

The Five Pillars Of Safety
In Healthcare

Appendix

Tersano, Inc.[™]

Appendix

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EVALUATING THE CUMULATIVE EFFECTS OF THE PROCESS OF TESTING A HOSPITAL SURFACE DISINFECTANT

MEASURING THE DISINFECTION EFFICACY OF STABILIZED AQUEOUS OZONE (SAO®)

VANCOUVER GENERAL HOSPITAL'S INFECTION CONTROL TEAM
IN PARTNERSHIP WITH CROTHALL HEALTHCARE



METHODOLOGY

- **Test parameters – Count Bacteria After Each Stage:**
 - Time 0
 - After Table is Dry from placement of bacteria
 - After Wiping with Microfibre Cloth for each scenario:
 - Cloth Soaked in Distilled Water
 - Cloth Soaked in AHP
 - Cloth Soaked in Quat
 - Dry Cloth wiped after table sprayed with O_3 (SAO)
- **Sampling:** pre-moistened Copan swabs x 2 swabbed in three directions, placed in D/E neutralizing broth, vortexed and serial ten-fold dilutions with colony counts performed

Fig 1 Algorithm for Overbed Tables inoculation with MRSA or *A. baumannii* then Cleaning w/ Disinfecting with the test solution.

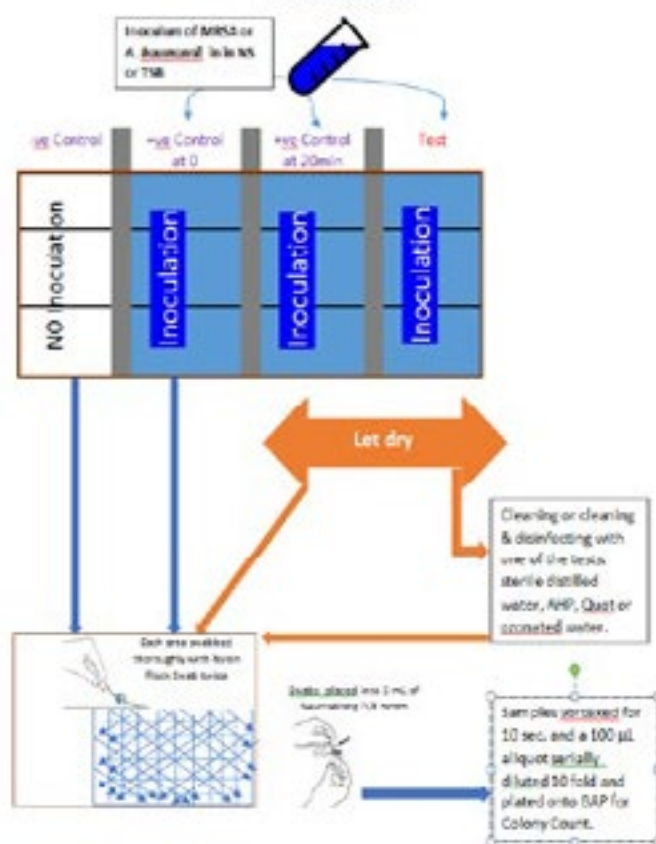


Figure 1. Steps for Inoculation of overbed tables and swabbing.
NS, normal saline; TSB, trypticase soy broth; MRSA, methicillin-resistant *Staphylococcus aureus*; DW, distilled water; AHP, accelerated hydrogen peroxide; Quat, quaternary ammonium.

STEPS FOR INOCULATION OF OVERBED TABLES AND SWABBING

- A. Overbed tables are UV- irradiated to ensure sterilization.
- B. Prepare inoculum
- C. Divide overbed table, and inoculate control and test then wait to dry 20-40 min or sample right away for time 0.
- D. After drying, disinfect and clean the surfaces marked for test
- E. Each area swabbed thoroughly with Nylon Flock Swab after cleaning/disinfection, or without for the dried control
- F. Swabs will be placed into 1 mL of Neutralizing D/E broth
- G. Samples will be vortexed for 10 sec. Then 100 μ L aliquots will be diluted 10 folds and plated onto BAP for Colony Count



Overbed tables used during testing. Notice squares drawn on table outlining where bacteria was placed and swabbed

RESULTS AFTER INOCULATION

Table 1: Using a two- step flock swab sampling method provides a good recovery of the inoculum, especially when the indicator bacteria is diluted in a broth media for a known colony count, then inoculated on the overbed tables, and sampled right away. Normal saline was noted to saturate the flock swabs rapidly. This could explain why the recovery of the saline- diluted inoculum was 2- 3 logs lower than the known inoculum count, or that broth diluent are better than saline in preserving the bacteria.

