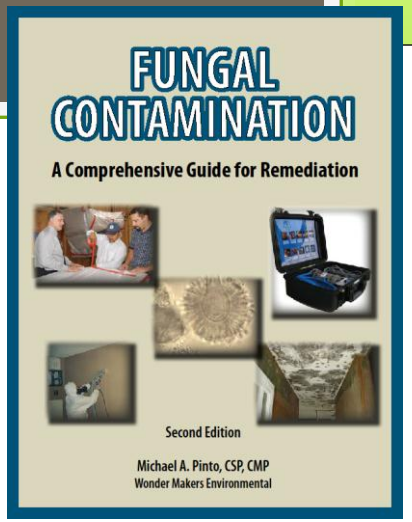
The Sandy Solution

A cleaning method and mold treatment for homes that were flooded during Hurricane Sandy

Your instructor



- Michael Pinto
  - CEO, Wonder Makers Environmental
- Doctoral training in Environmental Engineering
- Industry titles
  - Certified Safety Professional
  - Certified Mold Professional
- Author of 5 books and over 150 published technical articles

Housekeeping

- Start / stop time
- Breaks
- Restrooms / smoking areas
- Question / discussions
  - Candy
  - Special prize

Topics

Morning

1. Overview of the Sandy Solution
2. Safety and health issues are paramount
3. Correct work activities and PPE
4. Dealing with the power issue
5. Checking the work (ATP & moisture meter)

Working lunch

Afternoon

6. Preparation of the structure for cleaning and mold treatment
7. The cleaning and mold treatment process
8. The drying process
9. Wrap up of the Sandy Solution and final questions

1. Overview of the Sandy Solution

The problem

- Hurricane Sandy arrived on October 29, 2012
- Wind, storm surge, and flooding from Delaware to Connecticut, especially New York and New Jersey

As time goes by without repair, problems mount

- Mold is the most visible threat
  - Government agencies and the press prominently warn about the problem, but offer little usable advice, unless there is money for professional restoration

Occupants and service providers are in danger from exposure to many toxins

Exacerbated problem

Some private companies and public service providers have indicated that they may not authorize restoration or repair of essential mechanical services until mold-contaminated structures have been “treated”.

There are restrictions

Definition of “treatment” is elusive, at best

- De Blasio: City must do more to fight post-Sandy mold infestation
  - Asking for FEMA aid to fund more inspections, and calling on city to set up mold hotline and perform health monitoring
  - The public advocate says thousands of homes with mold are making people sick
- Mold linked with fatal asthma and allergy attacks; Dr. Mold network suggests use of Molderizer and Safe Shield
- Deactivate remaining mold spores

Many homeowners are without the financial resources to recover

- Federal government does not reimburse homeowners for mold remediation
- Neither does a city repair program aimed at restoring heat and electricity to damaged buildings

The challenge is to use an effective, yet volunteer-friendly, “treatment” approach to homes like this

Flood waters destroyed most building materials and contents within homes

All Hands Volunteers Challenge

To bring homes to a condition where build back can be conducted

“Sandy Solution” is a comprehensive approach

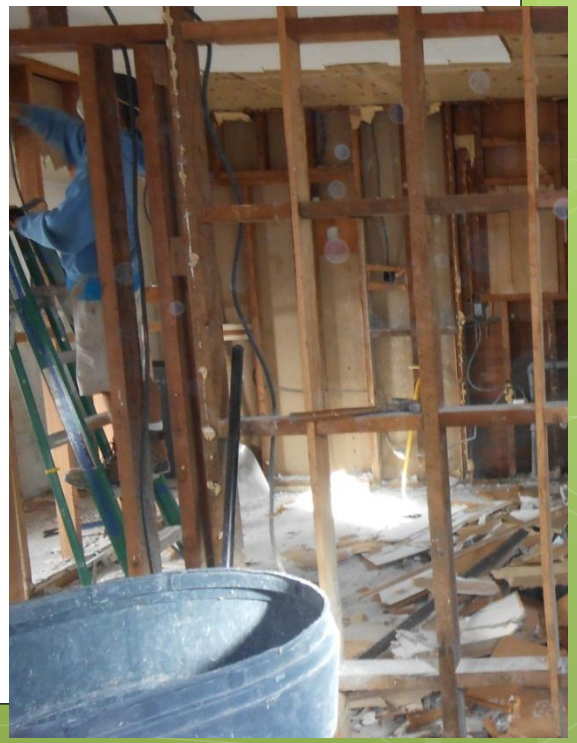
- Encompasses 18 steps

There is work to do before the specific steps

- Evaluation of structure
  - Conditions
  - Applicability of services
  - Recommendations to homeowner
- Final agreement on level of service

18-Step Sandy Solution

1. Isolation of non-impacted areas and contents
2. Muck out
3. Gutting
4. Restoring electrical power
5. Surface testing



Steps 6 - 12

6. Rubble removal
7. Sub-floor removal
8. Worker PPE
9. Equipment preparation
10. Foam application
11. Agitation of foamed surfaces
12. Power washing

Final 6 steps

13. Removal of excess water
14. Crawlspace barrier
15. Drying the structure
16. Air washing
17. Post-cleaning testing
18. Representative moisture testing

Sandy Solution is scientific, yet intuitive

- Combination of proven restoration techniques
- Easily adaptable to volunteer groups
- Involves specialized equipment
- Pre- and post-cleaning measurements ensure effectiveness and efficiency
- Initial Restoration for Flooded Buildings HURRICANE KATRINA RECOVERY ADVISORY

2. Safety and health issues

You are not helping anyone if someone gets hurt in the process

The lanyard makes up for all the rest?

