BIOVEX® READY-TO-USE SOLUTION
SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product Identifier:

BioVex® ready-to-use solution (user prepared)

Other means of Identification:

User-prepared dilute aqueous chlorine dioxide solution prepared from BioVex® concentrate and an acid activator, when mixed and diluted according to label instructions.

Recommended Use:

BioVex® ready-to-use solution is used to pre-clean or decontaminate critical or semi-critical medical devices prior to sterilization and to disinfect non-porous hard surfaces. Refer to the BioVex® concentrate label for a complete list of permitted uses (EPA Registration Number: 9804-1).

Chemical Manufacturer:

Bio-Cide International, Inc.
2650 Venture Drive
Norman, Oklahoma 73069
Phone: (405) 329-5556

Emergency Telephone Number:

Chemtrec for transportation emergencies in the United States, Canada, Puerto Rico, and Virgin Islands 1-800-424-9300; All other areas 1-703-527-3887
American Association of Poison Control Centers 1-800-222-1222

SECTION 2: HAZARD(S) IDENTIFICATION

BioVex® ready-to-use solution is not classified as a hazardous substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

BioVex® ready-to-use solution is a user-prepared aqueous chlorine dioxide solution prepared from BioVex® concentrate and an acid activator, when mixed and diluted according to label instructions.

Substance	CAS #	Concentration
Chlorine dioxide	7758-19-2	<0.01%
Sodium chlorite	10049-04-4	<0.1%
Water and other ingredients	–	Balance

If the specific chemical identity and/or the exact percentage of an ingredient are not specified, the information has been withheld as a trade secret.

SECTION 4: FIRST-AID MEASURES

The following procedures are recommended as emergency first aid only. They are not intended to replace or supplant the treatment advice of a physician or other authorized health care specialist.

Skin Contact: Not expected to cause serious skin irritation or injury. If irritation occurs, 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.

Eye Contact: Not expected to cause serious eye irritation or injury. If exposure occurs, 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**.** Consult a physician if symptoms persist.

If Swallowed: Ingestion of small amounts is not expected to result in serious injury. However, if ingested, closely monitor symptoms and seek medical attention if symptoms occur. 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.

Inhalation: Not expected to cause serious respiratory symptoms or injury. If inhalation exposure occurs, move person to fresh air. Consult a physician if symptoms persist.

SECTION 5: FIRE-FIGHTING MEASURES

Substance does not burn, but dried residues from large amounts of the substance may support the combustion of flammable substances through the liberation of oxygen. Water is the preferred extinguishing media when it is compatible with the burning substance. If water is not compatible, use dry powder extinguisher.

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURE

Smalls spills (<15 gallons) of BioVex® ready-to-use solution can be flushed into sanitary sewers with a volume of water 4x that of the spill. Larger spills should be contained and neutralized with 1 lb. of sodium thiosulfate pentahydrate per 20 gallons prior to disposal into a sanitary sewer.

SECTION 7: HANDLING AND STORAGE

HANDLING:

Use product only as directed by the label. Avoid contact with skin and eyes; Avoid using in enclosed areas to minimize breathing of vapors or fumes resulting from product activation. Wash thoroughly after handling. Thoroughly rinse all protective gear and handling equipment, such as transfer pumps and lines, with water prior to reuse or storage. Keep away from children, animals, and unauthorized personnel.

PRODUCT STORAGE:

Keep in-use containers such as spray bottles tightly closed to prevent spillage. Keep bulk solutions in a well-ventilated area at cool ambient temperatures.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits:

Preparation of BioVex Ready-to-use solution requires reaction of BioVex concentrate with an acid activator, leading to the formation of aqueous solution of chlorine dioxide (ClO_2) gas. Chlorine dioxide at this concentration is highly soluble in water, but over time solutions may evolve low amounts of chlorine dioxide gas. Occupational exposure limits for chlorine dioxide gas are as follows:

Chemical name	ACGIH TLV	OSHA PEL
Chlorine dioxide (gas) 7758-19-2	TWA (8 hr): 0.1ppm STEL (15 min): 0.3ppm	TWA (8 hr): 0.1ppm

Under normal use of BioVex® ready-to-use solution, and with adequate ventilation, airborne chlorine dioxide exposures are not anticipated to exceed the above threshold limit values (TLVs). When preparing or applying BioVex® ready-to-use solution, however, good ventilation should be continually maintained to ensure airborne chlorine dioxide exposure remains below these limits. For use in confined spaces or is applications having potential for exposer of workers to airborne fluid particles, such as fogging or bulk spraying applications, respiratory protection is required. If respiratory protection is required, a NIOSH-approved air-purifying respirator with cartridges approved for chlorine dioxide (ClO_2) must be used in accordance with OSHA requirements (29 CFR 1910.134).