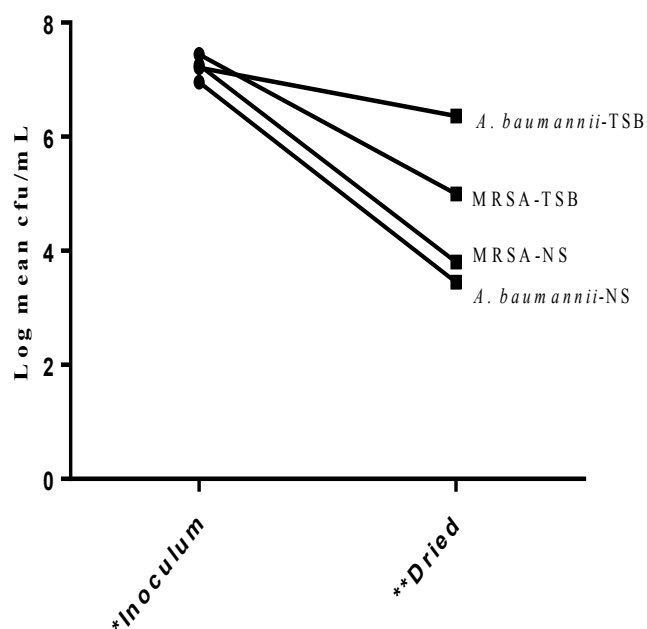
ORGANISM	ORIGINAL INOCULUM*	INOCULUM SAMPLED BEFORE DRYING‡
MRSA		
Saline	1.8×10^7	$7.7 \times 10^4 \pm 7.2 \times 10^4$
Broth	1.9×10^7	$3.3 \times 10^6 \pm 1.2 \times 10^6$
A. BAUMANNII		
Saline	9.1×10^6	$3.8 \times 10^4 \pm 3.8 \times 10^4$
Broth	1.8×10^7	$1 \times 10^7 \pm 2.2 \times 10^6$

*cfu/mL \pm SD, □ n= 1, ‡ n= 3.

CFU, colony forming units; MRSA, methicillin-resistant *Staphylococcus aureus*.

RESULTS AFTER INOCULATION

Figure 2. We can see in figure 2 that desiccation alone (for 20-40 min depending on environmental factors on the day of each experiment) reduces bacterial inoculum by 1-3 logs, depending on the diluent.



* n= 1 for NS and 2 for TSB, ** n= 3 for NS and 6 for TSB.
CFU, colony forming units; MRSA, methicillin-resistant *Staphylococcus aureus*; TSB, Trypticase soy broth; NS, 0.9% normal saline.

RESULTS AFTER INOCULATION

Table 2: We have used growth failure (which is the aerobic colony count of bacteria per cm² of the surface) as a marker of suboptimal disinfection. The UK studies have used 2.5 cfu/ cm², while the US Department of Agriculture uses 5 cfu/ cm²; as a marker of disinfection failure. After wiping with disinfectant or distilled water, as per EVS protocols, the fluid was left to dry, then the square was sampled. Mechanical wiping using microfibers alone can reduce the microbial load to the level of acceptable disinfectant such as AHP and Quat. However, In the case of failure of the technique of mechanical wiping, the classical disinfectants should mitigate that effect by exerting their disinfection properties during their contact time after cessation of mechanical action. In the case of ozonated water (which is approved as a sanitizer), it has met its claims but we can see growth failure according to UK standards. This could be due to the instability of ozonated water, and loss of potential disinfectant properties despite prolonged contact time (some ozonated water squares required more time to dry compared to distilled water).

After mechanical wiping with MF							
ORGANISM	INOCULUM*	AFTER DRYING*†	AFTER DW DRIED	AFTER AHP DRIED†	AFTER QUAT DRIED†	AFTER O ₃ DRIED†	AFTER O ₃ SPRAY DRIED†
MRSA							
Saline	1.8 x 10 ⁷	6.4 x 10 ³ ± 3.2 x 10 ³	1.33 x 10 ± 11.6 gf 0.5/cm ²	0	0	N/A	6 x 10 ± 104 gf 2.4/cm ²
Broth	2.8 x 10 ⁷ ± 1.3 x 10 ⁷	9.9 x 10 ⁴ ± 1.4 x 10 ⁵	0	0	0	0	1.33 x 10 ± 19.7 gf 0.5/cm ²
A. Baumannii							
Saline	9.1 x 10 ⁶	2.8 x 10 ³ ± 4.2 x 10 ²	0	0	0	N/A	0
Broth	1.6 x 10 ⁷ ± 1.9 x 10 ⁶	2.3 x 10 ⁶ ± 1.6 x 10 ⁶	0	0	0	0	8.5 x 10 ± 203 gf 3.4/cm ²

*cfu/mL ± SD (mean % reduction from original inoculum ± SD), gf is growth failure at cfu/ cm². n= 1, ‡ n= . CFU, colony forming units; MRSA, methicillin-resistant *Staphylococcus aureus*; DW, distilled water; AHP, accelerated hydrogen peroxide; Quat, quaternary ammonium; O₃I, ozonated water system tested includes Tersano.

