Navajo Nation Gaming Enterprise Pathogen Protection Proposal

Clean Air USA

Pathogen Control Technology

UVANGEL®

www.CleanAirUSA.com

UV Angel Air uses years of advanced clinical research in UV-C ultraviolet light to create a truly modern and effective air treatment system.

Clinically proven virus elimination rates up to 99.99%

Designed directly into a traditional ceiling light fixture, UV Angel Air is an unobtrusive environmental treatment system that uses ultraviolet light to automatically and continually treat the air.

UVANGEL®

- Using patented UV-C treatment technology, air is quietly drawn into a sealed UV-C air chamber with a series of fans and filters

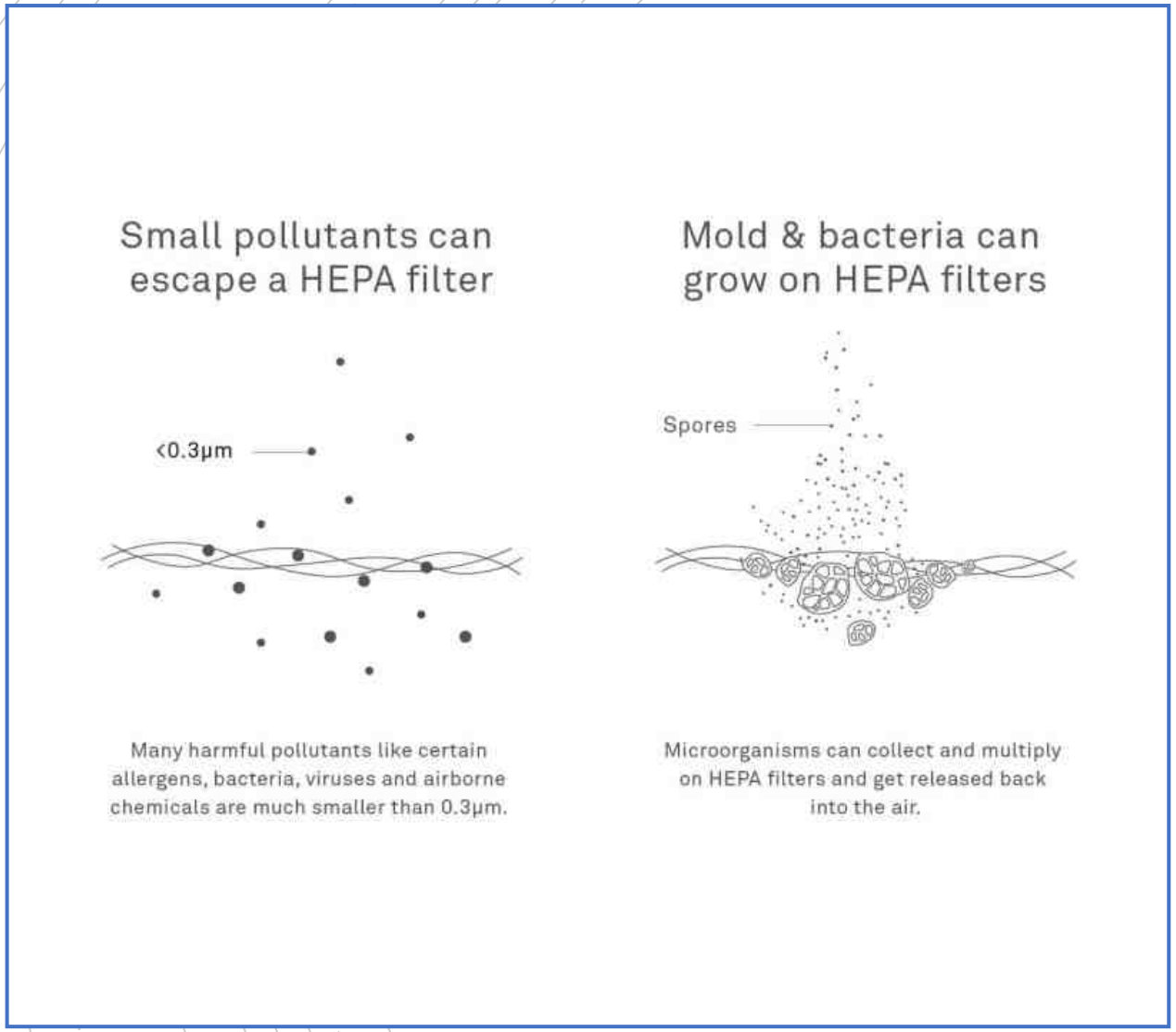
- Air is circulated through the UV-C air chamber where it is treated with an enclosed high-intensity UV-C light to inactivate bacteria, fungus and viruses in the air