Addressing flood-damaged homes poses numerous risks

- Flood clean-up hazards
- Electrical hazards
- Debris removal
- Falls
- Power tools
- Confined spaces

Safety risks change over time and with different activities

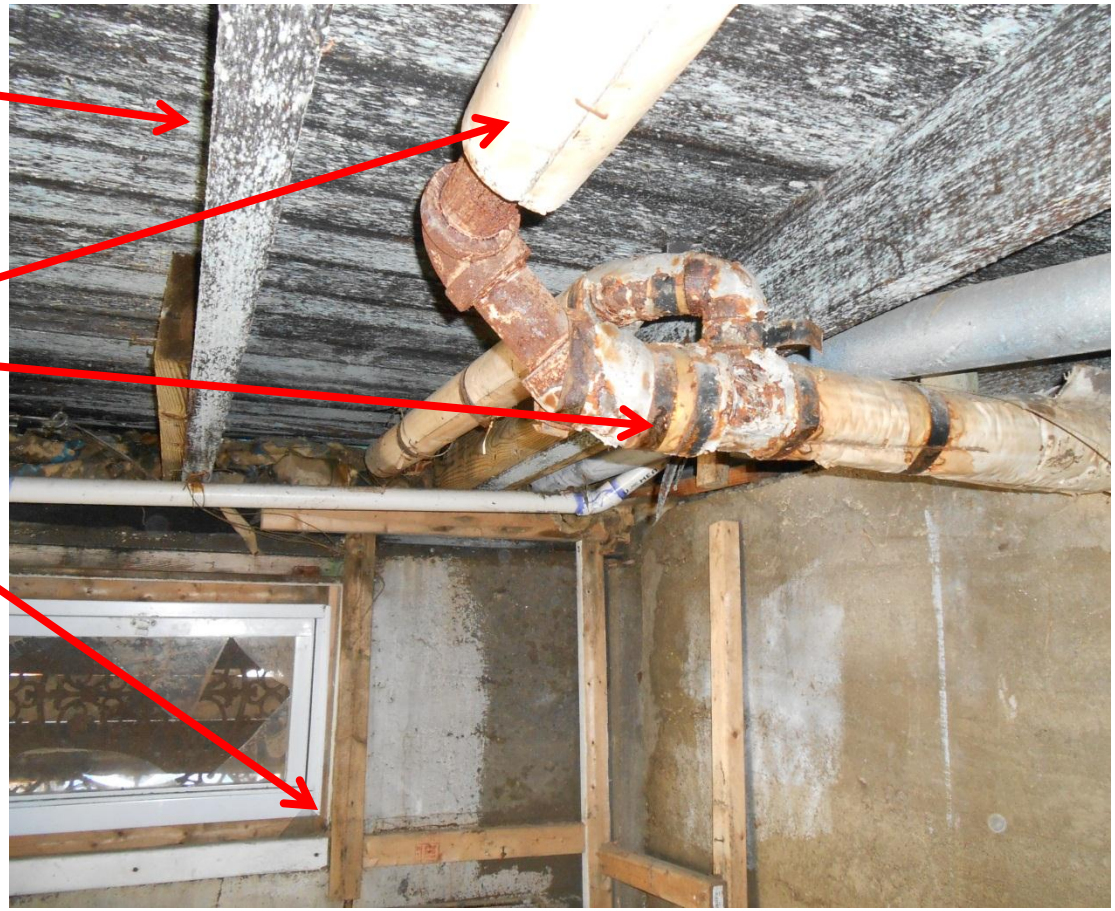
- Muck and gut
  - Sharp objects
  - Slips/trips from wet, cluttered conditions
  - Back injuries from lifting
- Cleaning and mold treatment
  - Electrical shock
  - Chemical exposure
  - Eye injury from compressed air

Muck out and gutting

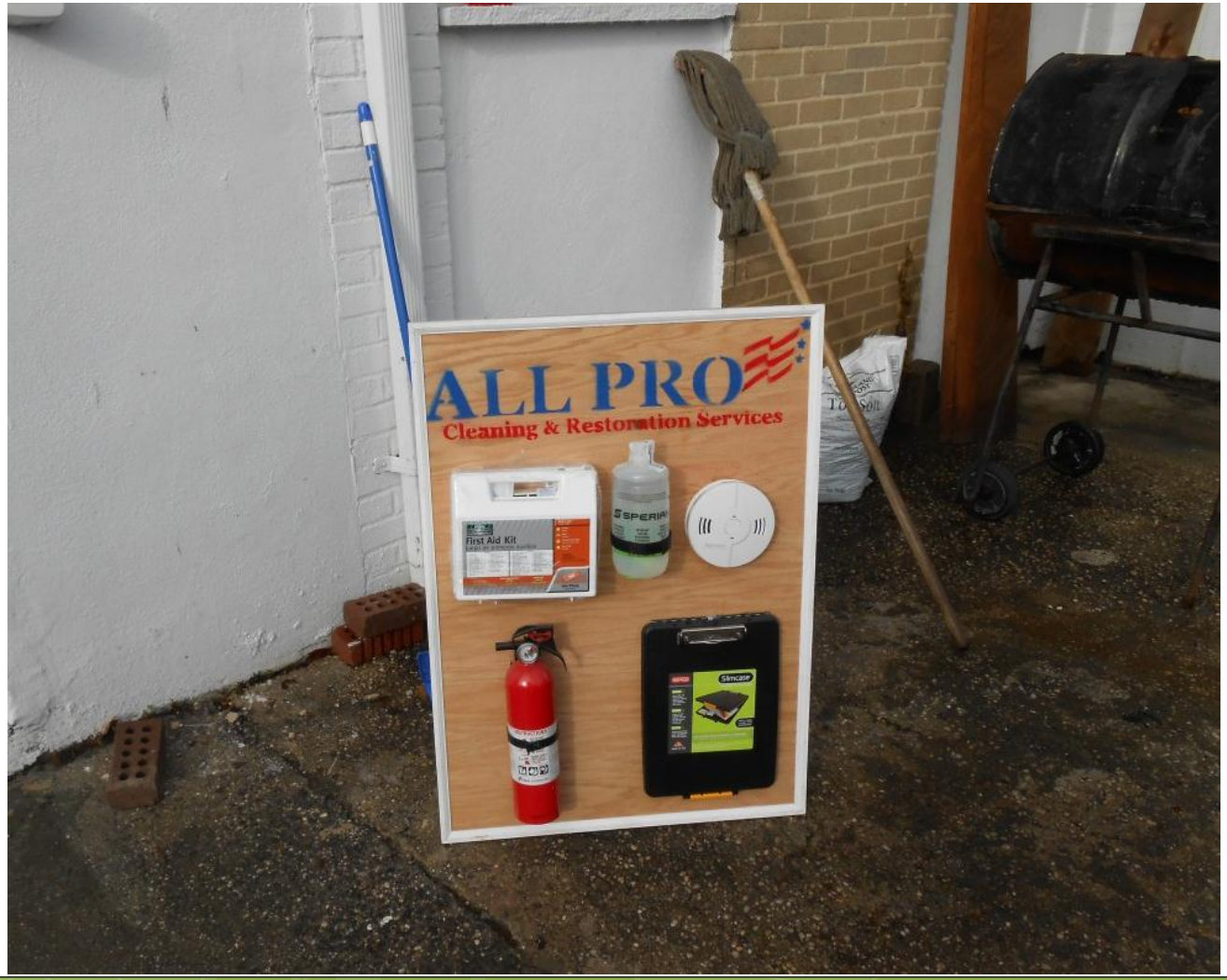
- Removal of wet, porous materials
- Gutting of damaged finish material
  - Plaster
  - Wallboard
  - Sub-floors, as appropriate

