

80346-4 9/28/2007

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs  
Antimicrobials Division (7510P)  
1200 Pennsylvania Avenue NW  
Washington, D.C. 20460

EPA Reg. Number:

80346-4

Date of Issuance:

SEP 28 2007

Term of Issuance:

Conditional

Name of Pesticide Product:

MDF-500D Part A

NOTICE OF PESTICIDE:

Registration  
 Reregistration

(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Ag-Chem Consulting  
Pesticide Science and Registration  
c/o for Modec, Inc.  
12208 Quinque Lane  
Clifton, VA 20124

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec 3(c)(7)(a) provided that you:

1. Submit and/or cite all data required for registration of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data; and submit acceptable responses required for re-registration of your product under FIFRA section 4.
2. Make the labeling changes listed below before you release the product for shipment:
  - a. Revise the "EPA Registration Number to read, EPA Reg. No. 80346-4"

Signature of Approving Official:

Marshall Swindell  
Product Manager Team-33  
Regulatory Management Branch I  
Antimicrobials Division (7510P)

*M. Swindell*  
c/o for Marshall Swindell

Date:

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- b. On page 1, under **Modec Decon Formulation**, delete any references “Disinfectant, Sanitizer, and Virucide”. Efficacy data needs to be submitted to support these claims. EPA requires that registrants proposing this claim submit an acceptable test method that shows the product is effective in treating pathogenic organisms in ventilation systems.
- c. On page 1, all references to algaecide, fungicide and **mildewcide** should be changed to algaestat, fungistat and **mildewstat**. Available data conclude that this product is effective to “control and inhibit” and not “kill” intended organisms which these terms implies.
- d. On page 1, in the bottom section, delete the statement “This product has been shown to be bactericidal in the presence of 5% serum contamination”. No data has been submitted to support that the product is effective against bacteria, fungi and viruses, nor as a sanitizer. In addition, the relevancy of this statement is not important since applications of this product will take place in a ventilation system.
- e. On page 1, under the section “For Sale to Professional HVAC Maintenance and Cleaning Companies Only”, add the following language “FOR PROFESSIONAL USE ONLY. For use by Professional HVAC Installers and repairers.
- f. On page 1, under the section “For Sale to Professional HVAC Maintenance and Cleaning Companies Only”, add the following language “THIS PRODUCT IS TO BE APPLIED BY PROFESSIONAL APPLICATORS ONLY. When using this product for HVAC (fungistatic), all Personal Protection Equipment (PPE) must be used. Please read ALL instructions before using this product.
- g. On page 3, under **Modec Decon Formulation**, delete the wording “Disinfectant” (see letter b above).
- h. On page 3, under **Antibacterial Disinfectant and Cleaner**, delete the statement “Advanced Restoration, Remediation & Disinfectant System”. Appropriate use directions are listed in the label for this product to be used in that manner.
- i. On page 3, near the top under the section that leads “Technology originally developed...” delete the statement “A Serious Product for a Serious Problem”. This term implies heightened efficacy which could be false and misleading to a consumer.
- j. On page 3, under the section “Foaming Action” delete the following statement, “Shown to be effective against pathogenic bacteria Staphylococcus aureus, Salmonella choleraesuis, and Pseudomonas aeroginos”. (see letter b above)
- k. On page 3, under the section “Foaming Action”, delete the word “Porous”. EPA requires that registrants submit and acceptable test method that proves this product is effective on these surfaces in ventilation systems
- l. On page 3, under the section “Foaming Action”, change the word “fungicide” to “fungistat” and delete the word “disinfectant” (see letters b& c above).

- m. On page 3, under the section "Foaming Action" delete the word "used" and add the wording "For use".
- n. On page 3, in the middle paragraph, after the 3<sup>rd</sup> mention of "MDF 500D", delete the word "prevents".
- o. On page 3, in the middle paragraph, after the wording "mildew & fungus", delete the statement "the causative agent for Athletes Foot". Although the organism *Trichophyton mentagrophytes* (the technical term for Athletes Foot) is a fungus, it is unlikely that a user will come in contact with this pest inside a ventilation system. Any reference of this kind could be false and misleading to the consumer.
- p. On page 3, in the middle paragraph, delete any references to "porous" (see letter k).
- q. On page 3, in the middle paragraph, after the 2<sup>nd</sup> mention of the word "technology", delete word "used" and add the wording "for use".
- r. On page 3, in the bolded section towards the bottom, delete the following statement, "Professionals recommend appropriate eye and respiratory equipment be worn when undertaking mold abatement procedures".
- s. On page 4, under the section **Personal Protective Equipment**, add the word "Requirements" after the word "**Equipment**".
- t. On page 4, under the section **Personal Protective Equipment**, delete the bullet symbol beside the wording "Handlers must wear".
- u. On page 4, under the section "Personal Protective Equipment, add a bullet for "coveralls"
- v. On page 4, in the bolded section that leads "**HVAC APPLICATORS MUST WEAR...**" make entire section a bullet to be included with the **Personal Protective Equipment Requirements** section.
- w. On page 4, after the bolded section that leads 'HVAC APPLICATORS MUST WEAR...', add the following statement:

