
Electrostatic Disinfecting System

Frequently Asked Questions

★ **Q: How does the Electrostatic Spraying Technology work?**

- A: The heart of the air-assisted electrostatic sprayer is the patented MaxCharge “air-atomizing induction-charging” nozzle, which was invented at the University of Georgia. Air and liquid enter the rear of the nozzle separately. The air moves through the nozzle under pressure and meets the liquid at the nozzle tip, causing the formation of spray droplets that are 30 to 60 microns in diameter. At the tip of the nozzle is a tiny electrode which applies an electrical charge to the spray. The electrical charging causes a natural force of attraction between the spray droplets and the target surface, similar to the attraction between items of clothing created by the tumbling of clothes in a dryer. The attraction to the target’s surfaces relates to Coulomb’s Law, which states that any two charged objects will create a force on each other. The charge on the droplets, though small, pulls the spray towards the target at 75 times the force of gravity. The spray droplets can reverse direction, moving against gravity, to coat all sides of an object.

The EDS takes advantage of the principal of physics to achieve better coverage and to lessen the environmental impact by allowing smaller amounts of chemicals to be used. In addition EDS uses air-assistance to help spray delivery. Air is necessary in electrostatic spraying to create tiny droplets (30-60 microns, 900 times smaller than conventional sprayers) that can travel in the turbulent airstream into dense areas.

★ **Q: Have the chemicals been registered with the EPA?**

- A: Yes both Noroxydiff and Vital Oxide have been registered with the EPA and have Material Safety Data Sheets (MSDS) available upon request.

★ **Q: Is the Noroxydiff chemical hazardous, toxic, or corrosive?**

- A: No, Noroxydiff is non-corrosive to the skin and eyes which qualifies the post activated formula for a health and safety rating of 0 (HMIS=0) that exhibits no oral or inhalation toxicities, and only a mild irritation when sprayed directly into the eyes (no permanent damage to the eyes) as validated in the Noroxydiff Activated Formula’s EPA-registration toxicity studies; and is
- Non-oxidizing to materials and is safe for direct application on stainless steels, plastics and polymers exhibiting excellent inhibition corrosion rates as validated in the Noroxydiff Activated Formula’s independent materials compatibility corrosion studies.

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★ **Q: Is the Vital Oxide chemical hazardous, toxic, or corrosive?**

- A: No, Vital Oxide is non-corrosive to the skin and eyes which qualifies the formula for a health and safety rating of 0 (HMIS=0) that exhibits no oral or inhalation toxicities, and only a mild irritation when sprayed directly into the eyes (no permanent damage to the eyes) as validated in the Vital Oxide Formula’s EPA-registration toxicity studies; and is
- Non-oxidizing to materials and is safe for direct application on stainless steels, plastics and polymers exhibiting excellent inhibition corrosion rates as validated in the Vital Oxide Formula’s compatibility corrosion studies.

★ **Q: How does Vital Oxide kill microbes?**

- A: Vital Oxide kills microbes by chemically altering certain amino acids that contain sulfur. The amino acids are important building blocks in the proteins that help to form cell walls. When these proteins are destroyed, the cell wall ruptures and the organism dies. In the chemical reaction, Vital Oxide takes on an electron from the amino acid and reverts back to a chlorite ion. The amino acid gives up an electron, and giving up an electron is what chemists call oxidation.

★ **Q: Is chlorine dioxide (ClO₂) some kind of bleach?**

- A: No. While chlorine dioxide has chlorine in its name, its chemistry is very different from the corrosive chemistry of chlorine bleach. The primary differences are that chlorine dioxide is less caustic, safer and gentler than bleach and many other antiseptics and antimicrobials, plus it remains effective under organic load.

★ **Q: What does it mean that a disinfectant product is "green"?**

- A: USEPA is currently reviewing the way third parties will be able to carry "green" claims on all disinfectant labels. EPA policy at this point does not allow "green" claims to be placed directly on any disinfectant product's label. While Vital Oxide is mild on skin, hard surfaces, and fabric, and will certainly qualify for "green status" when the designation is allowed, we cannot advertise this claim until it is permitted by the EPA. VO is also a powerful disinfectant able to kill some of the toughest and most resistant forms of bacteria and mold. The chemical composition of Vital Oxide is such that it has a minimal impact on the environment and contains no ozone harming volatile compounds (VOC). Further, chlorine bleach produces harmful by-products to the environment including trihalomethanes (THM) and haloacetic acids (HAAS). Vital Oxide breaks down to a simple salt, produces no harmful by-products.

★ **Q: I see that Vital Oxide is used in schools and hospitals, but can I use VO at home?**

- A: Yes. Vital Oxide is an excellent disinfectant to use around the house. Some of the best places to use Vital Oxide at home are in musty basements, in bathrooms where mildew has accumulated (or on surfaces to protect against mold and mildew), and in the kitchen to keep food surfaces clean. Vital Oxide has also been tested on carpets and can be used around the house to sanitize carpets.

