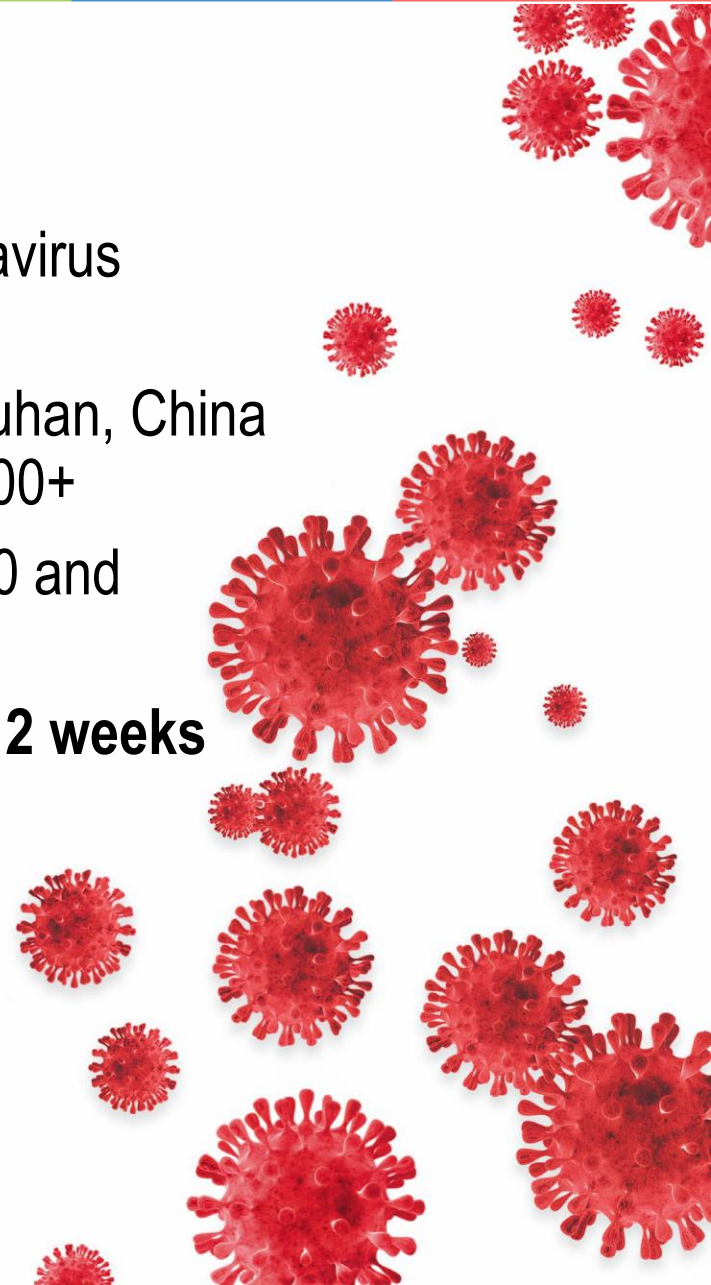




**Virus Decontamination
For Essential Businesses
Using Chlorine Dioxide Gas**

Virus

- The first discovered case of human coronavirus dates back to the 1960's
- COVID-19 first reported in Nov 2019 in Wuhan, China and today has infected more than 2,000,000+
- The first reported case in the US Jan. 2020 and today has infected over 615,000+
- Coronavirus can live on surfaces **for over 2 weeks**
- There is no current vaccine for the virus
- Adhere to CDC guidelines and social distancing