OZONATED WATER FOR HOSPITAL SURFACE DISINFECTION

A PRACTICAL EVALUATION



OZONE RESULTS FOLLOWING INOCULATION AND CLEANING

Table 1: After 60-90 minutes of drying, the surfaces were cleaned +/- disinfected. Ozonated water has met claims for sanitizers but could be considered unreliable as a disinfectant using UK standards for what is considered acceptable for growth failure for hospital surface disinfectant. This could be due to the instability of ozonated water, and loss of potential disinfectant properties despite prolonged contact time (some ozonated water squares required more time to dry compared to distilled water). We can also see that microfiber contribute to reducing the growth failure.

ORGANISM	INOCULUM*	AFTER DRYING*‡	AFTER DW DRIED	AFTER AHP DRIED‡	AFTER O ₃ DRIED‡
MRSA					
	5.5 x 10 ⁷	9.9 x 10 ⁴ ± 1.4 x 10 ⁵			
Using Cloth			9.33 x 10 ± 65.1	1 x 10 ± 17.3	1.07 x 10 ² ± 184.8
Using Microfibre			gf 3.7/cm ²	gf 0.4/cm ²	gf 4.3/cm ²
A. Baumannii					
	2 x 10 ⁷	2.3 x 10 ⁶ ± 1.6 x 10 ⁶			
Saline			0	0	3.33 x 10 ± 57.7 gf 1.3/cm ²
Broth			0	0	0

*cfu/mL ± SD (mean % reduction from original inoculum ± SD), gf is growth failure at cfu/ cm²

□ n= 1, ‡ n= 3.

CFU, colony forming units; MRSA, methicillin-resistant *Staphylococcus aureus*; DW, distilled water; AHP, accelerated hydrogen peroxide.

CONCLUSION

From both studies, we conclude the following:

- The importance of mechanical wiping to reduce the majority of microbial load.
- In the settings where disinfectants are left to dry (dwell time) on hospital surfaces, classical disinfectants exert their property mitigating the effects of failures in mechanical wiping.
- This effect is not significantly noticed in ozonated water, likely due to instability or less residual disinfection ability.
- Tersano SAO System met the claims for sanitizers.
- These studies highlight the real life contribution of classical disinfectants to hospital surface disinfection compared to good mechanical wiping using microfibre cloths.

SAO™ PATHOGEN SUMMARY

TESTING SPONSORED BY TERSANO, INC.

Updated: April 20, 2020

MICRO-ORGANISM	GROUP	STANDARD	REDUCTION	TIME
CLAIM: For use as a food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Microchem Laboratory, Round Rock, TX 12/15/17				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	AOAC 960.09	> 99.999%	30 secs
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	AOAC 960.09	> 99.999%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at MycoScience Labs, Wilmington, CT 4/13/17				
Listeria monocytogenes ATCC 19 115	Bacteria	AOAC 960.09	> 99.999%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 3/17/16 and 2/26/16.				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	ASTM E1153	> 99.9%	30 secs
Salmonella typhimurium (Salmonella) ATCC 1 428	Bacteria	ASTM E1153	> 99.9%	30 secs
CLAIM: For use as a non-food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 4/4/17.				
Enterococcus hirae ATCC 10 541	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Escherichia coli (E. coli) ATCC 10 536	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Pseudomonas aeruginosa ATCC 15 442	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	BS EN 13697:2015	> 99.99%	5 minutes
Candida albicans ATCC 10 231	Yeast	BS EN 13697:2015	> 99.9%	30 minutes
Aspergillus niger (A. niger) ATCC 16 404	Mould	BS EN 13697:2015	> 99.9%	30 minutes
CLAIM: For use as a food-contact sanitizer on hard, non-porous surfaces. Testing conducted at Lapuck Labs, Canton, MA 9/22/17.				
Enterococcus hirae ATCC 10 541	Bacteria	EN 1276	99.999%	5 minutes
Escherichia coli (E. coli) ATCC 10 536	Bacteria	EN 1276	> 99.999%	5 minutes
Pseudomonas aeruginosa ATCC 15 442	Bacteria	EN 1276	99.999%	5 minutes
Staphylococcus aureus (Staph) ATCC 6 538	Bacteria	EN 1276	> 99.999%	5 minutes
CLAIM: Determination of the antiviral effectiveness of SAO using a suspension time-kill procedure against Canine Parvovirus. Testing conducted at Microchem Laboratory, Round Rock, TX.				
Canine Parvovirus ATCC VR-2016	Small, non-enveloped virus	ASTM E1052	99.44%	5 minutes
CLAIM: Virucidal Activity Test.				
Coronavirus MHV-3 (Murine Hepatitis Virus)	Enveloped Virus	EN 14476	> 99.99%	1 minute
Influenza A Virus (H1N1)	Enveloped Virus	EN 14476	> 99.99%	1 minute
Measles Virus	Enveloped Virus	EN 14476	> 99.99%	1 minute
Syncytial Respiratory Virus	Enveloped Virus	EN 14476	> 99.99%	1 minute

NOTE: All standard protocols are modified. BS EN 13697:2015, EN 1276 & EN 14476 standards were done under clean condition protocol.