**SPECIAL INSTRUCTIONS FOR APPLICATORS:** Applicators treating the inside of an air duct system with this product must wear chemical resistant coveralls, chemical resistant gloves, and chemical resistant goggles. In addition the ductwork must be ventilated with an airflow of approximately 50 CFM per square foot of duct cross section. If this is not possible, OSHA confined space regulations must be followed and the requirements for permit-required space apply. These requirements include testing the atmosphere and use of adequate respirator protection. If the level of contamination cannot be determined, then the maximum respiratory protection (SCBA or airline with an escape bottle) must be used. If needed, the full space respirator should also be equipped with a spray mist pre-filter in addition to the charcoal filters.

**ENGINEERING CONTROLS:** During ULV, mist or spray application, the duct system interior must be maintained under slight negative pressure (0.015 to 0.025 in. WG) with an outdoor exhaust or using a negative air machine equipped with HEPA filter. Avoid higher pressure differentials that would be likely to disrupt the coverage pattern.

- x. On page 4, delete the section “SURFACE CLEANING PROCEDURES”. This section is applicable for use as a disinfectant (see letter b above). Additionally, the statement has no relevance based on the proposed use pattern (see letter d above).
- y. On page 4, under the DIRECTIONS FOR USE section, delete any references to “disinfectant” (see letter b above). This product cannot be used as a disinfectant (see letter b above). In that section, after “a general cleaner and...” statement, and after deleting the word “disinfectant”, add the wording “mold control agent”.
- z. On page 5, under the section “DIRECTIONS FOR USE”, after “It is formulated to...” statement, and after deleting the word “disinfect”, add the wording “control mold and mildew”.
- aa. On page 5, delete the section “DISINFECTION AND DEODORIZING”. This product cannot be used as a disinfectant (see letter b above). The language as a “deodorizer” is acceptable, but this section will have to be reworded.
- bb. On page 5, delete the section “BACTERICIDAL ACTIVITY” (see letter b above).
- cc. On page 5, in the **FUNGICIDAL ACTIVITY** section, change the word “FUNGICIDAL” to “FUNGISTATIC” (see letter c above). In that same section, delete *Trichophyton mentagrophytes* (see letter o above).
- dd. On page 5, in the section “**1.0 General**”, after the word product, change the word “should” to “must”.
- ee. On page 5, in the section “**1.0 General**”, delete the uses “evaporating coils, uninsulated piping, and drain lines”. In addition, the use on “cabinet housing components subject to wetting by mist of carry over” must be deleted as well. You must define these uses and have specific directions on how it should be treated. In latter parts of your label, you list how certain sites should be used for treatment. The sites stated above were not listed.
- ff. On page 8, in the paragraph that begins “Removed components that...” delete the wording “with MDF-500D” and add the statement “An appropriately labeled disinfectant can be used for treatment”. This product is not labeled as a disinfectant (see letter b above). In addition, the following language should be added: “Care must be used during decontamination to assure that fumes from the agent being used are not released into occupied spaces. Products selected should be used according to their label directions”.
- gg. On page 8, in the section “**3.0 General Directions for MDF-500D FOR HVAC SYSTEMS Usage**”, after the wording “inhibiting growth of odor...”, delete the word “posing”, and add the word “causing”.
- hh. On page 9, in the bullet that begins “Air supply and return...” delete the wording fabricated with plywood, OSB or other wood like material”. These use sites give the impression that it is suitable to treat wood – which is a porous surface. This product is not registered for use on porous surface (see letter k above).
- ii. On page 10, in the **Brush, Mop or Wipe Application** section, delete the following language: “If in doubt about a given surface, contact Modec at 800.967.7887 before proceeding”. Replace that language with the following: “Do not use on porous or non uniform surfaces”.