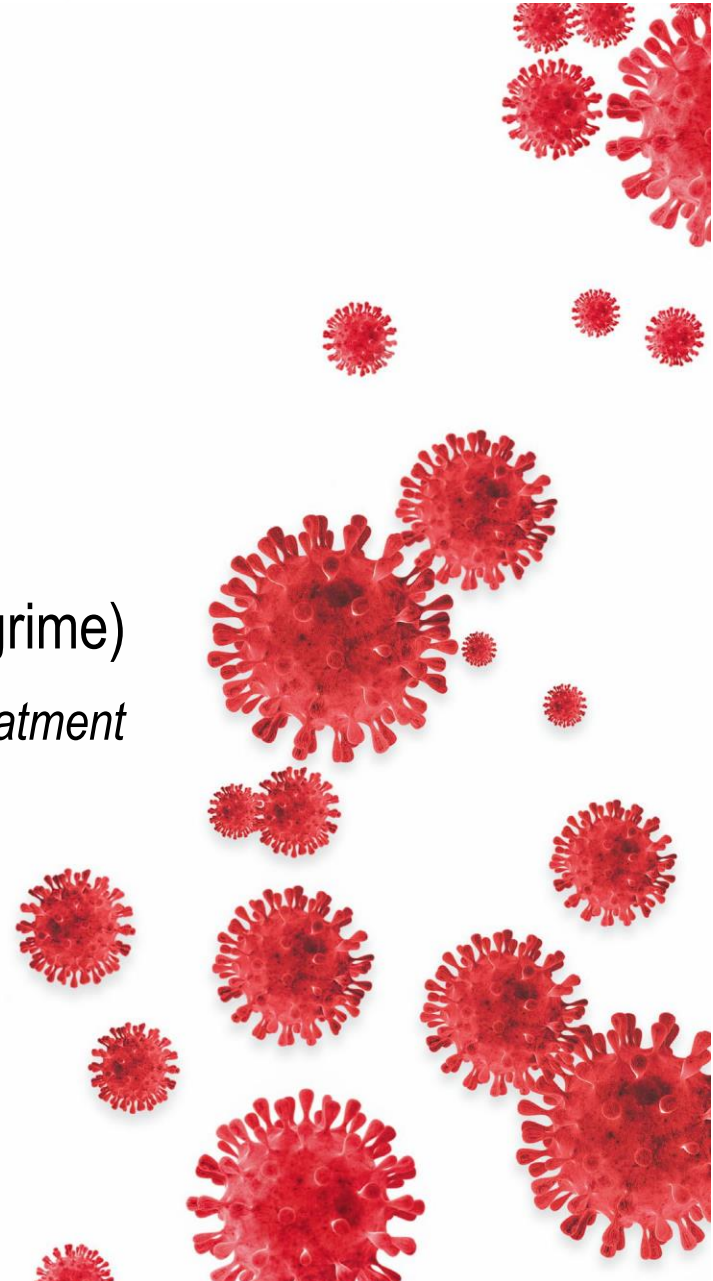
What is Chlorine Dioxide (ClO₂)?

Chemical Properties

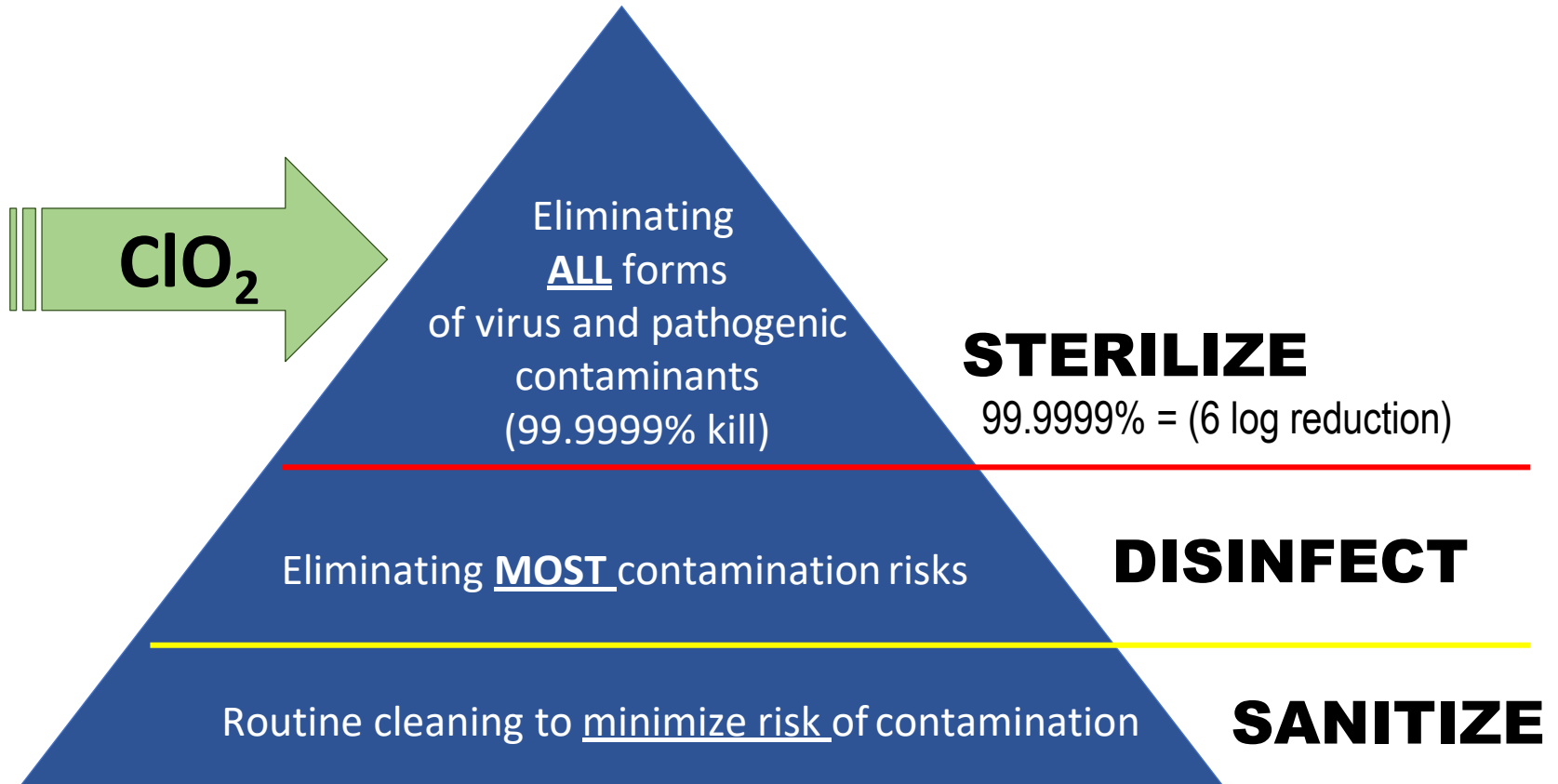
- EPA approved chlorine dioxide as a sterilant in 1988
- A **sterilant** capable of 6-log reduction (99.9999% kill)
- No residue, no post-application cleaning required
- Applied as a **real gas** (Diffuses equally within space)
 - Follows the “ideal gas” law
 - Capable of deep penetration
 - Selective oxidant
- Visible yellow-green gas

