

Decontamination services:

1. Beta-lactam Decontamination

Beta-lactam antibiotics are by definition a class of antibiotics which contain a beta-lactam ring in their structure. Beta-lactam antibiotics are split into various groups depending upon their base structure, with the main groups being penicillins, carbapenems, cephalosporins, and monobactams. Chlorine dioxide gas decontamination is to inactivate the various beta lactams found within the lab prior to its renovation. Chlorine dioxide gas was used due to its ability to reach all surfaces and allow for the safe renovation and reuse of the laboratory and its equipment afterward. The pharmaceutical manufacturer's requirement of achieving 3-log (99.9%) reduction (maximum post-exposure recovery of 0.1%) was the baseline for acceptance.

2. Biological Safety Cabinet Decontamination

Biological safety cabinets are used to protect the user from harmful agents and provide product and environmental protection. Chlorine Dioxide gas has now been named as an appropriate method for the decontamination of BSCs. Chlorine Dioxide gas can be easily distributed throughout the cabinet and through HEPA filters, decontaminating them as well because of its good penetrability. Chlorine Dioxide gas was proved to effectively decontaminate Biological Safety Cabinets, without any of the negative aspects of using formaldehyde. As such, Chlorine Dioxide gas is now approved under Annex G of NSF/ANSI 49 to be used in the decontamination of Biological Safety Cabinets.

3. Isolator Decontamination

CD is a single-electron, transfer-oxidizing agent. The gas has a chlorine-like odor and a green-yellow color, which enables it to be monitored with an ultraviolet (UV)-vis spectrophotometer. The properties of CD are as follows:

- Chemical formula: ClO_2
- Molecular weight: 67.45 g/mol,
- Melting point: -59°C ,
- Boiling point: $+11^\circ\text{C}$.

CD gas is becoming more widely used because of its efficacy in some difficult and challenging applications. Though it is effective in all isolator and room decontamination applications, more-challenging applications demonstrate CD's superior sterilization capabilities. If an isolator contains several types of complex equipment, such as in a filling line, it is difficult for nongaseous decontaminating agents to reach all the surfaces and crevices effectively. Decontamination with chlorine dioxide (CD) is a very effective and repeatable method. Because it is a true gas at normal-use temperatures, CD can get into crevices and other hard-to-reach areas by quickly and evenly dispersing to reach the same concentration throughout the isolator. As a gas, CD will not condense in colder areas or reduce concentration in warmer areas, as typically occurs with vapors such as hydrogen peroxide.

Applications:

Biological Safety Cabinet



BSL 3-4



Food Industries:



Hospitals:



Isolator

FLOW SCIENCES, INC.

**FS11300 with Glove Ports
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Pharma



Research Laboratory