- jj. On page 11, in the **Application Techniques** section, delete the following language: "Modec at 800.967.7887". Replace that language with the following: "a qualified professional for assistance".
- kk. On page 11, in the **Application from Exterior or the HVAC System or Air Duct** section, delete the following language: "until they are thoroughly and uniformly covered using hand or powered spray equipment. (This is the technique of choice for large penthouse or built up air handlers and other components with access panels or doors)". Replace that language with the following: "that are sealed to exclude moisture.
- ll. On page 12, deleted the entire section **Semi Porous Surfaces such as Concrete or Plaster**. (see letter k above).
- mm. The Agency is concerned with post-application risks associated with this product (*Occupational and Residential Exposure Assessment for Alkyl dimethyl benzyl ammonium chloride and Hydrogen Peroxide*, S. Mostaghimi, 1/29/07). The registrant must add language on the label indicating that the residents must not be in the building during the spraying time and some time period after spraying (4 to 12 hours).
- nn. On page 4, in the bullet "**HVAC APPLICATORS MUST...**" a statement must be included to state that the respirator needs to be a "full face" and on "pressure demand mode". Also, the label needs to indicate that the Occupational Safety and Health Administration (OSHA) respiratory protection standards need be followed when applicators apply this product. The registrant must list these standards or refer users to where they could locate these instructions.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

A stamped copy of the label is enclosed for your records. Submit one (3) copy of your final printed labeling prior to release of this product for shipment. If you have any questions concerning this letter, please contact Demson Fuller at (703) 308-8062.

Sincerely,



Marshall Swindell  
Product Manager Team-33  
Regulatory Management Branch I  
Antimicrobials Division (7510P)

Enclosure: (Stamped Label)

# modec inc. MDF-500D Part A

## Modec Decon Formulation Antibacterial ~~Disinfectant~~ and Cleaner

Specially formulated for use in HVAC Systems

For Sale to Professional HVAC Maintenance and Cleaning Companies

Only

Cleaner · Mildewstat

~~Disinfectant~~ · Deodorizer · Fungicide · Algaecide · Virucide  
*Start Start*

**MDF-500D Part A - Active Ingredient:**

Alkyl (50% C <sub>14</sub> , 10% C <sub>16</sub> , 40% C <sub>12</sub> ,)	
Dimethyl benzyl ammonium chlorides . . . . .	3.2%
Inert Ingredients: . . . . .	96.8%
Total	100.0%

**MDF 500D Part B - Active Ingredient:**

Hydrogen Peroxide . . . . .	7.95%
Inert Ingredients: . . . . .	92.05%
Total	100.0%

### DANGER

KEEP OUT OF REACH OF CHILDREN.

Corrosive. Causes irreversible eye damage.  
SEE BACK PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

This is a proven ~~disinfectant~~, cleaner, ~~sanitizer~~, fungicide, mildewstat ~~and virucide which is effective in the presence of 5% serum contamination.~~  
*Start*

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## First Aid

**IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have a person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

**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. Call a poison control center or doctor for further treatment advice.

**IF ON SKIN:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

**IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth to mouth, if possible. Call a poison control center or doctor for further treatment advice.

### NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage.

Modac's Decon Formula (MDF)  
is Commercially Manufactured  
using the Formula Licensed by



Sandia National Laboratories

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# Modec Decon Formulation Antibacterial ~~Disinfectant and~~ Cleaner

## ~~Advanced Remediation, Remediation & Disinfectant System~~

Technology originally developed and patented by Sandia National Laboratories.  
A Serious Product for a Serious Problem  
MDF 500D is Produced Commercially using the Formula Licensed by Sandia National Laboratories

### Foaming Action

- Inhibits and Retards Growth of Mold, Mildew and Fungus.
  - ~~Shown to be effective against the pathogenic bacteria Staphylococcus aureus, Salmonella choleraesuis, and Pseudomonas aeruginosa.~~
  - Cleans & Controls Mold Growth on ~~Porous~~ and Non-Porous Surfaces as listed on the label
  - Cleaner, Mildewstat, Fungicide, <sup>start</sup> ~~Disinfectant~~, and Deodorizer
  - ~~Used~~ by Professionals in Schools, Hospitals, Homes, and Commercial Facilities
- For Use

MDF 500D is a breakthrough product based on technology originally developed and patented by Sandia National Laboratories.  
MDF 500D is commercially manufactured using the license from Sandia National Laboratories. MDF 500D ~~prevents~~ <sup>controls</sup> mildew & fungus ~~(the causative agent for Athlete's Foot)~~ on hard nonporous surfaces and inhibits the growth of mold, mildew and fungal spores on ~~porous and~~ non-porous surfaces. This technology is used by professionals for remediation in hospitals, schools, homes and commercial facilities.

~~Professionals recommend appropriate eye and respiratory equipment be worn when undertaking mold abatement procedures.~~ This product is restricted to use by professional HVAC applicators. Appropriate respiratory protection is **REQUIRED**. See Personal Protection Equipment below for a description of suitable respiratory devices.

