

Research Summary Oral Surgery/Periodontics

AiroCide™ Air Quality-Improvement™ Systems Photocatalytic Oxidation in conjunction with Ultraviolet Irradiation

AiroCide a unique airborne pathogen killing technology that uses a patented combination of ultraviolet light and a proprietary titanium based photocatalyst. The AiroCide technology and developing product line is capable of killing a wide range of airborne pathogens including bacteria, viruses and molds, as well as breaking down volatile organic compounds (VOC's) in medical healthcare, residential, food storage, and a variety of other commercial applications.

Summary:

Air sampling tests were performed in an active oral surgery and periodontal medicine facility to measure the efficacy of the AiroCide system in removing airborne bacterial colony forming units (CFU's). The tests resulted in airborne mold/fungi reduction of 66% in the operating room (OR#3) and 100% in the adjacent corridor in 48 hours. Airborne bacteria was reduced by 82% in the corridor in the same 48 hours.

Note: Airborne bacteria levels were found to be at or near zero in OR#3 throughout the test.

Protocol

One AiroCide system (model ACS-100) was installed in both the OR#3 and the adjacent corridor.

Initial "Baseline" air samples were taken on Aug 30, 2005 outside of the waiting room entrance doors adjacent to the parking spaces to establish an outside level for both bacteria and mold. It is important to know the outside levels given the transport of contaminants with the ingress of patients entering the facility. Additionally samples were taken in the most interior corridor next to the wall area where an AiroCide ACS 100 was mounted at eye level. This location was selected given its proximity to all entry ways into the individual OR and procedure rooms. The third sample location was inside OR #3 with the sampling point immediately adjacent to the dental chair. A baseline sample was taken BEFORE AiroCide was activated

on the day of installation by the KesAir technician.

"Active On " air samples were taken at the three designated locations on August 31 and Sept 1 and after office air was processed by AiroCide for approximately 48 Active On hours. The number of staff did not vary by from day 1 baseline testing vs. "Active On" testing.

Air samples were taken using an Anderson type Aerotech 6 vacuum air pump sampler and agar petri dishes. These samples serve as the data for the following recommendations and conclusions in this report. All agar plates were exposed to 28.3 l/m of air for 3 minutes.

Results:

Bacteria

Bacteria was reduced substantially in the corridor space **82%** and held very low at **12 CFUs** in the OR from the baseline despite normal activities. Bacteria was not being generated and transmitted into the OR from the corridor and AiroCide functioned well to sanitize the high activity corridor. Much of the contamination in the corridor will come from patients and staff while the OR bio

Copies of tests mentioned in this paper can be obtained by writing KesAir, Research & Development, 3625 Kennesaw N. Ind.Pkwy., Kennesaw, GA 30144. AiroCide, KesAir & KesAir Technologies, and Air Quality-Improvement are trademarks of KesAir Technologies, LLC

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Sampling Location	Reading CFUs	Bacteria	Mold
Outside - Parking			
WITHOUT AIROCID	Baseline	82	153
WITHOUT AIROCID	48 hours	71	212
WITHOUT AIROCID	Change	- 13%	+39%
Corridor – Outside Procedure Rooms			
WITHOUT AIROCID	Baseline	130	94
W/ AIROCID	48 hours	24	< 12 = 0
W/ AIROCID	Change	- 82%	- 100%
Main OR #3			
WITHOUT AIROCID	Baseline	12	35
W/ AIROCID	48 hours	12	12
W/ AIROCID	Change	nc	- 66%

burden originates from equipment as well as generation from the oral cavity during surgery.

Mold

Mold was virtually eliminated in the corridor from base line tests. While mold levels increased outside baseline to second day the corridor's air dropped to an unmeasurable sub 12 level which is interpreted at zero. The AiroCide system was able to keep the corridor mold free. Within the OR the mold levels dropped 66% proving the affect AiroCide had on the circulatory air being cleansed of mold spores floating in the total space. Here again the corridor placement of AiroCide has a positive and pronounced affect on protecting the OR air quality with respect to mold.