Health risks are also prevalent

- Fungus
- Bacteria
- Asbestos in building products
- Lead in paint
- Oils
- PCBs
- Pesticides
- Heavy metals



Job Safety and Health Center



Health risks from mold range from minimal to severe

- Allergic responses
- Asthma trigger
- Organic Dust Toxic Syndrome (ODTS)

This could happen to you!

- ODTS example
- A severe case of *Coccidioidomycosis* caused by *Coccidiodes immitis* from the soil in the Southwest U.S.
- The patient recovered

A final word on potential health problems with mold

Magnified view of *Mucor* growing on skin

- CDC documented prevalence of a deadly fungus months after the Joplin, Missouri, tornado
- 8 people diagnosed and 3 died from fungal infection mucormycosis due to infections of minor injuries received during disaster response

It is not pretty!

- Mucor mold spores enter the body through puncture wounds and lacerated skin
  - He recovered

QUESTIONS?

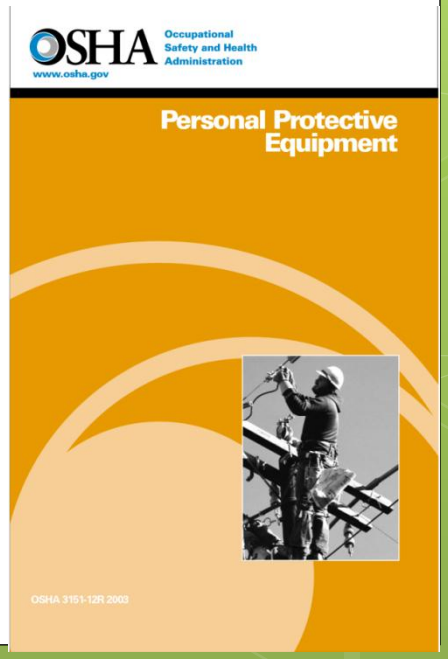
Break

3. Proper work practices and personal protective equipment (PPE)

Respiratory protection whenever mold is present!

OSHA requires a PPE assessment

- From their guidance book:
  - OSHA requires that employers protect their employees from workplace hazards that can cause injury.
  - When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment (PPE) to their employees and ensure its use.



Recommended PPE for cleaning and mold treatment

- Respiratory protection
- Eye protection
- Hand protection/gloves
- Disposable coveralls with head and foot protection
- Boots
- Special safety equipment

Correct PPE is based on the work activities

Minimum respiratory protection for mold

- N95 filtering facepiece
  - Disposable, single use
  - Replace daily, at minimum
- N100 filtering facepiece
  - For mold sensitive or close up work

Full face respirator as an alternative

- Provides both eye and respiratory protection
- HEPA filters protect wearer from mold spores

Respirator restrictions

- NO
  - Eating
  - Drinking
  - Smoking
  - Chewing
  - Applying of cosmetics
  - Facial hair

Protective suits

- Full body covering recommended for all situations of potential mold exposure
- Suits should protect workers from mold
  - Dry particle hold-out level of 1 micron or less
- Suits should have attached hoods and foot covers
- In hot environments, may be more effective to wear suits over shorts or swimsuits rather than work clothes

Slip-on boots are recommended

- Foot protection
  - Toe cap and sole protection
- Reduce slips and falls
  - Treads for traction
- Minimize cross-contamination
  - Non-porous, easy to decontaminate

Hand protection generally means gloves

- Work gloves for muck and gut out
- Rubber gloves for foam cleaning/power washing
- Thermal gloves for work in cold environments

Face shield is necessary for foaming, agitating, or power washing

Respiratory protection is worn underneath

Standard worker PPE for cleaning & mold treatment

Workers don:

- Splash resistant suits
- Respiratory protection
- Face shields
- Rubber gloves

4. Dealing with the power issue

Cleaning, mold treatment, and drying require power. Should existing electrical receptacles be used?

Current FEMA advice

Flooded electrical receptacles should be removed completely after the appropriate circuit breakers or fuses are deactivated.

A power distribution box is vital

Cooperation with an electrician is necessary

Reliable electrical service is a safety issue

The electrician will install a connection for the portable box at the panel

- One safe hook up for volunteers
- GFCI protection
- Extension cords still must be safe

QUESTIONS?

Break

5. Checking the work (ATP & moisture meter)

It is all about water

- Interior moisture will lead to mold growth
- Treated homes must be clean and dry

Dryness is measured with a moisture meter

- Surface and penetrating meters
- Dry to the touch is NOT a good indicator of moisture levels

Water levels of flooded framing can stay elevated for months

Check wooden frames before and after cleaning — and during drying

- Insert pin probe into bottom of meter
- Switch meter on

It is just that simple

- Use the moisture button to get to “moist ext”
- Insert pins
- Document results

How do we test for cleanliness?

