

# CIMR® TECHNOLOGY

Quick and Economical Mold Mitigation Now - Pathogen Free Shared Spaces from Now On



## Mold – Fungus – Bacteria – Virus – Allergen – Odor Cleanup – Keep Clean

Hurricane Ian has caused massive damage and flooding, estimated more than \$45 billion in damages in Florida and the Carolina's. Where water intrusion into any building exists, Mold, Fungus, Bacteria and Viruses always follows. The properties that are structurally damaged get most of the media coverage, but water intrusion (from flooding and rain) effects a much larger number of homes, schools, hospitals, and a range of other buildings. Were water gets in, often with the power out, Mold, Fungus, Bacteria and Viruses rapidly develop, often with 6 or 7 days, making these spaces not safe to occupy. Warm temperatures and high humidity only exacerbate the problems. Traditional Mold remediation methods are expensive, time consuming, labor intensive and very disruptive. In our current situation: labor shortages; inflation; supply chain disruptions for many critical materials; fuel costs; and the immense scale of the impacted areas are estimated to result in a year or more of buildings being uninhabitable.

## CIMR® Technology:

- Eliminates Mold and other air and surface risks, at a fraction of the cost of traditional methods, and in a much shorter period.
- Is proven effective and validated in independent and University Laboratories, the US military, and installations over the last 18 years.
- Does not require any ongoing inputs, is virtually free of continuous maintenance allowing homes and buildings, without significant structural damage, to be reoccupied usually in 3 weeks after water recedes, avoiding a number of other significant costs.

- Provides solutions for mold air and surface risks after storms and flooding During flooding from rainfall, storm surge, or overflow, homes and buildings become saturated with water contaminated by both chemical and biological toxins. Mold and Fungus are critical surface and airborne threats to humans and pets occupying indoor spaces, which are often also contaminated with various other Bacteria, Viruses Germs following any water intrusion. These containments are dangerous and devastating because they grow rapidly and causes toxins to be emitted.

## Traditional Remediation

- Is disruptive, expensive, and can take a long time. These methods deal with Mold, from previously flooded structures, by tearing out the walls, insulation, flooring, furniture, carpets, and other "soft" items, and then discard all this toxic material in a landfill.
- From the time Mold and other Pathogens have developed through to the completion of restoration, people cannot return to these indoor spaces until conditions are safe.
- Disposal impacts the environment by congesting landfills with tons of discarded and contaminated items and material.
- Already facing supply chain shortages, labor force issues, inflation, and other challenges prior to this historic storm, the time, cost, and complexity of safely returning to occupying Mold infested buildings are increasingly complex, expensive, and unpredictably time consuming.
- Given the current situation, and the scale of the projection of Hurricane Ian's damage, the anticipated time to get people to fully reoccupy their homes and buildings are projected to be a year or even longer and will consume economic resources and personal that are likely be stretched to the limit and beyond

## CIMR® Technology Solutions:

Lower cost, more effective and much faster solution is the only path to fast and cost-effective remediation and ongoing prevention of health risks in these buildings CIMR Active Air Infusion Pathogen Scavenging Technology enables a safe and quick return to homes and buildings impacted by water intrusion and resulting indoor air quality and surface risks – anywhere air can reach. The CIMR Solutions Team will determine an appropriate remediation and mitigation strategy based upon the needs of each building or complex. The CIMR team has specific experience in and a focus on large buildings and building complexes.

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- ⊕ Government buildings and other critical infrastructure
- ⊕ Hospitals, medical facilities (including emergency or
- ⊕ Nursing homes and long-term care facilities
- ⊕ Law enforcement, fire houses, EMT and other first responders' facilities and vehicles.
- ⊕ Essential businesses such as grocery stores and home improvement centers, and any other buildings
- ⊕ The CIMR team and its Partners also have solutions for:
  - ⊕ Homes, townhouses, and apartments
  - ⊕ Bars and Restaurants
  - ⊕ Small Stores and Offices
  - ⊕ Any other buildings infested with Mold, Fungus, and other Pathogens

**CIMR® Core Technology** of is patent pending in 4 areas and has been in continuous safe and effective use for over 18 years

- ⊕ CIMR® works by creating an ultra-low level (0.02 parts per million), of self-regulating, nonaqueous hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) from the oxygen and humidity that already exists in the air, therefore requiring no consumable supplies. CIMR® then diffuses everywhere air travels, continuously disinfecting Mold in places that traditional methods cannot reach.
- ⊕ CIMR® is completely safe, it creates no Ozone or harmful side effects and is safe for humans, animals, plants, and equipment. Walls that still have integrity, do not need to be removed, and carpets and furniture are remediated in place.

