a mist of water droplets containing hydrogen peroxide. The hydrogen peroxide mist contains hundreds and sometimes thousands of parts per million of hydrogen peroxide, so they can't be used in occupied spaces. Also, the droplets precipitate out of the air, so they have trouble spreading all the way through a facility. But the biggest disadvantage for these systems is that the hydrogen peroxide in the water droplets is surrounded by water. This insulates the hydrogen peroxide molecules in the droplets and prevents them from being drawn to microbes in the air or on surfaces by electrostatic attraction.

Because CIMR Infection Control Technology uses oxygen gas and water in gas form to begin with, CIMR produces hydrogen peroxide in true gas form. Hydrogen peroxide gas molecules produced by CIMR Infection Control Technology are not trapped in water droplets and are able to diffuse through the air like any other gas, even into cracks and crevices. Because they are not insulated by water molecules, they can be drawn to microbes by electrostatic attraction. This makes a much, much smaller amount of hydrogen peroxide gas much, much, more effective and lets CIMR provide you with an effective infection control technology that can be safely used in occupied spaces.

What Types of CIMR Infection Control Technology Units Are In Production?

CIMR Infection Control Technology systems come in a variety of sizes, from units large enough to safeguard up to 80,000 cubic feet, to those small enough for a single room.

CIMR Infection Control Technology can be installed in air intakes, air ducts, in single room heating and cooling units, or purchased in portable stand-alone units.

When users of CIMR Infection Control Technology reported that CIMR was killing the black mold in their homes and that absenteeism in their preschools dropped by 70%, three studies were undertaken.

Do You Have Proof?

Yes. CIMR Infection Control Technology systems have been in the field for years. Following catastrophic events such as hurricane Rita, Ike, Katrina, and others, CIMR

has been employed. In all cases CIMR systems were phenomenally successful in the stabilization and remediation cleanup of the buildings.

Kansas State University and Sandia Labs found that hydrogen peroxide gas technology disinfected 99% of the Influenza A virus subtype H5N8 on surfaces within two hours.

Dr. James I. Marsden of Kansas State University also had this to say based on his research: “Kansas State University found that the hydrogen peroxide gas technology disinfected surfaces contaminated with MRSA (Methicillin Resistant Staphylococcus Aureus), nonresistant Staphylococcus Aureus, Escherichia Coli (a/k/a E. coli), Listeria Monocytogenes, Candida Albicans, Stachybotrys Chartarum (a/k/a black mold), Streptococcus, Pseudomonas, and Bacillus Subtilis. This study demonstrated microbial reduction on contaminated surfaces by 96.4% to 99.9% within the first twenty-four hours.”

Air Quality Technologies is an Authorized agent of Hi-Tech Air & Water Purification Systems, LLC and CIMR® Infection Control Technology

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