CSI ClorDiSys Solutions, Inc.™

"The Chlorine Dioxide People"

Providing you with gaseous chlorine dioxide solutions for your animal facilities needs

Concerned about room decontamination?

- Remove the human factor from the decontamination process.
- Reduce human exposure to disinfecting agents.
- Reduce overall decontamination time.
- Chlorine dioxide offers total process control.

Concerned about your current decontamination process? Our chlorine dioxide system generates a true gas that ensures complete coverage.

- Vapor systems rely on uniform temperature on all room surfaces.
- Spray methods rely on complete coverage or direct contact.
- Formaldehyde requires neutralization and wiping of residues.
- Manual wiping does not ensure complete coverage, is labor intensive and time consuming.
- Aqueous chlorine dioxide methods have more corrosive side affects.

Minidox-M

How can chlorine dioxide save you money?

- Chlorine dioxide gas can be used instead of steam to decontaminate most items in your bulk sterilizer. Reduce steam costs, increase time between gasket change out, and reduce parts wear and tear (steam heat-up and cool down related issues).
- Reduced personnel expenses (chlorine dioxide is a 1 person process).
- Reduce down time (fastest decontamination times available).
- Eliminate cost of contamination related issues (complete decontamination).

The Cloridox or Minidox completely controls the cycle which will thoroughly decontaminate an animal room and its contents. There is no need to remove equipment and decontaminate it in a separate step as with other methods.

The typical chlorine dioxide cycle consists of humidifying the room, injecting gas, holding the gas, then finally exhausting. No manual wiping or further steps are required. In addition, variations in temperature or condensation do not affect the efficacy of chlorine dioxide gas thus simplifying validation efforts.

CD: The SAFEST Fumigant

- **Lower Concentration Levels**
  360ppm compared to 750-1500ppm for VPHP and ~8000-10000ppm for Formaldehyde.
- **Shorter Cycle Times**
  Less time for potentially unsafe conditions to exist.
- **Self Alerting**
  CD has an odor threshold at or below the 8-hour safety level so the user is aware of exposure before dangerous levels are present.
- **Quicker Emergency Aeration**
  CD aerates faster than VPHP and Formaldehyde and requires no neutralization.
- **Non-carcinogenic**
  Chlorine Dioxide Gas is non-carcinogenic.
- **Complete Decontamination**
  As a gas, CD and Formaldehyde are able to reach and penetrate all areas that vapors have trouble reaching. Safety becomes compromised when a decontamination agent is unable to kill the dangerous organisms present in the target chamber.

Applications:

Chlorine dioxide (CD) is ideal for decontaminating rooms, suites, pass-through rooms and chambers, bulk sterilizers, isolators, BSC's, Equipment, animal racks & cages, supplies, etc.

What is Chlorine Dioxide?

Chlorine dioxide (CD) is a greenish-yellow gas and is a single-electron-transfer oxidizing agent with a chlorine-like odor. CD has been recognized since the beginning of the century for its disinfecting properties; these properties have led to the

widespread use of CD in the treatment of drinking water. Beyond this and numerous other aqueous applications, the sporicidal properties of *gaseous* CD were first registered with the US-EPA as a sterilant in 1998. Subsequent to these studies, it has been shown that gaseous CD is a rapid and effective sterilant active against bacteria, yeasts, molds, spores and viruses. The rapid sterilizing activity of CD is present at ambient temperature and at relatively low gas concentration, 0.5 to 30 mg/L.

Chlorine Dioxide is widely used as an antimicrobial and as an oxidizing agent in drinking water, poultry process water, swimming pools, and mouthwash preparations. It is used to sanitize fruit and vegetables and also equipment for food and beverage processing. It is also used to decontaminate life science and research facilities. It is also employed in the pharmaceutical and health care industries to decontaminate rooms, pass-throughs, isolators and also as a sterilant for product and component sterilization. What's more, as an oxidizing agent, it is extensively used to bleach, deodorize, and detoxify a wide variety of materials, including cellulose, paper-pulp, flour, leather, fats and oils, and textiles.

NOTE: Approximately 900,000 tons are used daily.

Process Advantages:

- Biocidal at low concentration and ambient temperature
- Short Cycles
- It is a true gas that distributes rapidly
- Equipment can stay in the room
- No manual wiping required
- Process tolerates temperature fluctuations and gradients
- No liquids
- Process effectiveness independent of dew point and condensation
- No neutralization required
- Efficacious under vacuum or at atmospheric pressure
- No measureable residuals
- Rapid aeration (low-use concentration and minimal adsorption)
- No mixing of solutions

CD Antimicrobial Spectrum of Activity:

Vegetative Bacteria:
- Staphylococcus aureus
- Pseudomonas aeruginosa
- Salmonella cholerasuis
- Mycobacterium smegmatis

(* CD Indicator Organism)

Bacterial Spores:
- Bacillus *atrophaeus* (subtilis) *
- Bacillus stearothermophilus
- Bacillus pumilus
- Clostridium sporogenes

Fungi:
- Aspergillus niger
- Trychophyton mentagrophytes
- Candida albicans

Viruses:
- Polio Type II (non-lipid)
- Herpes simplex Type I (lipid)
- Parvo Virus

At ClorDiSys, we are as *GREEN* as our gas

Our Company:
- Our generator supply chain produces no landfill waste.
- Our operations produce no greenhouse gasses.
- Our facility strictly adheres to energy savings practices.

Our Generation Process:
- The CD generation process uses less electricity than a small power tool.
- Can replace carcinogenic fumigation processes.
- Leaves no residuals or waste to treat or clean up.
- Does not affect the ozone layer.
- Enables the elimination of liquid agents and their disposal.
- Is energy efficient running at ambient temperature and pressure.
- As a replacement for chlorine, CD does not chlorinate organic material, resulting in significant decreases in trihalomethanes (THMs), haloacetic acids (HAAs), chloramines and other chlorinated organic compounds that are thought to be carcinogens.
- Can eliminate the need for energy guzzling steam sterilizers.

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