- Treated air is then returned to the room, creating a healthier environment 24/7

- UV Angel Air is unobtrusive, works continuously and with the in-ceiling design, maintains the valuable floor

Clean Air USA

Our Systems ***KILL*** harmful pathogens – ***NOT*** try to capture them.



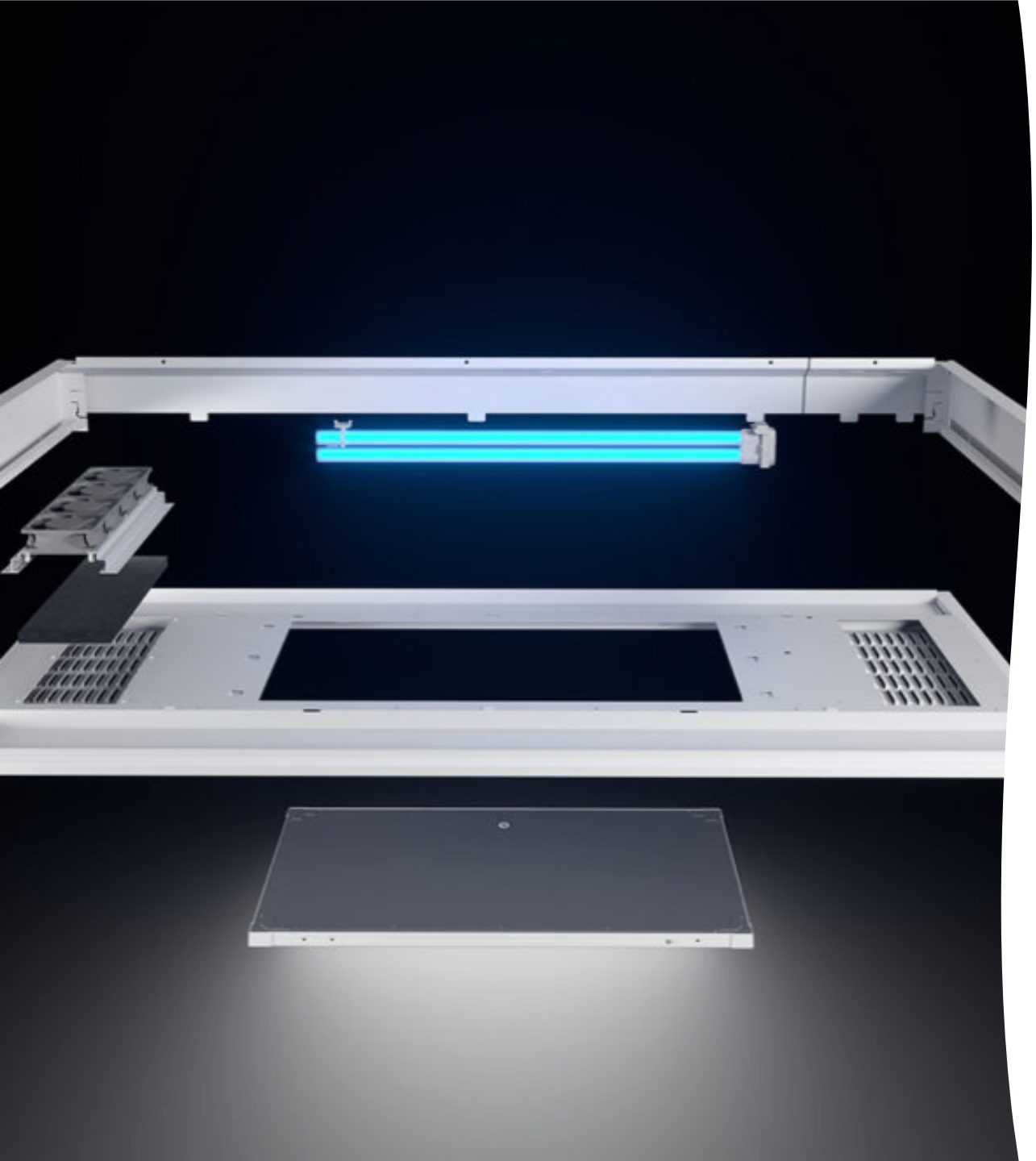
ISN'T A HEPA FILTER GOOD ENOUGH?

