OXINE®
SANITIZER
DISINFECTANT
FUNGICIDAL - BACTERICIDAL
GUARANTEED SHELF LIFE
NON-FLAMMABLE
LOW CORROSION

Directions for Use:
1) Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.
2) Preparation of 500 ppm Cl₂ disinfecting solution: Place 3.25 oz of Oxine concentrate into a clean plastic container and add 10 grams of Bio-Cide activator crystals or food-grade citric acid of no less than 99% purity. Prepare in a well ventilated area. Avoid breathing fumes while the crystals are dissolving. Allow five (5) minutes reaction time. To this solution, add one (1) gallon of clean potable water.
3) To apply: Activated solutions may be sprayed, mopped or sponged onto surfaces to be disinfected. All surfaces must be thoroughly wetted for at least ten (10) minutes. When spraying disinfectant solutions, use an appropriate spraying device. Active solutions may be irritating when breathed, therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.

PRECAUTIONARY STATEMENT
Hazard to Humans & Domestic Animals
Avoid contact with eyes
Harmful if swallowed
May cause eye irritation
Lot # 0809-080-AD

STORAGE
Product Storage
Store in a cool, dry, well ventilated location away from acids, chlorine and chlorine compounds, hypochlorites (bleach), organic solvents, sulfur and sulfite compounds, phosphorus, combustible/flammable materials, and direct sunlight. Keep containers tightly closed when not in use and open carefully to prevent spillage. Storage on wooden floors and pallets is not recommended. Do not contaminate water, food or feed by storage or disposal.

DISPOSAL
Container Disposal
Triple rinse. Then offer for recycling, or recondition, or puncture and dispose of in a sanitary landfill, or by incineration; or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Pesticide Disposal:
Wastes resulting from use of this product may be disposed of on site or at an approved waste facility.

FIRST AID
If Inhaled
- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

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 further treatment advice.

If in eyes:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lens, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for further 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 a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

Have product container or label with you when calling a poison control center or doctor or going for treatment. For 24 hour emergency information on this product, call NPPC at 1-800-859-7378 (U.S., Canada, Puerto Rico, Virgin Islands) or 1-713/523-3987 (All Other Areas).
OXINE® SANITIZER

.Active Ingredient:
Chlorine Dioxide..................................................2.0%
Other Ingredients..............................................98.0%
Total.................................................................100.0%

Mfg by: Bio-Cide International, Inc. 2650 Venture Drive, Norman OK 73069 • 800.323.1398 • www.bio-cide.com

FIRST AID: IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice. 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 lens, 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 a poison control center or doctor. Do not give anything by mouth to an unconscious person. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

PRECAUTIONARY STATEMENTS: HAZARD TO HUMANS AND DOMESTIC ANIMALS
HARMFUL IF SWALLOWED AND MAY CAUSE IRRITATION • AVOID CONTACT WITH EYES

STORAGE AND DISPOSAL
Storage: Do not contaminate water, food, or feed by storage or disposal. Store in a cool, dry, well-ventilated location away from acids, chlorine and chlorine compounds, hypochlorites (bleach), organic solvents and sulfide compounds, phosphorus, combustible/flammable materials, and direct sunlight. Keep containers tightly closed when not in use and open carefully to prevent spillage. Storage on wooden floors and pallets is not recommended. Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Container Disposal: Triple rinse. Then offer for recycling or reconditioning; or puncture and dispose of in a sanitary landfill; or by incineration; or, if allowed by state and local authorities, by burning. If burnt, stay out of smoke.

DIRECTIONS FOR USE
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

IN LABORATORIES, HOSPITALS, MORGUES, INSTITUTIONS
To disinfect non-porous, hard surfaces such as glazed tile floors, walls and ceilings and stainless steel cold rooms and walk-in incubators. Directions for Use: Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection. Preparation of 500 ppm ClO₂ disinfecting solution: Place 3.25 oz of Oxine® concentrate into a clean plastic container and add 10 grams of Bio-Cide activator crystals or food-grade citric acid of no less than 99% purity. Prepare in a well ventilated area. Avoid breathing fumes while the crystals are dissolving. Allow five (5) minutes reaction time. To this solution, add one (1) gallon of clean potable water. Activated solutions may be sprayed, mopped or sponged onto surfaces to be disinfected. All surfaces must be thoroughly wetted for at least ten (10) minutes. When spraying disinfectant solutions use an appropriate spraying device. Active solutions may be irritating when breathed, therefore, always use an NIOSH/MSHA approved respirator and appropriate protective gear for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.