Tested to meet or exceed TUV, UL and CSA standards. Tersano's aqueous ozone is created by a dispenser regulated as a pesticidal device manufactured at EPA Establishment No. 089093-CAN-001.

lotus, SAO, and iClean mini are a registered trade mark of Tersano Inc. All other marks are property of their respective owners.



1-800-727-8835
www.tersano.com

AQUEOUS OZONE PATHOGEN SUMMARY

TESTING SPONSORED BY TERSANO, INC.

Results from Tersano testing showing the power of aqueous ozone and the time required to destroy various bacteria at a strength of 2 ppm or less.

MICRO-ORGANISM	GROUP	STANDARD	REDUCTION	TIME
ODOR TEST RESULTS Testing conducted at Microbiotest Inc.				
Proteus mirabilis ATCC 7002	Bacteria	Fabric Surface Sanitizer Method	>99%	30 secs
BACTERIA TEST RESULTS Testing conducted at Microbiotest Inc.				
Escherichia coli (E.coli) ATCC 11 229	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs
Listeria monocytogenes (L. monocytogenes) ATCC 19 111	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs
Escherichia coli (S. choleraesuis) ATCC 10 708	Bacteria	Fruit and Vegetable Antibacterial Wash Test	> 99.99%	30 secs

TESTING RESULTS BELOW SPONSORED BY 3RD PARTY ORGANIZATIONS

Results of Aqueous Ozone Tested For Use As a Sanitizer on Non-Porous Surfaces

MICROBE	REDUCTION	TIME	REPORTING ORGANIZATION
Bacteriophage F2	99.9999%	Instantaneously	Journal of Food Sciences
E. faecalis	99.9%	Instantaneously	American Society for Microbiology
Mycobacterium avium	99.9%	Instantaneously	Virginia Tech
Hepatitis A	99%	Instantaneously	Journal of Food Sciences
Rotovirus (HRV)	99.9%	6 seconds	Applied and Environmental Microbiology
Tricophyton Mentagrophytes	99.9999%	30 seconds	Water Quality Products, Inc
Enteric Adenovirus	99.9%	30 seconds	Elsevier Water Research
Feline calicivirus	99.9%	30 seconds	Elsevier Water Research
Norwalk virus	99.9%	30 seconds	Applied and Environmental Microbiology

Aqueous Ozone is approved by the EPA, FDA, USDA, is considered GRAS, and is compliant with the EPA Organic Program as a natural and effective cleaner and sanitizer.



Nonfood Compounds Program
listed on White List as a
no-rinse sanitizer and cleaner



Awarded
Maximum
10 Points



GRAS and compliant
with the EPA
Organic Program



Aqueous ozone approved
as antimicrobial agent
June 26, 2001



Recognized as
environmentally
preferable



USDA/National
Organic Program (NOP)
Ozone Approval

Data compiled from third party independent industry and academic sources, and is for general information purpose only. Kill rates vary with temperature, surface texture, pH and other factors.
*for more detailed kill rate data along with a more thorough and complete list of microbes, please contact your Tersano Customer Representative.
otus is a registered trade mark of Tersano Inc. All other marks are property of their respective owners.



1-800-727-8835
www.terzano.com

UC Davis Chooses Tersano SAO™ for Toxic-Free Cleaning and Sanitizing

Embracing Innovation To Increase Sustainability

In 2018, the **UC Davis Medical Center (UCDMC)** in Sacramento, CA received the *Partner for Change* award from Practice Greenhealth, the nation's leading organization for environmental safety in healthcare. The award reflects UCDMC's commitment to reducing the impact the organization has on the environment. To continue meeting this commitment, the UCDMC environmental services team introduced the Tersano Stabilized Aqueous Ozone (SAO) system for cleaning, sanitizing, and deodorizing. SAO is a simple, safe, and sustainable way for UCDMC to lower its environmental impact even further.

After a months-long trial to gauge the performance of the SAO system, UCDMC committed to transition from traditional cleaning chemicals to chemical-free SAO. "Our housekeepers now use SAO to clean in patient care and public areas. It's working great," explains Kelley Samarcelli, UCDMC's Director of Environmental Services

OVERVIEW

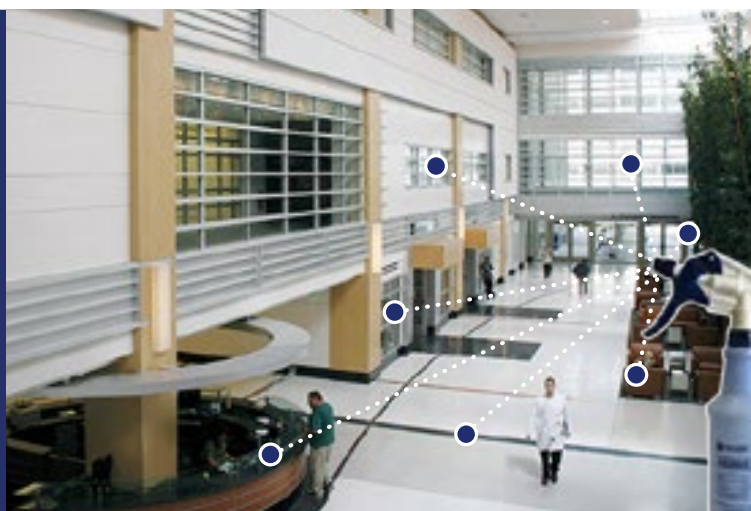
The Tersano SAO system:

- ▶ Is the industry's leading onsite generation system eliminating the purchasing, transporting, distributing, and stocking of cleaning products.
- ▶ Reduces use of chemicals by up to 90%.
- ▶ Decreases labor costs by increasing productivity through an all-in-one solution.
- ▶ Protects virtually all surfaces.
- ▶ Carries SDS of 0-0-0 meaning UCDMC staff are at zero risk from harmful chemicals.



90% of our hospital is cleaned chemical-free with SAO. We use it almost everywhere except in operating rooms and burn units.

Kelley Samarcelli
Director of Hospital
Environmental Services



All-In-One Solution



Website

 www.tersano.com



Opportunity

One of the most prestigious healthcare facilities in the United States, the UC Davis Medical Center is northern California's only Level 1 Trauma Center, serving 33 counties and six million residents. The medical center actively works to reduce overall environmental impact through sustainable products, recycling programs, and other system-wide green initiatives. The environmental services group cleans 24/7 with a staff of 270.

Impact

- ▶ UCDCMC has been able to eliminate three products: a floor cleaner, glass cleaner, and stainless cleaner.
- ▶ Benefits include labour savings, financial savings, increased safety and a greater ability to meet corporate sustainability goals.
- ▶ All-in-one solution has created program and process simplicity.
- ▶ SAO reverts back to water and oxygen and can be disposed down the drain with negatively impacting waterways.

Action

In January of 2018, the environmental services team was encouraged to explore safer, more sustainable maintenance methods to align with UCDCMC corporate stewardship objectives. After researching alternatives, Sammarcelli discovered that a sister healthcare facility in Florida was using SAO and finding success – particularly on the maintenance of floors.

Sammarcelli's team began a trial in February of 2018 and by April had initiated a roll-out with a complete conversion by June. Says Sammarcelli, "This product is definitely safer for our staff to use – with minimal risks. We conducted an ozone exposure study to reassure staff that SAO was safe and the tests confirmed: no risks."



The transition from chemicals to SAO was virtually seamless. The support, training, and education from Tersano was outstanding.

Kelley Sammarcelli

Contact

Melissa McMahon, VP Strategic Accounts

melissam@tersano.com



Compass/Crothall

2020 Infection Prevention Initiative

January 2020



WHO WE ARE

Tersano Inc. is a Canadian privately held innovations company based in Windsor, Ontario, with offices and distribution centers worldwide. Tersano is committed to advancing environmentally safe and healthy **cleaning, sanitizing and deodorizing** technologies.

WHAT WE DO

Tersano develops and manufactures devices that produce **Stabilized Aqueous Ozone (SAO™)**. This patent protected technology is offered to commercial customers globally. SAO solution is an approved cleaner, sanitizer, and deodorizer by multiple regulatory and government agencies.

WHERE WE SERVE

Tersano serves varied clients in several industries including healthcare, education, manufacturing, hospitality, airports, and office facilities world-wide.

Clients include large facility support services, QSRs and building service contractors.

Tersano has been a preferred Foodbuy/Compass supplier since 2013. Tersano's regulatory data is available to all at www.tersano.com and a white paper is available upon request.





Tersano's lotus® PRO device is a compact on-site SAO™ dispenser that fits easily into all janitor closets.

The system provides an effective, innovative and sustainable cleaning, sanitizing, and deodorizing solution.

Tersano's clients continue to contribute to the health of people and planet through the elimination of harsh chemicals.

Tersano eliminates the need to purchase, transport, distribute, store, and restock multiple cleaning products.

SAO technology is patent-protected and revolutionary. It creates an all-in-one solution, approved for sanitizing up to 24 hours and cleaning for 6 days.



SAO-24 Cartridge
& Desiccant Filter



Lotus® PRO
SAO Dispenser



PROscrub
RTD & RTU



Let's see how it works ...



HOW SAO WORKS

This patent-protected technology creates Stabilized Aqueous Ozone (SAO®), an effective, innovative and sustainable cleaning, deodorizing, and sanitizing solution. SAO attacks organic matter, breaking it down into smaller particles and suspending it in solution.

HOW SAO CLEANS

SAO attacks organic matter, primarily carbon-carbon double bonds of organic molecules, breaking it down into smaller particles and suspending it in solution.