★ **Q: What are the advantages of using electrostatic sprayers to disperse Vital Oxide?**

- A: The quickest way to disinfect a hospital room, entire basement, or school gym is by using an electrostatic sprayer that can create a fine mist to treat objects, walls, floors, and ceilings in a matter of just a few minutes. Electrostatic sprayers can dramatically cut the time to disinfect large areas. Vital Oxide is one of the few disinfectants that can be dispersed in this manner because VO is non-corrosive to treated surfaces and objects.

★ **Q: With so many disinfectants and mold removers on the market, why should I choose Vital Oxide?**

- A: The easiest way to answer this question is simply, "not all disinfectants are created equal". When evaluating and comparing disinfectant products, take a close look at their core ingredients. Vital Oxide uses a unique chemical compound called chlorine dioxide. While other competitors and manufacturers have attempted to copy and produce a form of stabilized chlorine dioxide similar to Vital Oxide, our

revolutionary formula is simply unequaled. Chlorine dioxide has been used during Anthrax attacks, in the aftermath of Hurricane Katrina, to purify drinking water, and most recently to kill MRSA in schools and hospitals. Also consider carefully what kind of chemicals you want around your children, employees, patients, students, and close family members. Most disinfectants and mold removers on the market are extremely toxic, but Vital Oxide gives you peace of mind that you are using an effective product that does not come with alarming safety warnings and precautions.

★ **Q. What is the difference between a cleaner and a disinfectant?**

- A: Cleaners are not registered with the EPA and cannot make public health claims on their label such as killing germs, or having any anti-microbial action.

★ **Q. What is a Hospital Disinfectant?**

- A: As part of the Environmental Protection Agency registration process, disinfectant products are put through rigorous testing to prove their efficacy and measure toxicity. The EPA registers three types of disinfectants: Limited, General, and Hospital. All three disinfectants destroy or irreversibly inactivate certain microorganisms on hard, inanimate surfaces, and objects. You can determine a “limited,” “general,” or “hospital” disinfectant by the microorganisms listed on the label.
 - **Limited** – must be supported by efficacy testing against either Salmonella cholerasuis or Staphylococcus aureus. Limited disinfectants are found mostly in household use.
 - **General** – must be supported by efficacy testing against both Salmonella cholerasuis and Staphylococcus aureus. General disinfectants are used in commercial areas.
 - **Hospital** – must be supported by AOAC Use Dilution or AOAC Germicidal Spray efficacy testing against Staphylococcus aureus, Salmonella cholerasuis and Pseudomonas aeruginosa. The bacteria Pseudomonas aeruginosa hides behind biofilm and is difficult to eliminate. Killing this bacteria is required for “Hospital Disinfectant”.

Also as part of this evaluation process, products are assigned to a toxicity category: The categories range from category 1 (highly toxic) to category 4 (no exposure warnings required on the label). Vital Oxide received an EPA category 4 rating for all exposure routes with the exception of mild eye irritation.

★ **Q. What is a Sanitizer?**

- A: A substance, or mixture of substances, intended to reduce the number of microorganisms on inanimate surfaces, in water or air (FIFRA § 4(i) (4) (C) (i)).

★ **Q. What is the difference between a ‘food contact sanitizer’ and a ‘non-food contact sanitizer’?**

- A: food contact sanitizer - At a minimum, reduces the level of Staphylococcus aureus and Escherichia coli by 99.999% on a food contact surface within one minute. A potable water rinse is not allowed after sanitation of a food contact surface.
A non-food contact sanitizer - At a minimum, reduces the level of Staphylococcus aureus and Klebsiella pneumoniae or Enterobacter aerogenes by 99.9% on non-food contact surfaces within 5 minutes.

★ **Q. What does “no rinse required on food contact surface” mean?**

- A: “No rinse required on food contact surfaces” is a safety rating given by NSF International (previously the National Sanitation Foundation). The NSF testing guidelines are a continuation of the USDA product approval and listing program, including the FDA 21. Vital Oxide is rated “no rise required on food contact surfaces” category D2, meaning Vital Oxide is approved to use in commercial or residential kitchens to control bacteria, viruses and mold without the need to wash/rinse the area with water after Vital Oxide is applied.

★ **Q. Can I clean and disinfect at the same time?**

- A: In some cases you can clean and disinfect at the same time, but this depends on how dirty the surfaces you are cleaning/disinfecting - the dirtier the surface the less effective the disinfectant. Disinfectants need to contact the area to disinfect, and cannot do this effectively with a barrier of dirt or grime in the way. Once the dirt has been wiped away the disinfectant can get to work. Under lightly soiled conditions, you can clean and disinfect in the same step with just Vital Oxide. (NOTE: EPA requires all disinfectants carry the following label direction: “For heavily soiled areas, a pre-cleaning step is required.”)