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS DANGER

Corrosive. Causes irreversible eye damage. Causes skin irritation. Harmful if inhaled. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or spray mist. Wear protective eyewear such as goggles, face shield or safety glasses. Wear chemical resistant gloves. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. ~~Wash~~ <sup>Wash</sup> contaminated clothing before reuse.

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**Remove stains from surfaces prior to mold and mildew treatment**

MDF 500D may be used to clean surfaces. Spray liberally to coat surfaces and allow to remain wet for 30 minutes. Scrub surface with sponge to remove stains.

**Personal Protective Equipment (PPE):** <sup>Requirements</sup>

- Handlers must wear:
  - Long-sleeved shirt and long pants;
  - Shoes plus socks;
  - Protective eye wear;
  - Waterproof gloves (some of the materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyethylene, polyvinyl chloride, or viton; If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart).

Adcl  
Bullet - ➤ **HVAC APPLICATORS MUST WEAR EITHER A SUPPLIED AIR RESPIRATOR WITH MSHA/NIOSH APPROVAL NUMBER TC-10C OR A SELF CONTAINED BREATHING APPARATUS (SCBA) WITH MSHA/NIOSH APPROVAL NUMBER TC13-F WHILE MAKING APPLICATIONS OF THIS PRODUCT TO HVAC SYSTEMS.**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. DO NOT reuse them.

~~**SURFACE CLEANING PROCEDURES**~~

~~Prior to application of MDF 500D as an antimicrobial agent, gross filth, heavy soil, blood and other bodily fluids must be thoroughly cleaned from surfaces and objects before application of this product. Blood and other bodily fluids should be autoclaved and disposed of according to local regulations and infectious waste disposal. Use appropriate personal protection when handling items exposed to blood and bodily fluids.~~

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. The product is designed specifically as a general cleaner and ~~disinfectant~~ for use in HVAC systems in homes, hospitals, and commercial facilities. It is sold and distributed and utilized ~~in commercial~~ professional HVAC

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maintenance personnel. It is formulated to ~~be used on~~ hard, non-porous, inanimate environmental surfaces.

**MODEC DECON FORMULA – “MDF” is a binary (two part) system. Before use, mix equal parts of MDF PART A and MDF PART B. Apply the newly mixed solution as a spray onto surfaces as directed below.**

~~DISINFECTANT AND DEODORIZING – Prior to disinfection of surfaces, spray the mixture (Part A and Part B) onto the surface and allow to penetrate, and then clean all surfaces thoroughly. To disinfect surfaces reapply the mixture and allow to remain wet for ten minutes. No scrubbing is necessary. The product will not leave grit.~~

~~BACTERICIDAL ACTIVITY - When used as directed, this product exhibits effective disinfectant activity against the organisms Staphylococcus aureus, including Methicillin-Resistant Staphylococcus aureus, Staphylococcus epidermidis, Salmonella choleraesuis, Pseudomonas aeruginosa, Klebsiella pneumoniae, Proteus mirabilis, Vancomycin-Resistant Enterococcus faecalis and Enterobacter aerogenes, Escherichia coli (O157:H7) and Escherichia coli (ESBL). When used as directed, this product is virucidal against Influenza A and Influenza B virus. This product meets the requirements for hospital use. This product has been shown to be bactericidal in the presence of 5% serum contamination.~~

**MILDEWSTAT** - To control mold and mildew on hard, non-porous surfaces, clean the surface to be treated, then spray with the product, making sure to wet completely. Let the surface air dry. Reapply as new growth appears.

**FUNGICIDAL ACTIVITY** - This product has been demonstrated to be fungicidal ~~against Trichophyton mentagrophytes~~. Use as directed on hard, non-porous surfaces.

**THE PERSON APPLYING THIS PRODUCT IS RESPONSIBLE FOR FOLLOWING THESE DIRECTIONS UNDER BOTH STATE AND FEDERAL LAWS**

**1.0 General**

MDF-500D FOR HVAC SYSTEMS is designed to be used as one component of a comprehensive HVAC and duct maintenance program. The purpose of such a program is to assure that the HVAC system and ducts function in the manner they were designed, to remain free from mold and other microbial growth and attic contamination, and continue in that condition. This product ~~should~~<sup>must</sup> only be used in only those cases where visible microbial growth has been detected in the system and then only after removing that growth and identifying and correcting the conditions that led to that growth. It may also be used to inhibit growth on surfaces that normally become wet during operation of the system. These normally include (but are not limited to) ~~evaporator coils, uninsulated piping, condensate drain pans, drain lines, mist eliminators, and cabinet housing~~<sup>evaporator coils, uninsulated piping, condensate drain pans, drain lines, mist eliminators, and cabinet housing</sup>

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~~components subject to wetting by mist or carryover of water.~~ If you need help in understanding any part of these instructions or have additional questions after reading these instructions, DO NOT APPLY THIS PRODUCT until you have received the answers for all of your questions.