USE DIRECTIONS FOR AIR DUCTS
1.0 General. Oxine® 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 other contamination, and continue in that condition. This product must 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. 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 a 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 Oxine® the system must be inspected for cleanliness and mechanical condition. When initiating any measures to repair, clean or treat ducts and associated HVAC system components, industry standards from the National Air Duct Cleaners Association (NADCA) 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 (ACR2002 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 website at 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 of these ducts: a. Duct system is found during inspection, cleaning in accordance with industry standards must be performed prior to the application of Oxine®. b. 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 exchanger coils, cooling coils, airflow control devices, filtration devices, and air-handling equipment determined to have restrictions, blockages, or contamination deposits 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. If you need help in understanding existing industry standards, consult a qualified professional, or consult the information at www.epa.gov (search for “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 • ASHRAE - www.ashrae.org • NADCA - www.nadca.com • NAIMA - www.naima.org • SMACNA - www.smacna.org.

2.2 Mechanical Inspection. Oxine® must be used only on ducts and other HVAC system components 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 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 ducts must be free from air leaks and other mechanical defects. Air leaks will promote condensation of water that causes microbial growth.

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 duct system you wish to treat conforms to industry practice. If you are not knowledgeable of industry guidelines and standards, consult a qualified professional.

In some situations, the inspection may reveal that the duct system or other component 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 Oxine®. Some (but not all) of the conditions that would indicate the need for major repairs or replacement of the system include:

- Improper size and shape – Ducts must be sized to achieve correct airflow. 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 deformed air ducts will restrict airflow and may leak (especially at joint areas). Damaged sections should be replaced or if there is extensive damage the entire system should be replaced.
- 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 before being moved through occupied spaces. An appropriately labeled disinfectant can be used during treatment. Care must be used during treatment to assure that fumes from the agent being used are not released into occupied spaces. Product use should be used according to their label directions. Please contact Bio-Cide International Inc. at 800.323.1398 for the appropriate product to be used in these situations.

3.0 General Directions for OXINE® Usage. OXINE® effectively controls by inhibiting growth of odor causing bacteria, fungi, and other odor, stain or damage causing organisms in air ducts in residential, commercial, institutional, and industrial buildings. OXINE® also eliminates odors associated with bacteria, mold, mildew, smoke, animals, cooking, spoilage, musty and other odors and removes odors when used as part of such a comprehensive preventative maintenance program in air ducts and other HVAC system components. OXINE® is a bacteriostat, fungistat (mold and mildew), mildewstat and deodorizer for use in residential, commercial and industrial buildings. Formulated in clear AC soluble water, (900 ppm CI₂O₄)3- to apply. Prior to application area to be treated must be decontaminated. DO NOT apply atomized solution to ductwork using a spray head. Spray or fog active solution into ductwork using a suitable spraying or fogging device (see below). Make sure that the surfaces are thoroughly wet for at least 10 minutes. During application, area must be closed as tightly as possible and sealed. Spray areas until thoroughly moist, giving special attention to cracks and crevices. After spraying or fogging, the area should be opened and aired for one (1) hour before repopulating. Active solutions may be irritating when breathed, therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when fogging or spraying these solutions. After application, allow to air dry. Treat as required. Always apply freshly made solutions.