- Field test
  - Non-specific ATP (adenosine triphosphate) samplers
    - Bio-Reveal

Why this type of field test?

- Simple, quick, inexpensive
- Measures total level of biological residue
  - Virus, bacteria, fungus, plant, insect
  - General screen rather than specific test
- Helpful to the occupants

A surrogate for mold

- ATP samplers, such as Bio-Reveal, identify presence of organic residue
- Provide numerical results that include fungal, bacterial, plant, and animal residue
- Logically, if cleaning process has removed biological material, it has removed mold

Surface testing for cleanliness

- Document initial biological contamination levels using a Bio-Reveal ATP tester
  - 4-inch square will be standard area measured

Simple operation

- Identify location to be tested; turn on the luminometer
- Remove swab from outer tube
- Pressing firmly down on swab tip (slight bend in swab shaft), collect sample from 4” x 4” area
  - Use side-to-side and up-and-down motion while rotating swab tip
  - **Do not touch the swab tip or shaft with anything other than the surface to be tested, as this will contaminate the test.**
- Place swab back into tube.
- The device is now ready to be activated or can be left inactive for **up to 4 hours** in this state.

ATP meter operation continued

- Holding swab/tube device upright, activate by bending the bulb back and forth until plastic valve breaks, then bend once more in opposite direction. Squeeze bulb twice to expel liquid into bottom of tube.
- Bathe swab bud in liquid by shaking gently in a side-to-side motion for 5 seconds. Test is now activated.
- Place entire swab/tube device into luminometer and close lid. Read the swab/tube sample within one minute of activation.
- Holding the luminometer in vertical position, press ‘OK’ to initiate reading. Test result will appear on screen in 15 seconds.

ATP meter precautions and warnings

- If swab/tube device accidentally gets activated, do not use.
- Avoid collecting large amounts of sample on swab bud.
- Keep swab/tube samples out of direct light when possible.
- Follow manufacturer's guidelines to maximize shelf-life of not-yet-activated samples.
- Refrigerated samples should be left at room temperature for 10 minutes before being used.
- Occasionally calibrate luminometer per the manufacturer's recommendations.

Post-cleaning testing

- Post-cleaning testing of surfaces for biological contaminants only after area is visually clean
  - Staining may still be visible
- Reading should be 150 or less

Lunch

6. Preparation of the structure for cleaning and mold treatment

Isolation of foam cleaning work area

- Poly door with zipper may be used to isolate non-impacted areas from foam cleaning work area
- This type of barrier may also be used to isolate area during drying process

Isolating non-impacted contents

Polyethylene (poly) sheeting may be used to cover non-impacted contents within foam cleaning work area

Duct tape may be used to secure poly

Rubble removal

- Preparation of structure for foam cleaning by removal of rubble left from gutting

- Wall cavity insulation
- Nails/screws
- Small debris

Preparation for cleaning and mold treatment

Better than broom clean

Sub-floor removal

If there is a crawlspace, it is recommended that the sub-floor be removed so rubble can be removed from crawlspace

Rake out crawlspaces

Plastic will be installed over soil later to improve drying

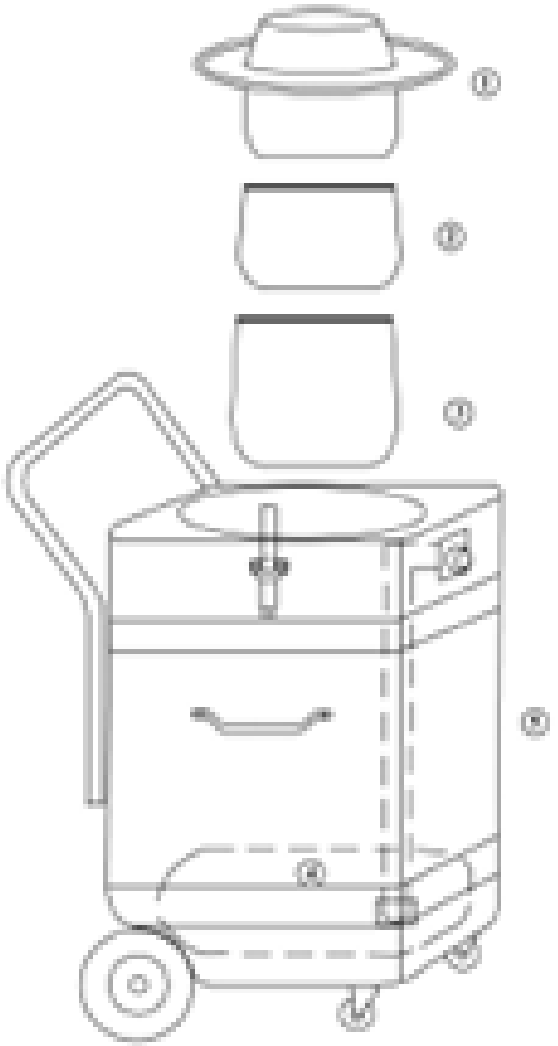
HEPA vacuum basics

High Efficiency Particulate Air

The guts of a HEPA vac

1. Motor/HEPA filter unit
2. Dacron bag filter protector (for wet use)
3. Paper filter protector (for dry use)

15-gallon poly tank and cart



QUESTIONS?

Break

7. The cleaning and mold treatment process

Why foam cleaning?