**2.0 Inspection**

Prior to inspecting, cleaning, treating, repairing or otherwise working on the HVAC or duct section, the HVAC system should be turned off or the section under repair physically isolated from sections in active use.

Prior to any application of MDF-500D FOR HVAC SYSTEMS the system must be inspected for cleanliness and mechanical condition. When initiating any measures to repair, clean or treat HVAC system components or air ducts, industry standards from the American Society of Heating and Refrigeration Engineers (ASHRAE), National Air Duct Cleaners Association (NADCA), Indoor Air Quality Association (IAOA) and other organizations must be followed.

HVAC systems should be routinely inspected for cleanliness by visual means. The NADCA Standard, *Assessment Cleaning and Restoration of HVAC Systems (ACR 2002* or the latest revision), provides minimum recommended inspection frequency schedules for ducts and other system components. More information on NADCA standards can be obtained from the NADCA web site at [www.nadca.com](http://www.nadca.com).

**2.1 Cleanliness Inspection**

According to NADCA Standards, HVAC system cleaning must be performed when any of the following conditions are found in the cleanliness inspection. If any of these deficiencies are found during inspection, cleaning in accordance with industry standards must be performed prior to the application of MDF-500D FOR HVAC SYSTEMS. At a minimum, these standards require removing all loose soil and debris with a HEPA filter equipped vacuum cleaner and complete cleaning of soil from all heat exchange surfaces using a special cleaner formulated so as to clean such soils effectively yet not damage heat exchange components or release unpleasant or potentially damaging fumes.

**21.1 Contamination**

- HVAC systems should be operated in a clean condition. If significant accumulations of contaminants or debris are visually observed within the HVAC system, then cleaning is necessary. Likewise, if evidence of microbial growth is visually observed or confirmed by analytical methods, then cleaning is required.
- If the HVAC system discharges visible particulate into the occupied space, or a significant contribution of airborne particles from the HVAC system into the indoor ambient air is confirmed then cleaning is necessary.
- Heat exchange coils, coding coils, air flow control devices, filtration devices, and air-handling equipment determined to have restrictions, which contribute to contamination deposits

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that may cause system performance inefficiencies, air flow degradation, or that may significantly affect the design intent of the HVAC system, require cleaning.

- Drain pans must be free from slime and sludge or other contamination. Badly rusted or corroded drain pans must either be repaired or replaced.
- Fans and fan housings must be free from accumulations of microbial growth and particulate matter.
- Filters must be in good condition and cleaned or replaced as needed to avoid exceeding the allowable pressure drop for the equipment.

If you need help in understanding existing industry standards, consult a qualified professional or contact Modec Inc. at 800.967.7887 for guidance and further direction or consult the information at [www.epa.gov](http://www.epa.gov) (search on "HVAC Systems" or "air ducts"). In addition, the following association and society Internet sites should be consulted for information on standards and guidelines they have developed:

- ACCA – [www.acca.org](http://www.acca.org)
- ASHRAE – [www.ashrae.org](http://www.ashrae.org)
- NADCA – [www.nadca.com](http://www.nadca.com)
- NAIMA – [www.maima.org](http://www.maima.org)
- SMACNA – [www.smacna.org](http://www.smacna.org)

## 2.2 Mechanical Inspection

MDF-500D FOR HVAC SYSTEMS must be used only on HVAC system components and air ducts in sound mechanical condition as defined in 2.2.1 and 2.2.2 (below). The HVAC system components must be designed and installed in conformance with industry standards and guidelines. Prior to using the product inspect the HVAC system and ducts and assure that they are in sound mechanical condition. The following general guidelines supplemented by Industry standards from SMACNA, NAIMA, ASHRAE, ACCA and other organizations must be followed:

### 2.2.1 Air Leaks and Mechanical Defects

The equipment housing, cabinets and ducts must be free from air leaks and other mechanical defects. Air leaks will promote condensation of water that causes microbial growth and will lead to failure of MDF-500D FOR HVAC SYSTEMS to protect the system adequately.

### 2.2.2 Design and Installation

ASHRAE, SMACNA, NAIMA and other industry organizations have established guidelines and standards for the design and installation of HVAC and duct systems. You should determine that the system components you wish to treat conform to industry practice. If you are not knowledgeable of industry guidelines and standards, consult a qualified professional or contact Modec at 800.967-7887.