- Molecules vary in their reactivity to ozone, depending on the chemical bonds present and other factors.
- SAO reacts mainly with the unprotonated amino group of the acids. The site of attack on cysteine and methionine by O_3 is at the sulfhydryl rather than the amino group. Reactions of O_3 with aliphatic amino acids form nitrate, ammonia, and one or two carbon atom-containing carbonyl and carboxylic by-products. In the ozonolysis of peptides and proteins, oxidation by SAO occurs at the tyrosine, tryptophan, histidine, cysteine, and methionine residues. Oxidation of proteins results in changes in their folding ability and tertiary structures.
- With proteins, SAO causes the oxidation or the ozonolysis of certain amino acid residues, for instance, tryptophan, tyrosine and cysteine.
- Spectrophotometric studies have shown that the amino acids Met, Trp, Tyr, Cys, His, and Phe are most susceptible to oxidation by SAO in aqueous solutions.

HOW SAO KILLS

When applied to surfaces, SAO (ozone in a stabilized, aqueous form), kills the germs that can also cause odours. When ozone (O_3) molecules make contact with the cell wall of bacteria & viruses, tiny holes are created. This reaction is called oxidation. Oxidation is germ killing.

COVID-19

When used as directed, SAO® kills >99.99% of MHV-3, the globally approved testing surrogate for SARS-Cov-2.



Step 1

Oxygen (O_2) from the air is safely turned into O_3 , then infused into ordinary cold tap water.



Step 2

SAO is attracted to germs, soils, and bacteria and quickly eliminates contaminants.



Step 3

SAO cleans for days and safely reverts back to water and O_2 .





EFFICIENCY

TERSANO SAO™ IS AN **ALL-IN-ONE** CLEANING SOLUTION

Eliminates the need to purchase, transport, distribute, store and restock inventory of multiple cleaning and sanitizing products.

APPLICATIONS

- | | |
|--------------------------|------------------------|
| ✓ Floor & Carpet | ✓ Hardwood, Vinyl |
| ✓ Stone, Marble, Ceramic | ✓ Walls |
| ✓ Hardwood, Vinyl | ✓ Seatings and Tables |
| ✓ Walls | ✓ External Terraces |
| ✓ Floor & Carpet | ✓ TV, Computer Screens |
| ✓ Stone, Marble, Ceramic | ✓ Hand Rails |
| ✓ Sinks and Faucets | ✓ Glass and Mirrors |

**Note: SAO is an approved 5-log reduction sanitizer.
A hospital-grade disinfectant may be required in select situations.*

MULTIPLE CHEMICALS

BEFORE



AFTER





Tersano SAO System's Cost Savings

Global clients report cost savings in:

- Labour
- Water
- Natural Resources
- Time
- Equipment
- Productivity
- Expenditure



Tersano SAO System's Indirect Cost Savings

Through a simplified and standardized approach to cleaning, Tersano provides indirect cost savings. Global clients report:

- **TIME SAVINGS.** By eliminating multiple products to an all-in-one solution, Tersano systems offer labour reduction in SDS management and training times.
- **WATER SAVINGS.** SAO is a no-rinse cleaner and sanitizer, thereby reducing cleaning time for staff.
- **IMPROVED SAFETY.** SAO is residue-free providing an improved slip coefficient rating and reducing the potential for slip & falls.
- **HIGHER EFFICIENCY & GREATER PRODUCTIVITY.** By choosing on-site generation through an SAO dispenser, clients eliminate the need for multiple chemicals increasing productivity and lowering labor costs.
- **MITIGATE RISKS.** SDS is 0-0-0. No fear of accidental splashes or ingestion from the exposure to multiple chemicals to staff and guests.
- **EQUIPMENT LONGEVITY.** SAO is non-corrosive to all surfaces. Floor finishes, cleaning equipment and decor lasts longer.





SUSTAINABILITY

BENEFIT OF SWITCHING FROM CHEMICALS TO SAO

By using on-site generation, carbon footprint is dramatically great reduced. Less packaging and emissions translates to less in our landfills and to the planet.



SAO is currently eliminating over
672,453,000 LITRES* or
4,229,264 BARRELS OF CHEMICALS
 from going down the drain or into a landfill each year

*as of January 2020

SAO reverts back to water and oxygen, and can be disposed down the drain without negatively impacting our waterways.



All cartridges are delivered with a
PRE-PAID return label for
 Tersano's Recycling Program.





Thank you! Tersano provides a non-toxic and safe solution to clients globally:



Crothall Provides AdventHealth with Toxic-Free Cleaning and Sanitizing with Tersano SAO™

Driven to reduce the use of cleaning chemicals throughout **AdventHealth Orlando**, Crothall Healthcare introduced the Tersano Stabilized Aqueous Ozone (SAO™) system for cleaning, sanitizing and deodorizing. The SAO solution is sustainable and safe, and would provide the Florida Hospital with a healthier working environment.

As an outcome of the Compass Support Service Multi-Sector Products Review, inclusive of Healthcare, Education and B & I, Crothall Healthcare conducted a month long trial of SAO at its AdventHealth Orlando location. The objective of the trial was to demonstrate a level of cleaning on par with or better than the hospital's current chemical solution—while also simplifying the process, increasing savings, and decreasing the impact the hospital's cleaning program has on its employees, patients, and guests.