- Addresses hazards beyond mold and bacteria
- Flood waters can drive contaminants into porous and semi-porous building components through capillary action
- Shortfalls of surface treatments (vacuuming & damp wiping)
  - Do not reverse capillary action
  - Leave significant amount of flood residue in structure

Foam cleaning works

- Lather of cleaning product increases dwell time for anti-microbial agents
- Foam extracts contaminants from semi-porous structural members

Two foam applicators

Powered foam generator

- 20 gallon capacity tank
- 30 feet of ¾” hose discharges foam
- Battery operated
- Large drain in front of tank
- Hinged fill cap
- Stainless steel wand assembly
- Gross weight: 56 pounds

It is what is inside that is important

- Primary rationale for product selection
  - Safety of users
  - Effectiveness
    - Mold and bacteria
  - Concentrate
  - Ease of use

Safe use

- Follow label directions
  - 2 ounces per gallon of water
- Common sense with chemicals
  - Do not spray/foam at people
  - Do not mix other materials with Shockwave

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER

KEEP OUT OF REACH OF CHILDREN. Corrosive. Causes irreversible eye damage and skin burns. Do not get in eyes, on skin, or on clothes. Harmful if swallowed. Wear goggles or face shield and rubber gloves when handling. Avoid contamination of food. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

STATEMENT OF PRACTICAL TREATMENT - FIRST AID
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 – 20 minutes. Call a poison control center or doctor for treatment advice.
IF IN EYES: Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment. For additional medical advice, call the following emergency phone number: 800-255-3924.
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

STORAGE and DISPOSAL
Do not contaminate water, food, or feed by storage or disposal.

STORAGE
Do not store on skin. Avoid breathing or ingesting of skin wash. Store in securely closed original container. Avoid storage at temperature extremes or in sunlight. Avoid shipping or storing below freezing. If product freezes, thaw at room temperature and shake gently to remix components. Use locked storage in an area that will prevent cross-contamination of other pesticides, fertilizer, food and feed. Store in locked area inaccessible to children.

PESTICIDE DISPOSAL
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL
Do not reuse empty container. Replace cap and discard container in trash. Securely wrap original container in several layers of newspaper and discard in trash.

DIRECTIONS FOR USE
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.
To be used in hospitals in the following areas as a disinfectant: operating rooms, patient care rooms & facilities, recovery, anesthesia, ER, radiology, X-ray services, newborn nurseries, orthopedics, respiratory therapy, surgi-centers, labs, blood collection centers, housekeeping, & janitorial rooms, nursing homes, doctor's offices & labs, dentists offices & labs (dental operatories).
This product is not to be used as a terminal sterilant/high-level disinfectant on any surface or instrument that (1) is introduced directly into the human body, either into or in contact with the bloodstream or normally sterile areas of the body, or (2) contacts intact mucous membranes but which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. This product may be used to precleanse or decontaminate critical or semi-critical medical devices prior to sterilization or high level disinfection.
In addition, this product may be used as a disinfectant in Mortuaries, Biotechnology Firms, Police Stations, Museums, Post Offices, Banks, Libraries, Gift Shops, Gymnasiums, Physician Offices, EMS & Fire Facilities, Coffee Shops, Department Stores, Retail Stores, Colleges, Universities, Travel Trailer Areas, Recreational Facilities, Sports Arenas, Hotels/Motels, Dormitories, Movie Houses, Pizza Parlors, Hospices, Book Stores, Convenient Stores, Day Care Centers, Adult Care Institutions, Food Establishments, Churches, Schools, Health Clubs, Spas, Skin Rooms, Retail Rooms, Restaurants, Cafeterias, Meat/Poultry/Food Processing Plants.
This product can be used to disinfect the following inanimate, hard, non-porous nonfood environmental surfaces: walls, floors, sink tops, toilet bowls, table tops, counters, countertops, barber shop instruments and tools, appliances, tables, chairs, benches, telephones, chair arms, bed frames, cabinets, bathtubs, and urinals.

ShockWave

HOSPITAL DISINFECTANT, BROAD SPECTRUM CLEANER & DISINFECTANT, HIV & HBV VIRUCIDIC, KILLS COMMON HOUSEHOLD GERMS, CARPET SANITIZER AGAINST ODOR CAUSING BACTERIA, CLEANER, DISINFECTANT, SANITIZER, DETERGENT, FUNGICIDE, DEODORIZER, VIRUCIDE*, MILDEWSTAT

ACTIVE INGREDIENTS:
Alkyl (50 %C_{12}, 30 %C_{14}, 5 %C_{16}, 5 %C_{18}) dimethyl benzyl ammonium chloride 2.5%
Alkyl (68 %C_{12}, 32 %C_{14}) dimethyl ethylbenzyl ammonium chloride 2.5%
INERT INGREDIENTS 95.0%
TOTAL 100.00%

KEEP OUT OF REACH OF CHILDREN
DANGER
SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

EPA Reg. No. 81178-1-73884
EPA Est. No. 8325-PA-01
NET CONTENTS: 1 gallon

8310

Manufactured by:
Fiberlock Technologies, Inc.
160 Dascomb Road, Andover, MA 01810
(800) 342-3730 • www.fiberlock.com

FIBERLOCK

Wood Poultry Food Processing plants. Before using this product, food products and packaging materials must be removed from the room or carefully protected. After use, all food contact surfaces in the area must be thoroughly rinsed with potable water. This product may be used in mandatory product processing areas, nonprocessing areas and/or exterior areas without a time delay. Cafeterias, Bars: Use a potable rinse on the following specific food contact surfaces: counters, tables, picnic tables, appliances and/or stovetops. This product should not be used to disinfect or clean utensils, glassware, dishes and cookware.

