HYDROGEN PEROXIDE TECHNOLOGIES

COMPETITIVE ANALYSIS

For International Use

				
	SteraMist™ BIT™ **Activated Ionized Hydrogen Peroxide (AIHP)** Innovative technology developed by DARPA* that converts dilute Hydrogen Peroxide into a Reactive Oxygen Species (ROS)	**Bioquell** **Hydrogen Peroxide Vapour (HPV)** Concentrated Hydrogen Peroxide (35%) solution is vaporized under controlled humidity (dry, but >30% RH)	**Sanosil** **HALO Fogging Unit (aHP)** Nebulizers to disperse Sanosil solution (dilute Hydrogen Peroxide and silver anions)	**Steris (Vaprox)** **Vaporized Hydrogen Peroxide (VHP)** Concentrated Hydrogen Peroxide 35% solution is vaporized under controlled humidity (dry, but >30% RH and less than 60% RH
CHEMICAL/ACTIVE INGREDIENTS (SDS)	Hydrogen Peroxide less than 8%	Hydrogen Peroxide 35% H_2O	Hydrogen Peroxide 5% Silver 0.01%	Hydrogen Peroxide 35%
APPLICATION TIME	SteraMist™ Surface – 5 sec SteraMist™ Environment – Approx. 8 min to reach a concentration of .5 ml per cubic foot to treat a 1200 ft3 space	15 minutes	25 minutes	90 minutes
CONTACT TIME	SteraMist™ Surface - 7 min SteraMist™ Environment - 15 min	150 minutes 10 grams per minute 500 ft^2 room	140 minutes to treat a 191.5ft2 or 75m3 space	Minimum 90 minutes under optimized conditions
AERATION TIME	SteraMist™ Surface – N/A SteraMist™ Environment – as low as 15 min Dependent on room size, environmental Conditions, and scrubbers (PortaSens used to check for concentration of < 1 ppm or lower)	5 Hours	60 minutes + an additional 60 minutes after H2O2 is below 1 ppm	6 hours 44 minutes
KILL LEVEL (BASED ON EPA AND INDEPENDENT TESTS)	> 99.9999%	>99.9999%	99.99% possible with longer treatment time	>99.9999%
RH DEPENDENT	Low	High	Low	High
TEMPERATURE DEPENDENCY	Low	Moderate	Low	Moderate to High
POTENTIAL DAMAGE TO EQUIPMENT	None	High (Paint Blistering)	Moderate (Silver anion), Silver build up over time should have negative effects on delicate medical equipment	High (Paint Blistering)

CORROSION OF METALS	Low	High	Moderate	High
BY-PRODUCTS	Evaporated Oxygen and Water	Evaporated Oxygen and Water	Silver Cations, Oxygen, and Water	Evaporated Oxygen and Water
HMIS*/NFPA*				
HEALTH HAZARD	HMIS: 0	HMIS: 3	NFPA: 1	NFPA 704 Hazard Rating: 2
FLAMMABILITY	HMIS: 0	HMIS: 0	NFPA: 0	NFPA 704 Hazard Rating: 0
REACTIVITY	HMIS: 0	HMIS: 1	NFPA: 0	NFPA 704 Hazard Rating: 1
PPE*	SteraMist™ Surface | Bullard PAPR - 5 min don / 5 min doff SteraMist™ Environment - HMIS: H	SCBA - in excess of IDLH 75 ppm	SCBA - in excess of IDLH 75 ppm	SCBA -in excess of IDLH 75 ppm
COMPETITIVE ANALYSIS * Defense Advanced Research Projects Agency (DARPA) * Hazardous Materials Identification System (HMIS) * National Fire Protection Agency (NFPA)	• Complete Room Treatment Time: SteraMist™ Surface 7 - 20 min (varies with room size and room content) | SteraMist™ Environment 75 min (includes room prep, application, contact, and aeration times) • Leaves no residue • BIT™ Solution can be stored on a supply cabinet shelf and requires no shipping precautions • No mixing or diluting required • Safe for use on delicate medical equipment & electronic devices • The SteraMist™ Surface unit is a portable, hand held, point and spray application. Room does not need to be sealed • The SteraMist™ Environment System is fully portable, configurable to treat multiple spaces simultaneously, room must be unoccupied and sealed • EPA registered (registration number 90150-2) for use as a hospital-healthcare disinfectant • Broad-spectrum, six-log, independent (non EPA) lab testing, study data, and field clinical data including U.S. Government anthrax testing • Atmospheric Cold Plasma Arc converts a low concentrated Hydrogen Peroxide to Reactive Oxygen Species (ROS)	• Concentrated product • Must be stored in a hazardous materials cabinet • Device gives off an invisible vapor • Considered HAZMAT - potential shipping issues • Cannot be shipped by air • Room to be treated has to under-go pre and post room humidity changes • Room must be sealed and vents shut down • Solution is EPA approved as a sporicide solution • Initially EPA approved to control slime. EPA label amended for room decontamination • Cannot fulfill CDC protocol for EBOLA patient tracking decontamination • The 30% Hydrogen Peroxide solution is what produces VHP	• Textile materials such as curtains, drapes, bed linens, covering vents, all porous fabrics/items must be removed • Not to be used in HVAC system • For use in rooms 1100 ft^3 and up to 3700 ft^3 • Cannot be used in rooms smaller than 1100 ft^3 • Must wait 110 minutes minimum before re-entry, larger rooms longer wait • 24 oz. of solution to treat a 3664 ft^3 room • Room must be sealed and vents shut down • Room cannot have higher than 8 foot ceiling • New claim for six-log kill on C.diff only in certain room sizes • Potential negative effects on delicate medical equipment	• Vaprox® is 35% Hydrogen Peroxide • Room must be sealed • Low temperature dry vapor • Humidity must be lowered to 60% • 4,000 ft^3 when applied at a minimum of 250 ppm for 90 minutes or 4,000 ft^3 when applied at a minimum of 400 ppm for 30 minutes • Hazardous to ship by air • Requires use of 2.2 grams per minute • Must use oscillating fans • 950 ml cartridges • Vaprox® Hydrogen Peroxide Sterilant not for use as a terminal sterilant or high-level disinfectant for reprocessing of critical or semi-critical medical devices