While HEPA filters remove some particulates from the air, there are many harmful pathogens in the air that are not particulate, and some are too small to be captured by HEPA filters.

Viruses: Viruses are too small to be removed. Despite this fact, HEPA based products were marketed for a long time with the claim to protect from viruses. The US Federal Trade Commission (FTC) has now regulated that HEPA filter-based products can no longer make that claim.

Bacteria: While bacteria are large enough to be trapped, bacteria are understood to release endotoxins into the air stream when dying on the air filter surface. Studies have demonstrated that endotoxins cause inflammatory and atopic responses in nonasthmatic and asthmatic participants.

Mold: Mold spores are large enough to be caught in HEPA filters but stay alive on the filter surface. Other particles that accumulate and fill the filter start acting as nutrients and allow mold spores to potentially grow on and through the filter membrane and eventually release new spores into the air.



UVANGEL

We'll Help You Create Healthier Airports

- Maintain safer terminals, gate and retail areas
- Provide protection for airport staff, security and the public
- Give confidence to travelers with proven technology
- Monitor air & surface contamination levels
- Reduce the spread of infectious aerosols

Backed By Science

Researched by Dr. Linda Lee

UV Angel - Chief Medical Affairs & Science Officer

Dr. Lee has spent over 30 years working with organizations, ranging from CH2M Hill to the MD Anderson Cancer Center. Dr. Lee has conducted years of research, development and clinical studies for the advancement of ceiling mounted UV-C air treatment systems. She has also published several peer-reviewed studies on the relationship of opportunistic environmental pathogens.

Click for Clinical Study - Efficacy of Ceiling Mounted UV-C Systems

UV Angel Adapt

Frequently touched surfaces are being interacted with faster than they can be wiped down.

Angel Adapt can be attached to keyboards, touch displays, check-in kiosks and other frequently touched surfaces.

Using an intelligent, automated ultraviolet light treatment platform, UV Angel Adapt will monitor frequently touched surfaces or devices, breaking down the bacteria at the cellular level and neutralizing it with greater than 99% effectiveness.

Click for Clinical Study - American Journal of Infection Control

The Technology & Software Powering UV Angel

UV Angel collects invaluable treatment data that can be accessed from anywhere at any time. This information is collected using the devices' Angel IOT integration, which also transmits data to Angel Analytics.

Angel Analytics

UV Angel hardware's dedicated cloud portal is complemented by Angel Analytics.

Angel Analytics is a partner-centric portal with connections to IOT-enabled devices – UV Angel branded or otherwise – in the infection prevention space. The Analytics engine allows the system to dynamically translate data from infection control systems throughout the facility, and process that data to show users a combined view of their infection prevention efforts.

Angel Cloud

UV Angel has created a proprietary cloud platform, allowing users to access their devices data from anywhere in the world. As data is generated from the UV Angel IOT platform, the UV Angel Cloud system processes this data, creating insightful charts, graphs and facility-specific notifications.

Additionally, the UV Angel Cloud system connects to popular real-time-location systems, allowing for UV Angel to act as a tracker for equipment throughout the facility.

Case Study – Navajo Nation Gaming

Four Casinos

428,000 Square Feet in Total

(2500) UV Angel Air Units - $4,625,000

(3000) UV Angel Adapt Units - $1,185,000

Total - $5,810,000

Clean Air Financing*

Zero upfront cost | 100% Financed

60-month term

$103,307.61 per month

*Financing will vary based on sale amount and current rate.