3.2 Application Instructions: 1) Preparation of active solution: Place 3/4 fl. oz. of OXINE® concentrate into a clean plastic container and add 10 grams of BCI Activator Crystals or food grade citric acid of no less than 99% purity. Prepare in a well ventilated area. Avoid breathing any fumes while the crystals are dissolving. Allow five minutes minimum before use. The solution should be applied using a fogging, misting sprayer or mop application. DO NOT use sprayers or mop application technology. Tools and materials used shall be reserved only for application of OXINE®, kept clean and protected between uses and replaced when worn or visibly soiled. Natural fiber brushes are preferred although any quality brush is acceptable. Microfiber 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. Apply the solution to the surfaces to be treated. Usually this will require entering the ducts. In such cases, the application must start from the point most distant from the point of entry into the duct. 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 duct of the first floor, followed by the sides then the floor of the duct. Overlap applications to assure complete coverage. Cover completely while avoiding runs or pooling. 3.2.2 Spray or Atomizer Applicator: Spray equipment is preferred on large surfaces that are easily accessible (such as in long runs of large diameter ducts, coil assemblies and fan coil units). Overhead cabinets and plenums (with removable accessible panels). The spray equipment chosen should provide a consistent fine (10-50 micron) particle size and uniform spray pattern. Powered medium pressure sprayers are preferred. 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 spray to run or pool. 3.2.3 ULV Fogging Sprayers or Mop Application — For very small particle application is preferable. Non-misting or non-airassisted or other fogging small particle application is preferable for use on those hard to reach or other rear end of ductwork or components are irregular in shape, or irregular surfaces. Equipment capable of generating particles in the 15 to 60 micron range is most satisfactory. Avoid use of thermal type fog generators. Contact Bio-Cide International Inc. at 800.323.1398 for information on other devices. Generally a uniform liquid spray can carry and provide adequate coverage up to 8 feet from the point of application so adequate penetrations must be cut in the ducts to assure complete coverage without over wetting. SMACNA, NADCA and NAIMA have established standards and guidelines for making and sealing penetrations in ducts. Operators should be trained upon proper application techniques as well as correct duct penetration and sealing procedures using these standards and guidelines. Operators should also be carefully read and follow directions for the brand of equipment used. Bio-Cide International Inc. personnel should be contacted at 800.323.1398 for information on training for using various types of equipment. Duct penetrations should be properly sealed following application, in accordance with industry standards.

3.2.4 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 OXINE® 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.

3.3 Application Techniques. OXINE® must be applied evenly throughout duct system and over other 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 proved desirable results. Other procedures, equipment or techniques may also achieve satisfactory results but should not be used without discussing the specific situation and equipment with a Bio-Cide International Inc. representative. Contact Bio-Cide International Inc. at 800.323.1398 for information on other techniques and products.

3.3.1 Application from Exterior of the HVAC System. OXINE® may be sprayed into openings at intervals throughout the duct system or on components that are accessible through removable panels or access doors. Spray into openings every 8 feet at a minimum. 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 penetrations will have to be made as needed, so enough openings will be available to make uniform coverage possible.

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).

3.3.2 Application from Within the HVAC System. When OXINE® cannot be sprayed into openings at intervals throughout the duct system, you must gain entry into the system and spray the product into interior duct and other surfaces while they are thoroughly and uniformly covered using hand or powered spray equipment. This is the most frequent method and is the technique of choice for air handlers, other components with access panels or doors and large diameter (generally 20" x 20"

Ducts where direct access can be gained to surfaces being treated.

3.4 Rate of Application. The recommended rate of application for OXINE® 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 Air Duct, or plenums. Until surface is evenly wet. Mist or wipe coverage 1,000 ft² per gallon. Spray coverage 500 ft² per gallon. If the lower application rates result in surface runoff or liquid pooling on the bottom of the duct, the application rate until the surface is thoroughly and evenly wet without runoff or pooling. The exception 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 ft² per gallon. Wipe not recommended. Spray coverage 250 ft² per gallon. OXINE® must penetrate the two surface devices and irregularities or it will not be effective. Inspect and assure that penetration is satisfactory. It may be helpful to apply half of the quantity 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. 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. See guidance in sections 2.1 through 2.2.2 for evaluating the need for treatment. Prior to removal of growth, the surface should be thoroughly cleaned. The use of self-regenerating microbial growth does not have another cause such as consistently 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.

3.6 Returning the System to Operation following Application. Fans and blowers in the section of duct being treated must be turned off during application of OXINE®. If the system is to be turned on the same day, the system must be left in an unoccupied condition. The next time that the spray or fog is to be applied, it will be blown away from the surface that is being treated. The system can be returned to full operation as soon as treatment is completed or at any time following completion of treatment. OXINE® will dry on surfaces within 15 minutes following application. Extended drying time does not have an impact on effectiveness or treatment. When the above directions are followed properly, there will not be significant concentrations of OXINE® released to the spaces served by a system being treated. It is recommended that affected areas of the building be unoccupied during treatment.