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

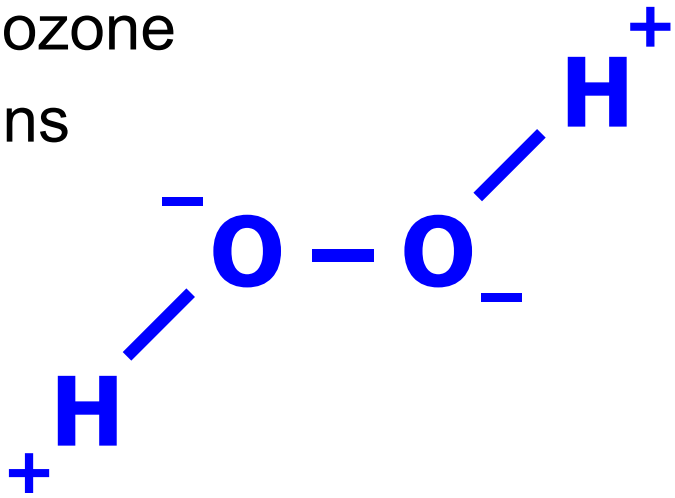
- Photo-Catalytic Reactor Based
  - Produces Hydrogen Peroxide Gas
    - A true gas – not an aqueous vapor
    - H_2O_2 produced from water vapor and oxygen already in the air
    - Continuous production of 0.02 ppm
    - Safe – 1/50th OSHA limit
  - Uses Ambient Temperature and Humidity

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, matresses, and heavily mold stained wood

Hydrogen Peroxide Gas

- Similary 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

- 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