Clinically Proven and Peer-Reviewed Effectiveness

Table 4: Combined UV + Filter Removal Rates

Microbe	Type	Size µm	Filter %	UV Rate %	Total %
Acinetobacter	Bacteria	1.225	21	100	100.00
Adenovirus	Virus	0.079	9	100	100.00
Aeromonas	Bacteria	2.098	35	100	100.00
Aspergillus	Fungi	3.354	45	93	96.30
Bacillus anthracis	Bacteria	1.118	19	61	68.20
Bacteroides fragilis	Bacteria	3.162	44	100	100.00
Blastomyces dermatitidis	Fungi	12.649	50	99	99.65
Bordetella pertussis	Bacteria	0.245	4	100	100.00
Burkholderia cenocepacia	Bacteria	0.707	11	100	100.00
Burkholderia mallei	Bacteria	0.674	10	100	100.00
Burkholderia pseudomallei	Bacteria	0.494	7	100	100.00
Candida albicans	Fungi	4.899	49	79	89.19
Candia auris	Fungi	4.899	49	75	87.31
Chlamydia pneumoniae	Bacteria	0.548	8	100	100.00
Chlamydophila psittaci	Bacteria	0.283	4	100	100.00
Cladosporium	Fungi	8.062	50	98	98.75
Clostridium botulinum	Bacteria	1.975	33	100	100.00
Clostridium difficile	Bacteria	2	34	100	100.00
Clostridium perfringens	Bacteria	5	49	100	100.00
Coronavirus (Wuhan)	Virus	0.11	6	100	100.00
Corynebacterium diphtheriae	Bacteria	0.698	10	100	100.00
Coxsackievirus	Virus	0.027	19	100	100.00
Cryptococcus neoformans	Fungi	4.899	49	99	99.67
Curvularia lunata	Fungi	11.619	50	71	85.57
Ebola virus	Virus	0.09	8	100	100.00
Echovirus	Virus	0.024	20	100	99.89
E. coli	Virus	0.5	7	100	100.00
Enterobacter cloacae	Bacteria	1.414	24	100	100.00
Enterococcus	Bacteria	1.414	24	100	100.00
Enterococcus faecalis	Bacteria	0.707	11	100	100.00
Francisella tularensis	Bacteria	0.2	4	91	91.49
Fusarium	Fungi	11.225	50	92	96.23
Haemophilus influenzae	Bacteria	0.285	4	100	100.00
Haemophilus parainfluenzae	Bacteria	1.732	30	100	99.99
Hantaan virus	Virus	0.096	7	100	100.00
Helicobacter pylori	Bacteria	2.1	35	100	100.00
Histoplasma capsulatum	Fungi	2.236	36	99	99.56
Influenza A virus	Virus	0.098	7	100	100.00
Junin virus	Virus	0.122	6	100	100.00
Klebsiella pneumoniae	Bacteria	0.671	10	100	100.00
Lassa virus	Virus	0.122	6	100	100.00
LCV	Virus	0.087	8	100	100.00
Legionella pneumophila	Bacteria	0.52	7	100	100.00
Listeria monocytogenes	Bacteria	0.707	11	99	98.98

Full clinical reports available upon request.

Table 4: Combined UV + Filter Removal Rates

Microbe	Type	Size µm	Filter %	UV Rate %	Total %
Marburg virus	Virus	0.039	15	100	100.00
Measles virus	Virus	0.158	5	100	100.00
MERS virus	Virus	0.11	6	89	90
Mucor	Fungi	7.071	50	95	98
Mumps virus	Virus	0.164	5	100	100
Mycobacterium avium	Bacteria	1.118	19	100	100
Mycobacterium kansasii	Bacteria	1.118	19	100	100
Mycobacterium tuberculosis	Bacteria	0.637	9	100	100
Mycoplasma pneumoniae	Bacteria	0.177	5	100	100
Neisseria meningitidis	Bacteria	0.775	12	100	100
Nocardia asteroides	Bacteria	1.118	19	100	100
Norwalk virus	Virus	0.029	18	97	98
Parainfluenza virus	Virus	0.194	4	100	100
Parvovirus B19	Virus	0.022	21	100	100
Penicillium	Fungi	3.262	44	60	78
Proteus mirabilis	Bacteria	0.494	7	100	100
Pseudomonas aeruginosa	Bacteria	0.494	7	100	100
Reovirus	Virus	0.075	9	99	99
RSV	Virus	0.19	5	100	100
Rhinovirus	Virus	0.023	21	99	99
Rhizopus	Fungi	6.928	50	93	96
Rickettsia prowazeki	Bacteria	0.6	9	100	100
Rotavirus	Virus	0.073	9	100	100
Rubella virus	Virus	0.061	11	67	71
Salmonella typhi	Bacteria	0.806	13	100	100
SARS virus	Virus	0.11	6	100	100
Serratia marcescens	Bacteria	0.632	9	100	100
Stachybotrys chartarum	Fungi	5.623	49	12	55
Staphylococcus aureus	Bacteria	0.866	14	100	100
Staphylococcus epidermis	Bacteria	0.866	14	100	100
Streptococcus pneumoniae	Bacteria	0.707	11	77	80
Streptococcus pyogenes	Bacteria	0.894	14	100	100
Trichophyton	Fungi	4.899	49	71	85
Ustilago	Fungi	5.916	50	46	73
VZV	Virus	0.173	5	100	100
Yersinia pestis	Virus	0.707	11	100	100