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In some situations, the inspection may reveal that a component of the HVAC or duct system is badly damaged or in such poor operating condition that it cannot be corrected through cleaning and/or minor repair. In these situations the system should be replaced or rebuilt in conformity to the applicable Industry standards prior to using MDF-500D FOR HVAC SYSTEMS. Some (but not all) of the conditions that would indicate the need for major repairs or replacement of the system include:

- Improper size of system or component - The system and all components must be sized to achieve contact airflow and be of the proper capacity for the load. When air-handling equipment is changed or new inlets or outlets added, the size of all components in the system should be recalculated and replacements made as needed.
- Physical damage - Crushed or physically damaged equipment may leak or fail to perform as desired. Deformed air ducts will restrict airflow and may leak (especially at joint areas). Damaged equipment must be repaired a replaced or if there is extensive damage, the entire system should be replaced.
- Badly corroded metal components including duct sections, housings and cabinets, coil assemblies, drain pans, fans and their housings and heat exchange surfaces.
- Loose, damaged, friable or missing insulation - Insulation is important in preventing moisture condensation and subsequent growth of mold and other organisms. If insulation (either interior or exterior) is damaged, missing or not properly fastened it must be repaired or replaced or the associated duct sections replaced. Air handler, mixing, and VAV box housings are also normally insulated and this insulation should be checked for damage in a like manner.

Removed components that are contaminated with mold and other microbial growth may spread contamination while being removed from the building. To prevent this, smaller items should be placed in plastic bags that should then be sealed before being removed. Larger items that cannot be safely packaged should be treated with ~~bleach~~ before being moved through occupied spaces.

**3.0 General Directions for MDF-500D FOR HVAC SYSTEMS Usage**

MDF-500D FOR HVAC SYSTEMS effectively controls by inhibiting growth of odor posing bacteria, fungi, and other odor, stain or damage causing organisms in HVAC system components and air ducts in residential, commercial, institutional, and industrial buildings. MDF-500D FOR HVAC SYSTEMS also eliminates odors associated with bacteria, mold, mildew, smoke, animals, cooking, spoilage, musty and other odors and removes odor causing organisms when used as part of such a comprehensive preventative maintenance program in HVAC systems and air ducts.

MDF-500D FOR HVAC SYSTEMS is a bacteriostat fungicide (kills mold and mildew), mildewstat and deodorizer for use in residential, commercial and industrial settings. It

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will not stain or bleach materials or fabrics and will not harm or damage HVAC system components.

MDF-500D FOR HVAC SYSTEMS is formulated for use in all kinds of HVAC components and air ducts including:

- Furnaces.
- Air Handlers.
- Packaged units including Rooftops and Packaged Terminal Air Conditioner (PTAC) units.
- Fan coil units.
- Air distribution components such as air handlers, mixing boxes, transfer boxes, transitions, turning vanes, dampers, fans and fan housings and associated components.
- Condensate drain pans.
- Unlined sheet metal ducts.
- Air supply and return ducts and plenums ~~fabricated with plywood, OSB, or other wood like material.~~
- Flexible air ducts fabricated of metal or plastic.
- Humidifiers.
- Dehumidifiers; both Desiccant and Refrigerated.
- Registers.
- Grills and other air intake and discharge devices.

Follow the directions below for the specific type of duct or component being treated. It is vital that the following directions be carefully read and understood prior to using the product. If you have any questions, need further information, require clarification, or do not understand any of the directions, call Modec at 800.967-7887 prior to use.

### 3.1 Application Equipment and Devices

#### 3.1.1 Spray Applications

Spray application is preferred on large surfaces that are easily accessible (such as plenums, coil assemblies, the interior of cabinets, housings with removable access panels, and in long runs of large diameter ducts). The spray equipment chosen should provide a consistent fine (1-300 micron) particle size and uniform spray pattern. Powered medium pressure sprayers are preferred. However, airless sprayers are suitable.

Where airless sprayers are used, the most satisfactory spray pattern will be achieved using a 0.011" spray tip. For other brands and options contact Modec at 800.967-7887.

Pump up garden type sprayers can be used but care must be taken to maintain maximum pressure by pumping frequently and the spray nozzle must be adjusted for the finest spray pattern possible. During application, achieve complete uniform coverage. Avoid excessive wetting and do not allow the product to run or pool.

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### 3.1.2 ULV or Mist Generating Sprayers

ULV or mist or other wet small particle application is preferable where surfaces are irregular or less accessible. Equipment capable of generating particles in the 15 to 60 micron range is most satisfactory. Contact Modec at 800.967-7887 for information on other devices.