### CIMR® Technology: Tested and Compliant

- ⊕ CIMR® has been tested, proven safe, effective and is fully compliant with a wide range of national and international agencies and regulatory organizations.
- ⊕ CIMR® has been proven effective against Mold, Fungus and other water infusion issues in hospitals, nursing homes, military bases, border security, residential housing, churches, commercial homes and buildings, and school districts.
- ⊕ CIMR® has been repeatedly University, independently laboratory, and US Air Force (continuously tested for over the past two plus years in a top biohazard Laboratory) and field tested to be effective and safe in real-world cases. Kansas State University tested CIMR® Technology and demonstrated its ability to disinfect 96.4% to 99.93% of Mold spores on surfaces and in the air, within two hours and in a matter of minutes. Over 200 field tests in real life situations prove meticulously designed, the Technology works every time. The results illustrate that homes and buildings can be stabilized, sanitized, and allow people to

occupy safely, live, relax and work within a few days after a major natural disaster.

### CIMR® Tech Customers

The following list includes some of our clients:

- ⊕ Corpus Christi US Naval Air Station,
- ⊕ Fort Hood US Army Base
- ⊕ Bolling US Airforce Base,
- ⊕ Maxwell US Air Force Base
- ⊕ Lackland US Air Force Base
- ⊕ The US Department of Homeland Security (multiple Locations)
- ⊕ Spindletop Museum, National Historical Society, and Lamar University, TX
- ⊕ MHMR Facilities, Port Arthur Armory, TX
- ⊕ Pine Forest Baptist Church (remediated a 60,000 sq ft facility that was under 24" of water during Hurricane Harvey, 2017)
- ⊕ City of Destiny Church, Orlando, FL
- ⊕ Austin ISD, TX
- ⊕ Federal Emergency Management Agency (FEMA) (multiple locations)
- ⊕ Salvation Army Rehabilitation Center
- ⊕ And many others.

### CIMR® Tech FEMA OK Reimbursement

CIMR® Tech is eligible for FEMA reimbursement as well as remediation funding from several large insurers.

CIMR® is designed to meet the requirements to respond to major flooding, and the resulting Mold infestation following water receding. CIMR® Mold Mitigation and Remediation (CIMR®) is a Program that provides a way to return safely and quickly to homes and buildings impacted by water intrusion.

CIMR® Technology is available in a wide range of units. From DIY portable plug-in units to a range of Duct Work units that integrate into an existing HVAC System.

The CIMR® team uses this range of equipment to compile a specific solution for each uniquely impacted building. CIMR® Technology: Mold Mitigation Benefits CIMR® Technology provides significant advantages over traditional storm drive Mold recovery methods such as:

- ⊕ Reduce repair and restoration costs by between 70 and 100%.
- ⊕ Allow more efficient use of Federal and State funds to be targeted toward disaster prevention and mitigation.
- ⊕ No dependance on multiple contractors or building suppliers.
- ⊕ CIMR® has significant inventory in stock and is ready for immediate deployment.
- ⊕ CIMR® has a variety of portable units that can be installed by homeowners and building maintenance staff.
- ⊕ Faster return to critical and essential facilities, homes, and businesses from the

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- conventional 6 - 12 months required in traditional Mold mitigation to between 1 - 3 weeks when CIMR® is in use/installed.
- + Reduce time in temporary housing by 50 to 70%.
- + Dramatically reduce/eliminate cross contamination of toxic fumes, Mold, Germs, Viruses, Bacteria, and Fungi.
- + Safe for humans, animals, plants, and equipment.
- + Ensure the population remains in localities (reduce population scatter), which restores communities faster and more efficiently.
- + Eliminate environmental waste of discarded building materials damaged from
- + Most, if not all the building, floors, carpets, furniture, decorations, and other artifacts can be re-habilitated when CIMR® is used in combination with proper cleaning.
- + Accelerate the safe occupation of indoor spaces.
- + Provide environmentally safe areas to work, relax and live in.
- + The dire situation that is unfolding because of Hurricane Ian's destruction and devastation, will put immense pressure on supply chain and human resources (labor) to manage the demand. It is estimated that it could take 10 times longer for some structures to be restored.
- + CIMR® Technology: Independent Lab Testing
- + CIMR® has been proven effective in FDA compliant lab testing against Fungal Spore Mold and Bacterial Spore Mold. A list of lab test results is available on request.
- + CIMR® protects against any Pathogens...anywhere air can reach indoors.
- + It deactivates and eliminates Viruses, Bacteria, Fungi, Molds, and their odors and combats the transmission and transference thereof including the following and more:
- + *Bacillus Subtilis* (Common infections)
- + *Candida Albicans* (Fungi: Thrush and Yeast infections)
- + *Escherichia Coli* (E-Coli)
- + H5N8 Virus (Influenza A or Bird Flu)
- + Influenzas (General Flu)
- + *Listeria Monocytogenes* (Listeriosis)
- + Methicillin Resistant *Staphylococcus Aureus* (MRSA)
- + Norovirus (Common food poisoning - "Stomach bug")
- + *Pseudomonas aeruginosa* (Pneumonia)
- + SARS-CoV-2 (COVID-19)
- + *Streptococcus Lactis* (Infective Endocarditis or IE)

Diverse types of Molds such as:

- + *Acremonium*
- + *Bacillus* (Gram negative and Gram positive)
- + *Alternaria*
- + *Aspergillus*
- + *Aureo basidium*
- + *Chaetomium*

- + *Cladosporium*
- + *Fusarium*
- + *Mucor*
- + *Penicillium*
- + *Smuts/Myxomycetes/Periconia*
- + *Stachybotrys Chartarum* (Black Mold)
- + *Synecphalastrum*
- + *Trichoderma*
- + *Ulocladium*

Case Study: Fort Hood US Army Base, TX

- + Mold intrusion was caused by minor flooding and typical condensation build-up in the HVAC system.
- + CIMR® reduced the repair and restoration costs by 70 - 100%.
- + Thus, facilitated more efficient use of Federal and State funds and resources to be targeted toward disaster prevention and mitigation

CIMR® Technologies is prepared to work with homeowners and businesses all the way to Local, State and Federal Governments. CIMR® is experienced in working with Federal and State FEMA agencies to create programs for deploying CIMR® Technology in disaster recovery regions.