What ClO₂ is NOT

- Not a silver bullet
- It will not eliminate a reinfection
- Won't penetrate residues (e.g. dirt and grime)
 - *Surfaces must be clean of residue before treatment*



Chlorine Dioxide is a Sterilant





Why is ClO₂ Gas More Effective?

- A better / safer means of decontamination than wiping, spraying or fogging
- If air can reach a surface, the ClO₂ gas can reach it and do its job
- Minimal material compatibility concerns
- Not poisonous, not carcinogenic. No residual toxic residue.
- Viruses can't build up resistance (destroys RNA/DNA)
- Activities can resume immediately; No post-treatment cleaning

Confidence every surface has been decontaminated

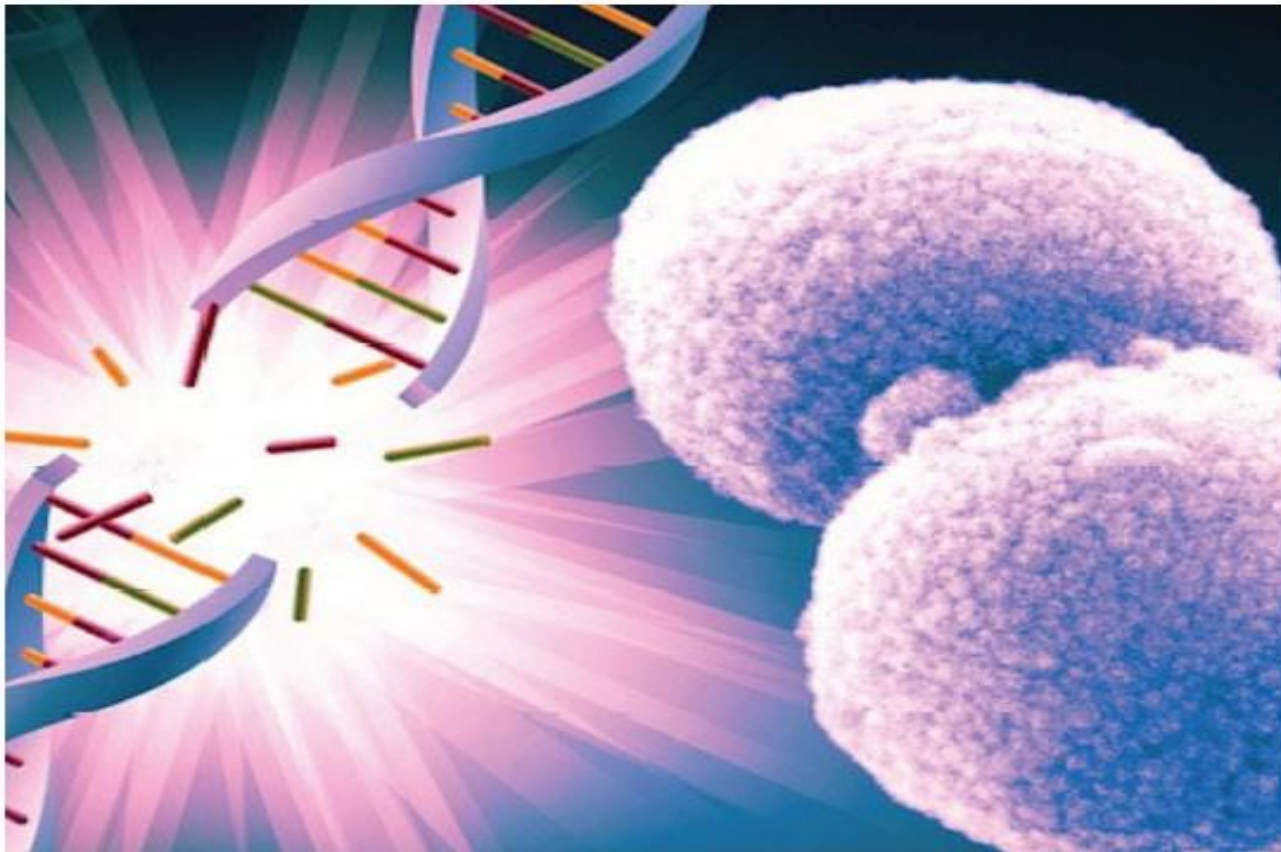


How Do We Prove Sterilization?

- A sterilant **MUST** be able to inactivate spores
 - A spore is a dormant microbe with a hard outer “shell”
 - Viruses and other pathogenic microbes are more easily killed than spores
- Spore ‘strips’ are an industry standard to prove a complete “kill” of all microbial life (sterilization)
 - Sterilization accepted as 99.9999% (aka - 6 log reduction)
 - *G Stearothermophilus*: Typical spore strip used in healthcare, pharmaceuticals and other industries to prove sterilization
- Spore strips are incubated post-treatment
 - No growth = 6 log reduction = sterilization

Destroys Virus RNA/DNA

Viruses cannot build up a resistance