WATER DAMAGE RESTORATION
SANITIZER AGAINST ODOR-CAUSING BACTERIA AND FUNGI FOR HOME, INSTITUTIONAL, INDUSTRIAL AND HOSPITAL USE
This product is particularly suitable for use in water damage restoration situations to sanitize against odor causing bacteria on the following porous and semi-porous materials: carpets, carpet cushion, subfloors, drywall, trim and frame lumber, baseboards, area rugs and plastering. Using solutions recommended, saturate affected materials with enough product to remain wet for at least 10 minutes. Use proper ventilation.
Severe Backup & Water Flooding: During mitigation procedures, dilute 2-4 ounces of the product per gallon of water allowing for the diluting effect of absorbed water within saturated materials. Remove gross filth or heavy soil along with non-salvageable materials. Saturate all affected areas with a sprayer using a coarse spray tip, before and after cleaning and extraction.
Carpets, Carpet Cushions and Other Porous Materials such as Subfloors, Drywall, Trim and Frame Lumber, Backboards, Studs and Paneling: For water damage from a clean water source, extract excess water. Treat hidden areas for colorfast-ness. Dilute 2-4 ounces of the product per gallon of water, allowing for the diluting effect of absorbed water within saturated materials. Remove gross filth or heavy soil. Apply directly with a sprayer using a coarse spray tip, to fully saturate affected materials. Rub, brush or agitate into the materials and allow the materials to remain damp for 10 minutes. Follow with a thorough extraction. Dry quickly and thoroughly.
Special Instructions for Cleaning/Sanitizing Carpet Against Odor Causing Bacteria: This product may be used in industrial and institutional areas such as homes, motels, hotels/motels, nursing homes, schools and hospitals. For use on non-absorbent synthetic floors. Do not use on wood. Vacuum carpet thoroughly prior to cleaning/sanitizing. Test fabric for color fastness. For pre-spotting extraction units: Mix 1 ounce of the product per gallon of water. For truck mounted extraction machines: Mix 2-4 ounces of the product per gallon of water and meter at 4 gallons per hour. For rotary floor machines: Mix 2 ounces of the product per gallon of water and apply at the rate of 300-400 sq. ft. per gallon. Do not mix this product with other cleaning products. Follow the cleaning procedures specified by the manufacturer of the cleaning equipment. After using the product, wet the carpet pile and protect the carpet from fluctuations in temperature and tension while drying. Do not over-wet. If applied to stain resistant nylon carpet, apply a fabric protector according to the carpet manufacturers directions.

DISINFECTION
Add two ounces of Shock Wave per gallon of water. Remove gross filth or heavy soil. For heavily soiled areas, a pre-cleaning step is required. Apply solution with a cloth, mop, sponge or hand pump. Trigger sprayer such that all surfaces remain wet for 10 minutes. Let air dry. Prepare a fresh solution for each use. Shock Wave is effective in hard water up to 300 ppm hardness (calculated as CaCO3) and in the presence of organic soil (5 % blood serum).
SANITIZATION – NON-FOOD CONTACT SURFACES: Remove all gross filth or heavy soil prior to applying sanitizing solution. To sanitize walls, floors and other hard, nonporous surfaces in such areas as schools, institutions, and industries, use a mop, cloth or sponge dam in a solution containing 2 ounces per gallon on as to wet all surfaces thoroughly for 1 minute. Wash or let dry. Prepare a fresh solution daily or when solution gets visibly dirty.
MILDEWSTAT – Thoroughly clean surfaces prior to treatment. To control or inhibit mold and mildew on pre-cleaned, hard, non-porous surfaces (such as floors, walls, table tops) add 2 ounces Shock Wave per gallon of water. Apply solution with a cloth, mop or sponge making sure to wet all surfaces completely. Let air dry. Prepare fresh solution for each use. Repeat application at weekly intervals or when mildew growth reappears.
CLEANING AND DEODORIZATION – Shock Wave deodorizes garbage storage areas, empty garbage bins and cans, toilet bowls and any other odor-causing areas. Mix 2 ounces per gallon of water and apply solution to surfaces. Be sure to thoroughly wet surfaces, allow to air dry.
FUNGICIDE – At 2 ounces per gallon, Shock Wave is effective against the pathogenic fungus
Trichophyton mentagrophytes in 5 % organic soil. Contact time – 10 minutes. Surfaces where the fungus is found, should areas & walls, Bathroom floors, bathroom benches.
VIRUCIDAL* – When used as directed, hard, non-porous, environmental surfaces at 2 ounces per gallon of water for a 10 minute contact time (5 % organic soil), except for Poliovirus type 1 (Chat strain), which requires a 30 minute contact time.

5% organic soil) and HSV-1 which requires only a 30 second contact time.
KILLS HBV AND HIV-1 ON PRECLEANED ENVIRONMENTAL SURFACES/OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS in healthcare settings or other settings in which there is a likelihood of soiling inanimate environmental surfaces with blood or body fluids, and in which the surfaces/objects likely to be soiled with blood or body fluids can be associated with the potential for transmission of HBV (Hepatitis B Virus) or HIV-1 (AIDS virus).
SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HBV AND HIV-1 OF SURFACES/OBJECTS SOILED WITH BLOOD/BODY FLUIDS: PERSONAL PROTECTION: Specific barrier protection items to be used when handling items soiled with blood or body fluids are disposable latex gloves, gowns, masks or eye coverings.
CLEANING PROCEDURE: Blood and other body fluids must be thoroughly cleaned from surfaces and objects before application of this disinfectant.
DISPOSAL OF INFECTIOUS MATERIALS: Blood and other body fluids should be autoclaved and disposed of according to federal, state and local regulations for infectious waste disposal.
CONTACT TIME: Leave surfaces wet for 30 seconds for HSV-1 and 10 minutes for HSV. The contact time for the viruses, fungi and bacteria listed on the label is 10 minutes except for Polio virus Type 1 (Chat strain) which is 30 minutes.
To be used in the following areas as a food contact sanitizer: Coffee Shops, Bagel Stores, Colleges, Universities, Recreational Facilities, Donut Shops, Hotels/Motels, Pizza Parlors, Hospices, Convenient Stores, Day Care Centers, Adult Care Institutions, Food Establishments, Churches, Picnic Facilities, Homes, Schools, Institutions, Industries, Meat/Poultry/Food Processing Plants, Restaurants and Cafeterias to sanitize hard, nonporous food contact surfaces as listed and identified below. Use a mop, sponge or cloth to apply sanitizing solution or immerse item in sanitizing solution. This product is an effective sanitizer when diluted in water up to 800 ppm hardness (CaCO3).
SANITIZATION – FOOD CONTACT SURFACES: (glassware, utensils, cookware and dishware)
1. Scrape and presoak utensil, glassware, cookware, and dishware.
2. Wash with a good detergent.
3. Rinse with potable water.
4. Sanitize in a solution of 4 oz. of product per 7 gallons of water (200 ppm active solution). Immerse all utensils for 1 minute or longer if specified by government sanitary code.
5. Place sanitized utensils on a rack or drain board to air dry. Do not rinse or wipe.
SANITIZATION – FOOD CONTACT IMMOBILE SURFACES: (food processing equipment, counter tops, tables, picnic tables, appliances, stovetops and food work areas)
1. Remove all gross food particles and soil by pre-flush or prescrape.
2. Clean all surfaces thoroughly using a good detergent or cleaner. Fill movable surfaces for proper drainage. Rinse with potable water.
3. Mix 4 oz. of product per 7 gallons of water (200 ppm active solution).
4. Wet surfaces thoroughly for 1 minute.
5. Let surfaces drain and air dry. Do not rinse or wipe.
6. Finish sanitizing solution should be prepared daily or more often if solution becomes diluted or soiled.
For mechanical operations: The prepared use solution may be used once for sanitizing and reused for other purposes such as cleaning.
CARPET SANITIZER AGAINST ODOR-CAUSING BACTERIA, FOR HOME, INSTITUTIONAL, INDUSTRIAL AND HOSPITAL USE
This product sanitizes the carpet by controlling/reducing the growth of odor-causing bacteria. It can be used in institutional and institutional areas such as homes, motels, hotel chains, nursing homes and hospitals. Vacuum carpet thoroughly prior to application. Mix 1 ounce of product per gallon of water. Follow the injection and/or extraction procedures as specified for any conventional steam cleaning equipment you are using. For rotary floor machines, mix 2 ounces per gallon of water and spray on carpet at a rate of 300-400 sq. ft. per gallon. For use on wearable synthetic fibers: Do not use on wool. Test color fastness of carpet before use. Apply diluted product to a small concealed spot, then rub with a clean white cloth. If color changes or transfers to cloth, a waterbased product should not be used. After using the product, wet carpet pile in and direction with a stiff brush. Place aluminum foil under legs of heavy furniture to prevent rusting or staining during drying. Over-wetting can cause carpet to shrink. Manufacturer assumes no responsibility for over-wetting misuse.
NOTE: This product should not be mixed with other cleaning products.
LAUNDRY ADDITIVE (DISINFECTANT, RESIDUAL BACTERIOSTATIC AND RESIDUAL SELF SANITIZING)