## Next Steps

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# Advanced Mold Remediation

## Fort Hood Garrison Command Directorate of Public Works

### New Photo-Catalytic Reactor



# Fort Hood DPW: Test Site #2



- Recently the Fort Hood Directorate of Public Works has began testing a new mold remediation technique to more efficiently and effectively clean mold situations.
- As seen in the example above, the process has had some staggering results.



# Advanced Mold Remediation



- Benefits
  - Lower Cost
  - Non-Destructive
  - Faster Turn-Around
  - Much Lower Post-Remediation Spore Counts
  - Recovers Most Furnishings, Including Cloth Goods
  - Long-Term Mold-Prevention System Left in Place
  - Work Guaranteed



# New Technology = New Capabilities



- Photo-Catalytic Reactor Based
  - Produces Hydrogen Peroxide Gas
    - A true gas – not an aqueous vapor
    - $H_2O_2$  produced from water vapor and oxygen already in the air
    - Continuous production of 0.02 ppm
    - Safe – 1/50<sup>th</sup> OSHA limit
  - Uses Ambient Temperature and Humidity



# Fort Hood DPW: Test Site #1



- Building 39013, Room 312
  - Mold intrusion caused by minor flooding and HVAC condensate back up
  - Before and After pictures include upholstery that in other situations could not have been saved
  - Furniture savings per room range between \$1500 and \$6000 depending on the number of upholstered items, mattresses, and heavily mold stained wood

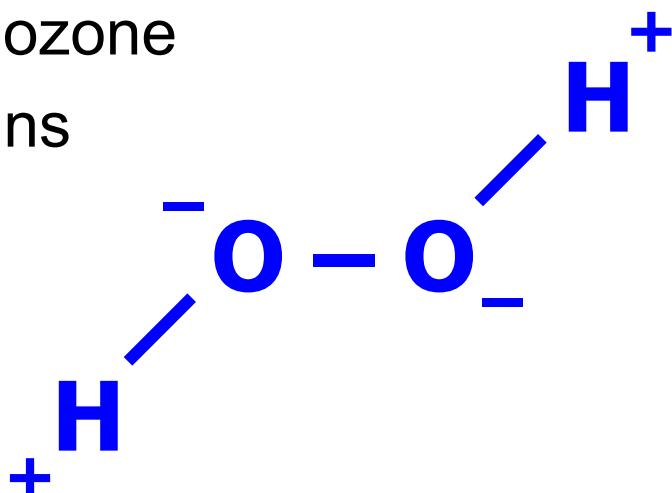




# Hydrogen Peroxide Gas



- Similar to water in structure
- Has both + and – charges
- Drawn to mold by electrostatic attraction
- Kills mold 20 times faster than ozone
- Chemically degrades mold toxins
- Also kills viruses and bacteria





# Mold and Other Fungi



- Fungi...
  - are designed to absorb water
  - attract water electrostatically
  - also attract hydrogen peroxide
  - are defenseless against hydrogen peroxide gas





# Non-Destructive Remediation



- Process temperature and humidity process does not induce sporulation
- Mold is killed cell by cell down to point of attachment
  - Dead hyphae release from surfaces
  - Effective surface removal is then possible
  - Removal of structurally sound material is no longer necessary
- Hydrogen peroxide gas also diffuses into cloth and other porous material, killing mold
  - Cloth furniture, bedding, books, etc. can be saved
- Injection process kills mold behind walls
- Only limited surface refinishing is required after remediation to restore area to full use



# University Testing



- Kansas State University
  - Dr. James Marsden, Regents Distinguished Professor, Department of Animal Sciences & Industry, K-State Food Science Institute
    - Microbial reduction on surfaces (Mold, Bacteria & Virus)
- University of Cincinnati
  - Dr. Sergey Grinshpun, Department Head, Center of Health Related Aerosol Studies, Department of Environmental Health
    - Reduction of the Aerosol Particle Concentration
    - Airborne Microbial reduction
- Sandia National Laboratories
  - Jill Bieker, Ph.D.
  - James L. Marsden, Ph.D.
    - Inactivation of Avian Influenza



# The Bottom Line

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- 33% to 66% savings on Total Dollars spent per job
- Faster turn around
  - Shorter execution time
  - No delay for reordering of furniture
- Less administrative cost
  - Fewer construction inspection hours
  - No furniture reordering administrative hours
- Fewer dollars paid out per project