OVERVIEW

The Tersano SAO system:

- ▶ Uses on-site generation thereby eliminating the need to purchase, transport, distribute and stock multiple cleaning products.
- ▶ Dramatically reduces traditional chemical usage by replacing sanitizers, deodorizers, and stainless steel, glass, general purpose, carpet, and floor cleaners.
- ▶ Increases productivity through an all-in-one solution thereby lowering labour costs.
- ▶ Is non-corrosive and safe for any surface.
- ▶ Has SDS of 0-0-0. AdventHealth staff are at **zero** risk of harm from toxic chemical exposure.



We simply have fewer chemicals to manage. We even use it on our floors. In the past, we would just be able to clean them. Now we can clean and sanitize them simultaneously.

Chris Bruno
Director of Operations and
Environmental Services
AdventHealth Orlando



All-In-One Solution



Website
 www.tersano.com



Opportunity

Led by the Director of Operations and Environmental Services, Chris Bruno, Crothall Healthcare provides environmental services to the sprawling AdventHealth Orlando campus. With four main buildings and over 1,300 patient beds, Bruno directs over 350 employees and has a strategic objective to bring operational efficiencies and cost savings to AdventHealth and, ultimately, Crothall.

Impact

- ▶ SAO reverts back to water and oxygen and can be disposed down the drain without negatively impacting waterways.
- ▶ AdventHealth trial reduced the number of chemicals in use dramatically.
- ▶ Switch to SAO helps AdventHealth maintain their Silver LEED rating for one of their newer buildings.
- ▶ Using SAO led to program and process simplicity.
- ▶ Best of all, no sacrifice in any cleaning performance.

Action

In late 2014, Bruno was introduced to the SAO dispenser at an industry trade show he was attending. Bruno and his team started the test and, while finding no resistance from the clinical side of the hospital, he did receive some caution from his housekeeping staff. He recalls, “We did have minor resistance from the staff just because of how new and different it is from the chemicals they were used to.”

Bruno began by cleaning glass, stainless, mirrors and more of the general purpose spray-bottle cleaning areas. Over time, his team began using SAO in their walk-behind scrubbers and carpet cleaners – and enjoyed positive results here as well.

Notes Bruno, “It was amazing to see what it did on carpet. It’s outstanding.”



We were able to replace four chemicals by switching to Tersano.

Today 90% of our cleaning at the hospital is done with SAO. We use Tersano and a disinfectant. That's it.

Chris Bruno

Contact

Melissa McMahon, VP Strategic Accounts

melissam@tersano.com

Morrison Community Living Brings Innovation to Sharon Towers

Tersano SAO™ Toxic-Free Alternative for Cleaning and Sanitizing

Driven to bring innovation, savings and sustainability to clients, the Compass Support Service team at **Morrison Community Living** introduced the Tersano Stabilized Aqueous Ozone (SAO™) system for cleaning, sanitizing and deodorizing. The SAO solution is sustainable and safe, and would provide Sharon Towers with a healthier working environment.

Morrison Community Living, a healthcare division of Compass Group North America conducted a six-month trial of SAO at its Sharon Towers location in Charlotte, NC. The objective of the trial was to demonstrate a level of cleaning on par with or better than the Community's current chemical solution—while also being able to simplify the process, increase savings, and decrease the impact Morrison's chemicals had on its staff, residents, and guests.

OVERVIEW

The Tersano SAO system:

- ▶ Uses on-site generation thereby eliminating the need to purchase, transport, distribute and stock multiple cleaning products.
- ▶ Dramatically reduces traditional chemical usage by replacing sanitizers, deodorizers, and stainless steel, glass, general purpose, carpet, and floor cleaners.
- ▶ Increases productivity through an all-in-one solution thereby lowering labour costs.
- ▶ Is non-corrosive and safe for any surface.
- ▶ Has SDS of 0-0-0. Sharon Towers staff are at **zero** risk of harm from toxic chemical exposure.



Our three-month savings versus our previous chemical spend was over 38%. That annualizes to a minimum 30% savings every year from no longer buying chemicals.

Curt Deeter
Regional Director
Compass' Community Works



All-In-One Solution



Website

www.tersano.com



Opportunity

Led by Senior Director Jeff Cline and Regional Directors Curt Deeter and Jesse Cash, Compass' Community Works division offers environmental services, light maintenance, groundskeeping, and housekeeping services at its Morrison, Flik, and Touchpoint senior living communities across the U.S. One of the team's strategic objectives is to bring operational efficiencies and cost savings to these 94 Compass accounts.

Impact

- ▶ SAO reverts back to water and oxygen and can be disposed down the drain without negatively impacting waterways.
- ▶ The Sharon Towers trial reduced the number of chemicals in use dramatically, leaving only a bowl disinfectant as the only traditional chemical.
- ▶ Program and process simplicity has been a benefit of using SAO.
- ▶ Storage areas are now streamlined with less inventory to manage and track.
- ▶ Staff with chemical sensitivities benefited from working in a healthier and safer environment.