ACTIVITY UNDER CONDITIONS OF HIGH RELATIVE HUMIDITY OR WET CONTAMINATION AGAINST ODOR-CAUSING BACTERIA FOR INSTITUTIONAL, INDUSTRIAL AND HOSPITAL USE
This product disinfects/sanitizes laundry such as: bedspreads, sheets, pillowcases, diapers, towels, and other wet linens by controlling and/or reducing the growth of odor-causing bacteria. It can be used in industrial and institutional areas such as motels, hotel chains, nursing homes and hospitals.
This product is used as an addition to the final rinse cycle.
Add 4 fluid ounces of this product per 1/8 lbs. of dry laundry to the final rinse cycle water (350 ppm). If this product is to be diluted prior to adding it to the final rinse cycle, use 1 ounce per gallon of water and then add to the washwhen in the final rinse cycle.
This product is effective against the following, resistant gentamicin: Contact time is 10 minutes unless noted as below.
Isolates From AIDS Patients: Aspergillus niger, Candida albicans, Pseudomonas aeruginosa, Staphylococcus aureus, Streptococcus pneumoniae
Gram Positive Clinical Isolates: Enterococcus faecalis, Staphylococcus aureus, Staphylococcus epidermidis (Toxic shock), Staphylococcus epidermidis
Gram Negative Clinical Isolates: Escherichia coli, Enterobacter cloacae, Escherichia coli (Urinary), Escherichia coli (Wound), Klebsiella pneumoniae, Proteus mirabilis, Proteus vulgaris, Pseudomonas aeruginosa
Other Bacteria: Bacillus cereus, Bordetella bronchiseptica, Burkholderia cepacia, Corynebacterium pseudotuberculosis, Enterobacter aerogenes, Enterococcus faecium, Escherichia coli, Escherichia coli strain H10407, Listeria monocytogenes, Pasteurella haemolytica, Salmonella choleraesuis, Salmonella typhi, Shigella dysenteriae, Staphylococcus capitis, Staphylococcus hominis, Staphylococcus simulans, Streptococcus pyogenes
Pathogenic Fungi: Trichophyton mentagrophytes
Environmental Fungi: Aspergillus candidus, Aspergillus niger, Penicillium chermesinum, Penicillium oxalicum, Penicillium spinulosum, Unidentified sp.
Antibiotic Resistant Gram Negative Rods: Pseudomonas aeruginosa (Suits, Cefotaxime, Nitrofurantoin, Tobramycin, Amikacin, Aztreonim, Cephalothin and Gentine Resistant), Escherichia coli (Suits, Tobramycine, Ampicillin and Penicillin Resistant)
Antibiotic Resistant Gram Positive Rods: Enterococcus faecalis (Vancomycin Resistant) (VRE), Staphylococcus aureus (Methicillin-MRSA), Penicillin G, Ampicillin, Cefazolin, Cefotaxime, Chloramphenicol, Ciprofloxacin, Clindamycin, Erythromycin, Oxacillin, Rifampin and Tetracycline Resistant), Staphylococcus epidermidis (Drug Resistant)
Human Viruses: Adenovirus type 2, Cytomegalovirus, HSV (Hepatitis B Virus), Herpes Simplex type 1 Virus, Herpes Simplex type 2 Virus, HIV-1 (AIDS Virus), Influenza A/Aichi Virus, Influenza A/Victoria (H3N2) Virus, Influenza A2 Asian Virus, Influenza B Virus (Allen strain), Influenza C Virus (Taylor strain), Measles Virus, Parainfluenza type 1, Poliovirus type 1 (Chat strain), RS minutes contact time, Vaccinia Virus
Non-Human Viruses: Avian Influenza/Turkey/Wisconsin Virus, Canine Distemper Virus, Canine Herpesvirus, Equine Herpesvirus, Equine Influenza, Feline Calicivirus, Feline Infectious Peritonitis, Infectious Canine Hepatitis Virus (IBR), Newcastle Disease Virus, Porcine Parvovirus, Porcine Respiratory & Reproductive syndrome virus (PRRSV), Porcine Rotavirus, Pseudorabies Virus, Transmissible Gastroenteritis (TGE), T1 bacteriophage, T4 bacteriophage, Vesicular Stomatitis Virus (VSV).