Generally a fog will carry and provide adequate coverage up to 8 feet from the point of application so adequate penetrations must be cut in cabinets or ducts to assure complete coverage without over wetting. SMACNA, NADCA and NAIMA have established standards and guidelines for making and sealing openings in HVAC system components and ducts. Operators should be trained on proper application techniques as well as correct duct penetration and sealing procedures using these standards and guidelines. Operators should also carefully read and follow directions for the brand of equipment used. Contact Modec at 800.967-7887 for information on training for using various types of equipment. Housing and duct penetrations should be properly closed following application, in accordance with industry standards.

### 3.1.3 Automated Atomizing or Spray System

There are a number of automated spraying systems on the market including those that are carried by a "robot" through air ducts. These may provide an excellent option for application of MDF-500D FOR HVAC SYSTEMS in parts of air ducts that are difficult to access if they produce the correct spray pattern and application quantity. These devices must be visually monitored using video or other means while applying spray so proper application rate will be maintained. Please contact Modec at 800.967-7887 regarding a specific device should you have question.

### 3.1.4 Brush, Mop or Wipe Application

Brush, Mop or Wipe Application may be specified by same facility maintenance or remediation plans. These techniques are generally more labor intensive than other methods and are normally used only when specifications require. ~~If in doubt about a given surface, contact Modec at 800.967.7887 before proceeding.~~ When using brush or mop application, tools and materials used should be reserved only for application of MDF-500D FOR HVAC SYSTEMS, kept clean and protected between uses and replaced when worn or visibly soiled. Natural fiber brushes are preferred although any quality brush is acceptable. Mops should be of the types that leave minimal lint behind. Micro-fiber or other non-linting cloths are preferable. Where other types of cloths are used, they must be soft enough that they absorb a sufficient quantity of liquid to provide uniform application.

During Brush, Mop or Wipe Application, the applicator must have access to the surfaces being treated. Usually this will require entering the component or air

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ducts. In such cases, application must start from the point most distant from the point of entry. The applicator will then work from that point back to the entry point covering a 3 foot length of duct at a time. Apply to the top of the area to be treated first followed by the sides, then the floor. Overlap applications to assure complete coverage.

### 3.2 Application Techniques

MDF-500D FOR HVAC SYSTEMS must be applied evenly to surfaces that are being treated. Even and uniform application is essential for satisfactory results. The procedures, equipment and techniques described below have been tested and provide the desired results. Other procedures, equipment or techniques may also achieve satisfactory results but should not be used without discussing the specific situation and equipment with Modec at 800.967-7887.

#### 3.2.1 Application from Exterior of the HVAC System or Air Duct

MDF-500D FOR HVAC SYSTEMS may be sprayed into existing access openings where these provide adequate access. Normally these consist of removable panels or access doors. Completely cover all non-electrical components ~~until they are thoroughly and uniformly covered using hand or powered spray equipment. This is the technique of choice for large penthouse or built up air handlers and other components with access panels.~~

When applying to ductwork spray into openings at a minimum of every 8 feet. Existing supply openings can be used where they provide a clear view of the surfaces being sprayed so that uniform application can be achieved. However, additional installations will have to be made, as needed, so enough openings will be available to achieve total and uniform coverage.

Spray application is not an acceptable technique where openings are greater than 8 feet apart, additional openings cannot be made and property sealed, and/or the duct geometry does not allow for uniform coverage. In such cases, application from within the HVAC system is necessary (see 3.3.2 below).

#### 3.2.2 Application from Within the HVAC System

When MDF-500D FOR HVAC SYSTEMS cannot be sprayed into openings at intervals throughout the HVAC or duct system, you must gain entry into the system and spray the product onto interior surfaces until they are thoroughly and uniformly covered using hand or powered spray equipment. This is the most frequently used technique and is the technique of choice for air handlers, other components with access panels or doors mid large diameter (generally 20" x 20" minimum) ducts where direct access can be gained to surfaces being treated.

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Some protection is provided for drain pans by excess MDF-500D FOR HVAC SYSTEMS that runs off of coiling coils when they are treated. Replace badly deteriorated pans. Drain pans that do not drain completely and retain water may experience microbial growth even when treated. Level drain pans and otherwise adjust them so water completely drains from them.

**3.3 Fans and Fan Housings**

Fans create air turbulence, which can lead to condensation of water that supports mold and other growth. As a result fan blade and blower wheel surfaces as well as associated housings are especially prone to fouling from both microbial growth and soil accumulation. It may be necessary to partially or completely remove and disassemble these components so they may be properly cleaned prior to application of MDF-500D FOR HVAC SYSTEMS. Complete cleaning must take place before attempting to treat these components.