Eye and Skin Protection
Wear chemical safety goggles whenever preparing, handling or applying BioVex® ready-to-use solution. Wear gloves or other protective clothing to minimize skin contact.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

(a) Appearance (physical state, color, etc.): Clear, light yellow liquid

(b) Odor: Slight odor of chlorine

(c) Odor threshold: Not determined

(d) pH: 6.5 – 8.0

(e) Melting point/freezing point: Comparable to water

(f) Initial boiling point and boiling range: Comparable to water

(g) Flash point: Not applicable

(h) Evaporation rate: Comparable to water

(i) Flammability (solid, gas): Not flammable

(j) Upper/lower flammability or explosive limits: Not flammable

(k) Vapor pressure: Comparable to water

(l) Vapor density: Not determined

(m) Relative density: 1.0 g/ml (20°C)

(n) Solubility(ies): Miscible (water)

(o) Partition coefficient: n-octanol/water: Not applicable

(p) Auto-ignition temperature: Not applicable

(q) Decomposition temperature: Not determined

(r) Viscosity: Approx. 1 mm^2/ sec @ 20°C

SECTION 10: STABILITY AND REACTIVITY

(a) Reactivity; Not reactive under normal temperatures and pressures.

(b) Chemical stability; Stable at normal temperatures and pressures.

(c) Possibility of hazardous reactions; Contact of BioVex concentrate with acids or chlorine can result in the evolution of chlorine dioxide gas (ClO_2)

(d) Conditions to avoid: Avoid evaporation to dryness. Dried material can ignite upon contact with combustibles. Avoid contamination with foreign materials. Avoid exposure to sunlight or

ultraviolet light.

(e) Incompatible materials; Acids, Reducing agents, Combustible material, Oxidizing agents, Hypochlorite, Organic solvents and compounds, Garbage, Dirt, Organic materials, Household products, Chemicals, Soap products, Paint products, Vinegar, Beverages, Oils, Pine oil, Dirty rags, Sulfur-containing rubber, or any other foreign matter

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY

Inhalation LC_{50} (mist): >5 mg/l (rat)
Oral LD_{50}: >5,000 mg/kg (rat)

SKIN AND EYE EFFECTS

Not classified as a skin irritant based on animal studies.
Not classified as an eye irritant based on animal studies.
(Prolonged or repeated exposure may be slightly irritating to skin or eyes.)

CARCINOGENICITY

Active ingredients are not listed by OSHA, IARC, NTP or EPA. No evidence to date implicating product as a carcinogen or tumor promoter.

MUTAGENICITY

Though product active ingredient is a chemical oxidant, no evidence to date for mutagenicity from whole animal or in vitro studies.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY

No known effects.

SECTION 12: ECOLOGICAL INFORMATION

BioVex® is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, rivers or streams. Do not discharge effluent containing this product to sewer systems without first notifying the sewage treatment plant.

BioVex® does not bio-accumulate and is biodegradable.

BioVex® does not migrate in soil.

SECTION 13: DISPOSAL CONSIDERATIONS

Product Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. (See also Section 6.)

CONTAINER DISPOSAL: Rinse BioVex® ready-to-use solution containers thoroughly with water before disposal. Offer for recycling if available.

SECTION 14: TRANSPORT INFORMATION

Not regulated in transport

Environmental Hazards: Toxic to fish and aquatic organisms. Not a marine pollutant.
In case of spill, flush with copious amounts of water. Do not allow to dry to crystalline form.

SECTION 15: REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:

This material is not considered hazardous under the criteria of the OSHA Hazard Communication standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

Not regulated.

SARA EHS Chemical (40 CFR 355.30):

Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):

Not regulated

EPCRA SECTION 313 (40 CFR 372.65):

Not regulated.

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):

All components are listed or exempt.

TSCA 12(b):

This product is not subject to export notification.

Canadian Chemical Inventory:

All components of this product are listed on either the DSL or the NDSL

STATE REGULATIONS

California, Proposition 65:

When prepared as directed, no components in BioVex® ready-to-use solution are listed on the California Governor's list(s) of Carcinogens, Reproductive Toxicants, and/or Candidate Carcinogens, and the solution contains no known impurities or other trace elements subject to California Prop 65 warning requirements.

Massachusetts Right to Know Hazardous Substance List: Not applicable

New Jersey Right to Know/Special Health Hazards Hazardous Substance List: Not applicable

New Jersey Environmental Hazardous Substance List: Not Listed

Pennsylvania Right to Know Hazardous Substance List: Not applicable

Pennsylvania Right to Know Special Hazardous Substances: Not Listed

Pennsylvania Right to Know Environmental Hazard List: Not Listed

Rhode Island Right to Know Hazardous Substance List: Not Listed

WHMIS - Classifications of Substances:

Not classified

FIFRA Regulations:

BioVex is a registered pesticide under 40 CFR 152.10, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA Reg. No. 9804-1 (BioVex®). User-prepared BioVex® ready-to-use solution must be used in accordance with BioVex® concentrate label instructions.

FIFRA Labeling Requirements:

BioVex® concentrate is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirement under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels non-pesticide chemicals. The hazard information required on

the BioVex® concentrate label is reproduced below. The pesticide label also includes other important information, including directions for use.

FIFRA Signal Word – CAUTION
Harmful if swallowed
Avoid Breathing vapor or spray mist
Causes moderate eye irritation
Remove contaminated clothing and wash clothing before reuse
Wash thoroughly with soap and water after handling
Handlers applying chlorine dioxide must wear gloves
This pesticide is toxic to fish and aquatic invertebrates

SECTION 16: OTHER INFORMATON

NOTICE: Manufacturer believes the information contained herein is accurate; however we make no guarantees with respect to such accuracy and assume no liability in connection with the use of the information contained herein by any party. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED FOR A PARTICULAR PURPOSE OR OTHERWISE

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