Comparisons

	Gram (-)	Gram (+)	Yeast	Virus	Spore	Corrosion	Coverage
Chlorine Dioxide	😊	😊	😊	😊	😊	😊	😊
Peracetic Acid (PAA)	😊	😊	😊	😊	😊	😞	😐
Industrial Strength Hydrogen Peroxide [1]	😊	😊	😊	😊	😊	😞	😐
Chlorine (Bleach)	😊	😊	😊	😊	😐	😞	😞
Iodophor	😊	😊	😊	😊	😐	😊	😞
Acid Quaternary	😐	😊	😊	😊	😞	😊	😞
Quaternary	😞	😊	😊	😊	😞	😊	😞
Acid Type	😊	😊	😐	😐	😐	😞	😞

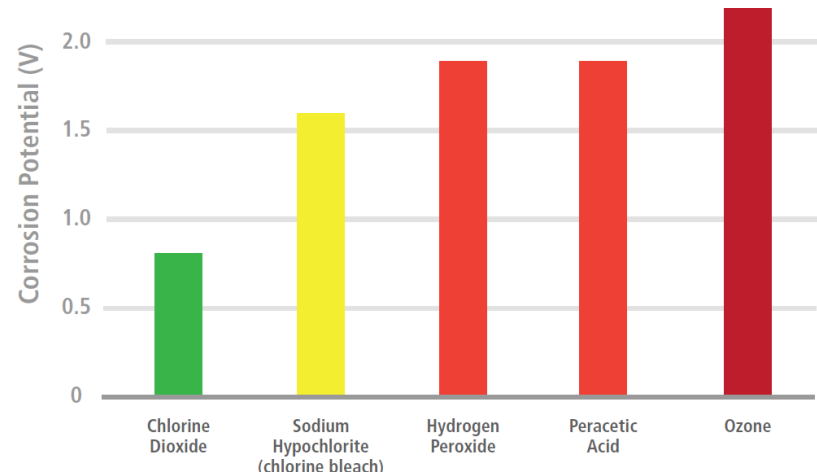
[1] Hydrogen Peroxide shown is industrial strength (35%+), not consumer strength (3%)



Material Compatibility

Less corrosive than other decontamination agents

Source: EPA, July 2011 Homeland Security Research Workshop



Compatible with:

- All office and household building materials and furnishings/carpeting
- Electronics (computers, printers, etc.)
- Heating/Cooling systems
- All metals (unpainted mild steel may show light oxidation)



Example Customized Treatment Options

Service	Full Service	DIY option	Treatment time
Yachts/Aircraft	✓	✓	Overnight**
Hotel Rooms/ Homes	✓	✓	Overnight**
Offices/Restaurants	✓	✓	Overnight**
Police Vehicles	✓	✓	15 minutes**

All surfaces. **Options for Mold

- **Green, Chemical-Free. No residual biocide**
 - **EPA Approved**
- **Confidence every surface has been decontaminated.**
 - **Very competitive pricing versus all other procedures!**



For More Information on Coronavirus chlorine dioxide decontamination:

Ask the Experts:

Contact: 919-971-8463 or 336-639-0888 moldfreenc@gmail.com