Action

In late 2014, Cline and his team participated in a new products review meeting where they were introduced to Tersano's stabilized aqueous ozone (SAO). "We had long been trying to reduce our chemical usage as a way to increase our profitability and sustainability," explains Cline. "We had become disappointed in the cost and effectiveness of green products. We quickly discovered that anytime we were introduced to a green-label product, it would be more expensive and less effective."

Cline's team tried cleaning alternatives like accelerated hydrogen peroxide and salt-based hypochlorous systems. None felt like the right fit. Recalls Cash, "One of the Tersano reps introduced us to their system and I immediately loved the compactness of the machine."



At Sharon we hoped this could be a measurable way to cut costs. We noticed great results quickly and over time we were pleasantly surprised to discover we have found an effective cleaning agent that also delivered cost savings

Jesse Cash
Regional Director
Compass' Community Works

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ENVIRONMENTAL UPDATE

EPA Provides New Guidance for Pesticide Devices Making Coronavirus Claims

June 5, 2020

On June 1, the U.S. Environmental Protection Agency (EPA) issued a compliance advisory ([What You Need to Know Regarding Products Making Claims to Kill the Coronavirus Causing COVID-19](#)) that addresses pesticide devices that make efficacy claims related to SARS-CoV-2 (hereinafter, the coronavirus), the virus that causes COVID-19. EPA has jurisdiction over such devices under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the federal pesticide law. The compliance advisory provides new guidelines for the testing and other data needed to support claims that pesticide devices such as ultraviolet (UV) lights can kill the coronavirus, an area that has been the source of significant confusion and uncertainty for the regulated community over the last few months. This is particularly significant for companies seeking to develop UV and other technologies to fight the coronavirus, as EPA does not provide premarket approval or review of pesticide devices such as UV lights.

The compliance advisory highlights a key difference under federal pesticide law between “pesticides” (which kill pests using substances such as chemicals) and “devices” (which kill pests using an “instrument or contrivance” such as a mechanical device or UV light). Namely pesticides are subject to premarket review and registration by EPA, while pesticide devices are not. Nonetheless, both pesticides and devices must be manufactured in EPA-registered establishments (regardless of whether they are manufactured domestically or imported), and the pesticidal claims made with respect to both pesticides and devices must be supported by efficacy data.

The compliance advisory states that manufacturers of pesticide devices (e.g., UV light units and ozone generators) may be able to make coronavirus efficacy claims if the device has been tested against the coronavirus itself or on harder-to-kill viruses. EPA has not previously issued guidance on the issue of efficacy testing for devices; it had been thought that pesticide devices may make claims related to the coronavirus only if the devices had been tested on the coronavirus itself. Efficacy testing on the coronavirus, however, remains difficult given that SARS-CoV-2 is still not widely available in commercial laboratories. Thus, manufacturers, importers, and retailers should be cautious with any pesticidal device making claims to kill the coronavirus.

EPA does not provide a list of “harder-to-kill” viruses in this compliance advisory. However, the coronavirus is categorized by the U.S. Centers for Disease Control (CDC) as an “enveloped virus.” Per the Spaulding

<https://www.sidley.com/en/insights/newsupdates/2020/06/epa-provides-new-guidance-for-pesticide-devices-making-coronavirus-claims>

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Classification model, used by the CDC and referenced in EPA's 2016 [Emerging Viral Pathogen Guidance for Antimicrobial Pesticides](#), viruses that are categorized as "small, non-enveloped" or "large, non-enveloped" may be considered harder to kill than enveloped viruses like the coronavirus.

While pesticide devices, unlike pesticide products, are not required to undergo EPA premarket review and approval, device manufacturers are still prohibited from making any "false or misleading" claims in labeling or marketing materials. All testing done by a device manufacturer on coronavirus or on harder-to-kill viruses must be sufficient to support the efficacy or safety claims being made on device labeling or marketing (and be maintained in a data file for inspection as needed).

The advisory also reiterates EPA's current policies regarding surface disinfecting pesticides that make coronavirus claims. Pesticides, unlike pesticide devices, require manufacturers to submit efficacy and testing data as well as proposed product labeling to EPA for review and approval before the product can be sold. Since January, EPA has been allowing pesticide product manufacturers to make limited, off-label claims of efficacy related to the coronavirus consistent with EPA's 2016 Emerging Viral Pathogen Guidance, referenced above. EPA has also been maintaining a living list (called List N) of pesticide products authorized to make such claims about the coronavirus. Pesticide devices are not included on List N because EPA does not review or approve devices or their efficacy claims or label language.

The compliance advisory also reiterates EPA's commitment to bringing enforcement actions against pesticides and device manufacturers, importers, and retailers for making false and/or misleading claims related to the coronavirus, stating, "EPA is working with e-commerce platforms to remove/prohibit these fraudulent and/or otherwise inefficacious products from the marketplace [and] EPA is also coordinating with the U.S. Department of Justice and other federal partners to bring the full force of the law against those selling or otherwise distributing violative products." See our prior coverage of EPA's enforcement response [here](#).

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