Images during lab testing

The UV Angel Air results showed laboratory elimination rates up to 99.99%.

PEER REVIEW AIR AND SURFACE

Field trials were set up at three hospitals (Texas, Nevada, and Massachusetts) where we tested air and surface for bacteria, installed continuous UV-C products at the room level, and then tested air and surface again. In all cases, airborne bacteria was reduced between 79% and 91% over pre-installation values.

PROOF OF EFFECTIVENESS

Tests conclusively support that UV Angel Air treats bacteria, fungus and viruses in the air including: Gram negative and gram-positive bacteria, fungal pathogens and viral surrogates.

UV Angel Air Technical Data

Key Specifications:

- Dimensions: 23.8" x 47.75" x 4"; Weight: 23.5 lbs.
- UV Angel Air™ automated continuous UV-C air treatment system operates 24 hours per day, 7 days per week, 365 days per year
- MERV 6 replaceable filter: rigid polyester filter that is designed to keep dust and particulates from the UV chamber with an ASHRAE dust arrestance rate up to 90%. Flame retardant and listed UL 94 HR-1 and UL 900. Additional antimicrobial coating controls the growth of mold, mildew, algae, and fungi.
- Four fans continuously draw a nominal 50 CFM between 30-42dB, yielding a total UV dosage of greater than 300J/m2 in a single pass
- The fully enclosed, replaceable, 90 watt ultraviolet germicidal lamp (UV-C) operates at 254 nanometers
- Door interlock switches deactivate UV-C lamp when UV-C chamber and/or fan chamber is accessed
- Treated air is pushed through the exit area, a louvered panel on a louvered panel, designed to disperse treated air throughout the room
- EPA registered and ETL verified that UV-C emissions are at or below required standards

Limited Warranties:

- Aluminum body, IC board, light panel system, drivers & ballast: 5-year warranty
- LV power supply and lamp holder: 2-year warranty
- All other components:1-year warranty

Note: UV-C lamp and filter are required to be replaced annually

Power Ratings:

- UV engine power requirements: 120-277V AC, 1A,nominal 95 watts
  - \+ Dedicated UV Ballast
- Bulb & filter replacement kit: P/N 100-1097
- Green indicator light notifies occupants that system is working properly. If light is extinguished, then lamp and/or power is off. Do not maintain before reading rest of this document and take the proper safety precautions.

UVANGEL®

Maintenance

The UV lamp is rated for 9000 hours of continuous use so we recommend changing it annually. The MERV 6 filter should be changed annually. The maintenance of all UV Angel products is designed to be as simple as possible.

UV-C Lamp: Using a stepladder, open the grill door under the unit by unlatching and moving the hinges down. Open the large door panel (this will either be the Lighting Edgelight panel or a solid metal panel). The unlatched, open grill door, and door panel cuts power off to the fans and the UV-C lamp. Using gloves and protective eyewear, remove the UV-C lamp from the socket. Remove the new bulb from box and insert it into the socket. Close both doors, starting with the large door panel followed by the grill door. Latch tightly. Once the green light illuminates, the UV-C light will turn on and the fans restart. Safely dispose of the used UV-C lamp.

Filter: Open the grill door by unlatching and moving the hinges down. Using gloves and protective eyewear, grab the black tabs on the filter. Remove the filter by pushing in and then pulling down. Take the new filter and insert the non-tab side into the fan/filter frame and then push the tab side up so that it fits within the frame. Close by re-latching the grill door. The fan and UV-C light will resume operation. Safely dispose of the used filter.

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