



How Nature Cleans®

MEDICAL INDUSTRY PATHOGEN CHART



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Testing of Advanced Photocatalytic Oxidation Technology by Independent Laboratories, Universities & Facilities

Pathogen	Descriptive Examples	Results	Time Tested	Test Method
Norovirus	Norwalk virus	99% reduction	72 hours*	Stainless, carpet & cloth
	JungEun Lee et al: Applied Microbiology 2008, Inactivation of marine Norovirus with TiO ₂ In vivo shelter test: Aurora Animal Hospital, Dr. Nicole Bartley, DVM; State of Colorado Expert Witness for Veterinary Medicine; 3 month, double blind study.			
Methicillin-resistant Staphylococcus aureus	MRSA	99.9% reduction	80 minutes	On glass coupons
	Lab Name: In vitro - P.S.M. Dunlop et al: University of Ulster, Inactivation of clinically relevant pathogens by photocatalytic coatings; published Journal of Photochemistry & Photobiology			
Staphylococcus aureus	S. aureus	99.9% reduction	90 minutes	On glass coupons
	Lab Name: In vitro - P.S.M. Dunlop et al: University of Ulster, Inactivation of clinically relevant pathogens by photocatalytic coatings; published Journal of Photochemistry & Photobiology			
Clostridium difficile	C. diff	99.9% reduction	90 minutes	On glass coupons
	Lab Name: In vitro - P.S.M. Dunlop et al: University of Ulster, Inactivation of clinically relevant pathogens by photocatalytic coatings; published Journal of Photochemistry & Photobiology			
Listeria monocytogenes	Listeria	99.9% reduction	90 minutes	On stainless & glass coupons
	Nikos G. Chhrianiopoulos et al: Use of titanium dioxide (TiO ₂) as alternative means for Listeria monocytogenes biofilm disinfection in food processing; Hellenic Agricultural Organization			
Group A streptococci	GAS	97.4% reduction	100 minutes	On metal coupons
	Jung- Yoon Choi et al: (28) Photocatalytic Antibacterial Effect of TiO ₂ Film of TiAg on Streptococcus mutans; International Journal of Orthodontics and Dentofacial Orthopedics May 2009			
Pseudomonas aeruginosa	P. aeruginosa	99.9% reduction	24 hours	On coated glass coupons
	Ryuichi Nakano, et al: Broad Spectrum Microbicidal Activity of Photocatalysis by TiO ₂ ; Teiko University Department of Microbiology and Immunology, Japan 2013			
Streptococcus pneumonia	S. pneumonia	99.9% reduction	24 hours	On coated glass coupons
	Ryuichi Nakano, et al: Broad Spectrum Microbicidal Activity of Photocatalysis by TiO ₂ ; Teiko University Department of Microbiology and Immunology, Japan 2013			
Bacillus anthracis	Anthrax	> 90% reduction	300 minutes	Undefined
	R. Armon et al: Disinfection of Bacillus spp. Spores in drinking water by TiO ₂ photocatalysis as a model for Bacillus anthracis: Technicon, Haifa, Israel			
H1N1	Swine flu	99.9% reduction	20 min	On glass coupons
	Agata Markowska et al: Effect of Water Activity and Titania P25 Photocatalyst on Inactivation of Pathogenic Fungi; Institute of Inorganic Technology and Environmental Engineering, Poland			
H5N1	Bird flu	99.9% reduction	20 min	On glass plate
	Chantal Guillard et al: Microbiological disinfection of water and air by photocatalysis; Universite Claude-bernard Lyon-1; C R Chem 2008 January-February 11(1): 107-108			
Stachybotrys chartarum	Fungus and Spores	100% reduction	3 hours	MEA Slants
	Agata Markowska et al: Effect of Water Activity and Titania P25 Photocatalyst on Inactivation of Pathogenic Fungi; Institute of Inorganic Technology and Environmental Engineering, Poland			
Candida albicans	Molds and Spores	99% reduction		On Plexiglas coupons
	Klaus P. Kuhn et al: Disinfection of Surfaces by photocatalytic oxidation with titanium dioxide and UVA light; University of Heidelberg, Germany 2003, Chemosphere publication			
Volatile Organic Compounds	Over 60 VOCs	Average of 91% reduction	24 hours	VOC in enclosure
	Lab Name : In vitro - Avomeen Analytical Services, Ann Arbor, MI, FDA, cGMP, DEA, ACIL. Lab Name: In vitro - NREL, FDA & EPA approved, Dr. D. Tompkins, et al., summary of testing on PCO technology.			
Volatile Inorganic Compounds	Ammonia/ Nox/ H₂S/ Sox/ O₃	Average of 89% reduction	24 hours	VIC in enclosure
	Lab Name: In vitro - NREL, FDA & EPA approved, Dr. D. Tompkins, et al., summary of testing on PCO technology.			
Odors	Alkanes, Acetone, Alcohols, Ketones	Average of 87% reduction	12 hours*	Gas in enclosure
	Lab Name: In vitro - North Carolina State University, EPA & FDA approved, Dr. J. Peral, et al., testing on PCO technology.* In vivo testing: C&W Engineering, Ocala, FL - Showed pet odors reduced by 72%. Used 10 person test panel with two 500 ft ³ test chambers.			
Basidiospores	Allergens, Fungus, Ringworm	100% reduction	24 days	On glass coupons
	In vivo shelter test: Aurora Animal Hospital, Dr. Nicole Bartley, DVM; State of Colorado Expert Witness for Veterinary Medicine; 3 month, double blind study.			
Allergens	Pet dander, dust mite antigens	Average of 91% reduction	70 minutes	In solution
	Lab Name: In vitro - University of Florida, EPA & FDA approved, Dr. D. Goswami; Mie University, Japan, N. Nishikawa, et al.; testing on PCO technology.			

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Inactivation of pathogens used advanced photocatalytic oxidation techniques employed in UVAIRx products, which use patented techniques. Much testing used products labeled either PHI® or RCI. All tests were done using standard and accepted test methods employed by the fully accredited test laboratories.

* ALL UVAIRx UNITS ARE ETL, UL, FCC & CE APPROVED * UNITS ARE 12 VDC & ENERGY STAR COMPLIANT *

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