**3.3.1 Humidifiers and Dehumidifiers**

Because of the amount of water present humidifiers and dehumidifiers are often sites especially prone to microbial growth. They also attract and hold soil as growth related contamination builds up over time. This accumulated material must be thoroughly removed prior to treatment with MDF-500D FOR HVAC SYSTEMS. For some units, cleaning may also signal the need to replace pods, belts, wheels or service other components. The manufacturer of the unit being maintained should be consulted on the proper maintenance and cleaning procedure.

**3.3 Rate of Application**

The recommended rate of application for MDF-500D FOR HVAC SYSTEMS varies depending on the surface being treated. Users of this product must carefully follow the rate of application instructions provided below:

**3.4.1 Bare Metal and Flexible Ducts**

Apply until surface is evenly wet. Mist or wipe coverage 1,000 ft<sup>2</sup> per gallon. Spray coverage 500 ft<sup>2</sup> per gallon.

If the above application rates result in surface runoff or liquid pooling on the bottom of the duct, lower the application rate until the surface is thoroughly and evenly wet without runoff or peeling. The exception to this is when treating coil assemblies. In this case, the spray should be applied generously until there is runoff into the drain pan so as to penetrate the coil assembly to the greatest possible depth.

~~3.4.2 Semi-Porous Surfaces such as Concrete or Plaster~~

~~Apply until surface is evenly wet. Mist coverage 500 ft<sup>2</sup> per gallon. Wipe not recommended. Spray coverage 250 ft<sup>2</sup> per gallon. MDF-500D FOR HVAC SYSTEMS must penetrate into surface crevices and irregularities and will not be effective. Inspect and assure that penetration is satisfactory. It may be necessary to apply half of the quantity~~

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needed for full coverage spraying from side to side then repeat the application moving the spray from top to bottom.

### 3.5 Frequency of Application

Normally, infrequent application (every 3 months for HVAC Systems and every 6 months to every two years for alt ducts) will provide attractive control. Some critical applications such as HVAC and duct systems serving critical HealthCare spaces or clean rooms where it is essential to minimize the generation of particulate matter that may be released as a byproduct of microbial growth may require more frequent treatment. Do not apply more often than monthly and then only if there is evidence of re-growth. This product must only be used in those cases where visible microbial growth has been detected in the system and then only after removing that growth and identifying and correcting the conditions that led to that growth. Prior to reapplication, in such cases, investigate to determine the cause of re-growth and correct the problem prior to re-application. Before embarking on a program of frequent application (more frequent than every three months) contact Modec at 800.967-7887 and discuss the specific application and situation. Also make sure the reoccurrence of microbial growth does not have another cause such as persistently high humidity, standing water or hidden leaks.

Prior to reapplication, the interior of the ducts and other surfaces must be inspected and found to be free of accumulated soil. If soil or growth is found, the cause should be determined and corrected and then the ducts cleaned in accordance with accepted industry practice.

If microbial growth persists in air ducts following application re-inspect for duct leaks, carryover of water from cooling coils or humidifiers and other sources of moisture promoting growth. Eliminate such sources of moisture before retreating.

### 3.6 Returning the System to Operation following Application

Equipment being treated and the fans and blowers in the section of duct being treated must be turned off during application of MDF-500D FOR HVAC SYSTEMS. If the system cannot be shut down the section of the system being treated must be isolated until treatment is complete. This will prevent the spray of fog from being blown away from the surface that is being treated.

Do not attempt to use the system fan or blower to carry MDF-500D FOR HVAC SYSTEMS to the surfaces within system. Such a practice will not result in uniform application of the product to the surfaces being treated and will lead to refractive control. This should never be attempted.

The system can be returned to full operation as soon as treatment is completed or at any time following completion of treatment. MDF-500D FOR HVAC SYSTEMS will dry on surfaces within 15 minutes following application. Extended drying time does not have an impact on effectiveness of treatment MDF-500D FOR HVAC SYSTEMS should not

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be rinsed off following application so it will continue to inhibit the growth of microorganisms on treated surfaces.

**When the above directions are followed properly, there will not be significant concentrations of MDF-500D FOR HVAC SYSTEMS released to the spaces served by a system being treated. There is no need to have occupants leave the building during application.**

CONTACT TIME FOR ALL SURFACES - Allow surface to remain wet for 10 minutes.

**STORAGE AND DISPOSAL**

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

STORAGE – Store in a dry place no lower in temperature than 50°F or higher than 120°F.

CONTAINER DISPOSAL – Do not reuse empty container. Rinse empty container with water. Plastic containers may be disposed of in a sanitary landfill, incinerated, or if allowed by local authorities, by burning. If burned, stay out of smoke. For containers 1 gallon or more: Do not reuse empty container (bottle, can, and bucket). Wrap container and put in trash.

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

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