Chemical questions

- Left over mixed product can be saved for the next job
  - Empty and rinse containers and hoses if a different product will be used in the foamer
- Shockwave foam can be used on surfaces that have been treated with bleach
  - Previously treated surfaces must be dry to touch
- Captured residue can be disposed in sanitary sewer

Preparing to operate foam generator

- Don personal protective equipment over work clothes
  - Safety glasses, goggles, or face shield
  - N-95 filtering facepiece or better
  - Rain suit coat (with hood) and pants, or water resistant suit
  - Rubber boots
  - Rubber gloves

Foam generator operation

- Install charged 12-volt battery into 12.5-gallon battery-operated foam unit
- Screw on top cover to battery
- Pour solution of two (2) ounces Fiberlock antimicrobial cleaner to one (1) gallon water into top of the foam unit
  - 10 gallons for average home
- Turn on unit, using switch

Foam generator controls

Let the fun begin!

- Direct spray nozzle of hose connected to foam unit at contaminated surfaces
- Completely cover contaminated surfaces with sanitizing foam spray
- Allow foam to remain on surfaces for at least five (5) minutes
- Using stiff-bristled brushes, physically agitate surfaces that contain visible fungal residue or staining
- After light agitation the foamed surfaces are ready for pressure washing

Foam application

Pump foam generator

The hand pump unit can be used for hard-to-reach areas

Agitation tools/techniques

Agitation of foamed surfaces

- Scrub brushes for semi-porous structural materials and members
- Soft brushes or wiping for finished surfaces

Power washing

Removal of cleaning chemicals and debris

- Power washer with low volume setting for structural members
- Squeegee/wiping for finish materials

K 1600 pressure washer

- 1,600 max adjustable PSI
- 1.6 gallons per minute
- 110 volt, 14 amp TEFC electric motor with 25' cord
- 33' wire braided hose
- Professional gun-jet lance

Operating the power washer

- On/off switch
- Water in
- Pressurized water out
- GFCI protected cord

It is dangerous!

- Turn on water supply.
- Turn on power switch. Reset GFCI if unit does not turn on.
- Unlock safety lock button and squeeze trigger to start stream. When first started, gun will kick back.
- Test spray edge of surface to be cleaned to make sure that the stream is not too strong. Adjust pressure by squeezing trigger more or less, or by changing distance from surface. Adjust stream from fan to direct stream by turning nozzle.

It is dangerous! (continued)

- Direct spray nozzle at all surfaces previously foamed. Keep water off non-impacted surfaces, such as drywall above the saw cut line.
- When finished, release trigger, turn power switch off, unplug, and turn off water supply.
- Point nozzle in safe direction and press safety lock button and squeeze trigger to ensure that all pressure is released from unit. Release trigger.
- Clean and store indoors.

Removal of excess water

Air washing

- Air washing of isolated upstairs areas for spore removal
- Air washing of surfaces and contents in isolated areas using window fans and low pressure compressed air
  - Identification of any visible fungal growth during air washing triggers secondary remediation

QUESTIONS?

Break

8. The drying process

Natural or artificial?

Science provides a goal for drying

Summary of Moisture Reading Results for Wood Framing Materials	
Moisture Reading	Results
> 20%	Wet - no good
15 - 20%	Partially dry - caution
< 15%	Dry - OK

Table from FEMA's Katrina advisory

Science also provides a caution

Warning: Failure to allow for adequate drying prior to reconstruction can trap moisture in the building, which can cause structural damage and potential health problems in the future.

Drying the structure means “all of the above”

Dry the structure to FEMA recommended levels using combination of:

- Home heating system
- Natural ventilation
- Floor fans
- Commercial dehumidifiers

Crawlspace barrier

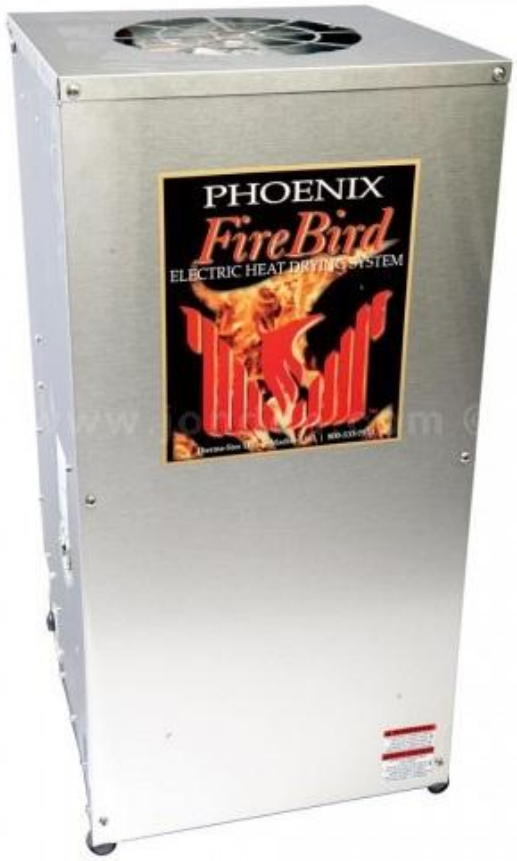
Installation of plastic barrier on soil in crawlspace will speed up drying of structure

Air movement and fan placement

Vortex drying concept

1. Bounce the air off wet surfaces
2. Move air in a circle
3. Place dehumidifiers in center

Add heat to accelerate drying



LGR dehumidifiers work best from 55 to 90 degrees F

9. Wrap up of the Sandy Solution and final questions

All Hands Volunteers

Trained in a comprehensive foam cleaning approach to dealing with flood water contaminants

Time to practice!

QUESTIONS?

Break