★ **Q: How long does it take to spray a typical patient / resident room with the EDS product?**

- A: It should not take any longer than 3 to 4 minutes to spray the entire room and attached bathroom.

★ **Q: Has the system and/or chemicals been tested in areas such as neonatal or reproduction labs?**

- A: The chemicals have been tested in neonatal environments and accepted by equipment manufacturers such as GE.

★ **Q: Is there still a bio burden after Vital Oxide has been administered?**

- A: Vital Oxide is very effective at eliminating biofilm and prevention of reformation, if applied correctly the bio burden should be eliminated.

★ **Q: Can facilities still use their ATP meter protocol?**

- A: Yes, facilities can still use the ATP meter protocol but should note that ATP is only a measurement of cleanliness not disinfection.

★ **Q: How would the facility’s flora be effected by using Vital Oxide?**

- A: The Molds/Mildews will be killed with no adverse effects on plants or animals. The base active in Vital Oxide is used routinely on vegetables and produce during harvest and transport.

★ **Q: Is it possible for a facility to use Noroxydiff as an additive to a laundering cycle to launder our polyester slings?**

- A: Yes, Noroxydiff can be used in laundering with one of the following suggested protocols which are dependent on the laundering equipment used. (Option B is the preferred method)
 - **Option A:** Pre-treat the slings with Steriplex by spraying them with the ESS Spray Cart, or if this is not available, spray Noroxydiff on the full length of the slings using a Noroxydiff trigger-spray

bottle. Get the slings nice and wet on all sides with Noroxycdiff. Let them sit (soak) for 10 minutes. Then depending on the size of the washing machine add liquid Noroxycdiff when you would normally add bleach. For a standard washing machine (consumer version) I would suggest adding 3 cups of Noroxycdiff to a top loader and 2 cups of Noroxycdiff to a front loader. For a commercial laundry machine you may have to add considerably more Noroxycdiff liquid to the wash cycle. Dry the slings per the manufacturers recommended procedure.

- **Option B (Preferred Method):** Launder the slings as per the normal protocol using only laundry detergent (no bleach and no fabric softeners). At the end of the normal wash cycle select a "SOAK" cycle and add 2 to 3 cups of Steriplex and NO DETERGENT or other chemicals. Run the Soak cycle as per normal (typically 30 minutes). This will provide complete penetration of the Noroxycdiff into the sling material and achieve the desired disinfection. ***The key is to eliminate all other chemicals in the laundering process especially bleach and just wash the slings using a gentle laundry detergent. Then use Noroxycdiff to disinfect which adds about 30 minutes to the washing machine time due to the SOAK cycle. This is the most effective protocol to eliminate C. diff., Norovirus, MRSA etc.*** Dry the slings per the manufacturers recommended procedure.
- **Option C:** Pre-treat the slings with Noroxycdiff by spraying them with the ESS Spray Cart, or if this is not available, spray Noroxycdiff on the full length of the slings using a Noroxycdiff trigger-spray bottle. Get the slings nice and wet on all sides with Noroxycdiff. Let them sit (soak) for 10 minutes. Then put the slings in the laundry machine on the "SOAK" cycle adding only Noroxycdiff liquid and a small amount of laundry detergent. Run the soak cycle (typically 30 minutes). Then run a regular wash cycle without Noroxycdiff but only with mild laundry detergent using NO BLEACH and no softeners or other chemicals. Dry the slings per the manufacturers recommended procedure.

★ **Q: Will the laundering process with Noroxycdiff damage the slings?**

- A: Noroxycdiff is completely harmless to cloth, vinyl, polyester fabrics, all synthetic substrates and fabrics. Noroxycdiff will not cause color fading or staining of fabrics (as bleach does) or cause the fabrics and substrates to become brittle or oxidized. Huntsman Cancer Hospital has been spraying Noroxycdiff onto sofas, daybeds, armchairs, cherry wood veneer cabinets, patient curtains, patient bed mattresses, plastics, electronics etc. for over 81 weeks with **NO** damage, fading or color change to any of the surfaces and substrates mentioned above. Currently facilities are using harsh Chemicals and or VERY high heat to kill the "bugs" but with Noroxycdiff we give them a great alternative that won't damage equipment, cloths, furniture or people.

★ **Q: What will it cost per room to spray the chemicals with the ESS machine?**

- A: The cost varies by chemical used but it is approximately \$.02 per square foot for Vital Oxide and \$.04 per square foot for Noroxycdiff.

★ **Q: What is an approximate cost for following the protocols in an entire facility?**



- A: We have found that a 120 bed facility will spend an estimated \$1300 per month for wipes, spray bottles and bulk chemicals applied through the EDS spraying protocols. This number is an average and will increase or decrease depending on the needs of the facility and the number and severity of outbreaks.