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AEGIS® AND DURABILITY

The AEGIS Microbe Shield is applied to impart enduring antimicrobial protection to porous and nonporous non-food contact surfaces to control and prevent the growth of microbes.

The duration of the effect is largely dependent upon the traffic of abrasive activity that could be expected to be applied to the treated surface.

A high-touch surface like a doorknob will likely last a shorter duration than a wall or board room table. As a general rule, Integral Services Group will support the ongoing protection of the treated surface in sustaining significant reductions in the growth of microbes for a period of 12 months.

STUDIES:

Fungal Remediation and Protective Antimicrobial Treatment of a Grossly Contaminated Ten Storey Hospital. Kumar et al. AEGIS Environmental, Midland MI.

- Fungal infestation, entire 10 Storey hospital.
- Treatment with AEGIS Microbe Shield. 5 Month follow up

RESULTS:

Location	Pre-treatment CFU/m ³	2015		2016		
		November	December	January	February	March
Total Average	791.4	48.1	56.1	72.2	101.4	96.6
Building Sites	307	307	307	307	307	307

Significant reduction in growth of microorganisms across 307 sites over 5 months

- Pre-treatment testing produced an average of 791.4 Colony Forming Units per Cubic Meter (CFU/m³)
- 1 Month post-treatment testing of 307 sample sites following restoration and the application of AEGIS produced an average of 48.1 CFU/m³
- 5 Month post-treatment testing of 307 sample sites produced an average of 96.6 CFU/m³

Improved Control of Microbial Exposure Hazards in Hospitals: A 30-Month Field Study R.A. Kemper et al.

- Catastrophic loss due to 500,000 gallon water pipe failure
- Treatment of entire hospital with AEGIS Microbe Shield
- Follow up for 30 Months

RESULTS:

Location	Pre-treatment CFU/m ³	1990	2015		2016	
			M-1 011	M-3 032	M-1 01	M-1 03
Total Average	2,655.2	4.1	1.8	0.8	0.7	0.4
Building Sites	209	643	83	82	105	86

Significant reduction in growth of microorganisms across 643 sites over 7 months

- 30 months follow up
- Pre-treatment CFU retrievals were in the range of 721 – 2800 CFUs/m³ with an average of 2,655 across 209 sites
- 7 Months post-treatment testing of 643 sites following restoration produced an average of 4.1 CFUs/m³
- 30 months post treatment sampling produced an average of 0.4 CFUs/m³

Street Car Transit Vehicle Follow-up Study – AEGIS / Bombardier 2009-2010

- 9 months follow up
- Over 9 months significant, enduring reductions in CFUs

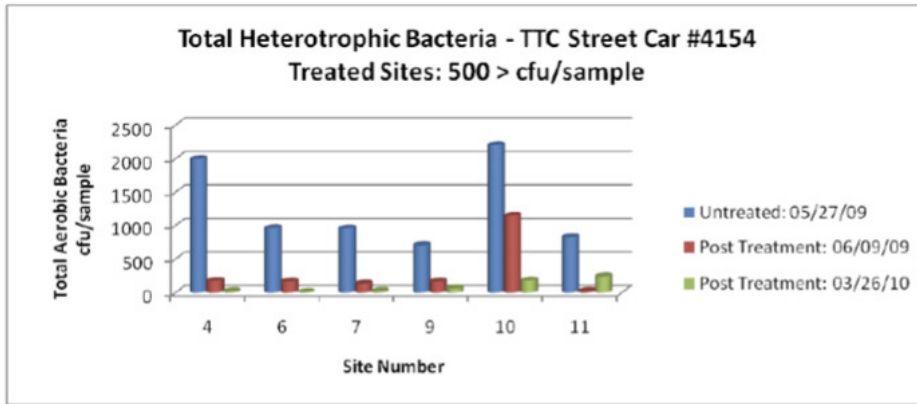
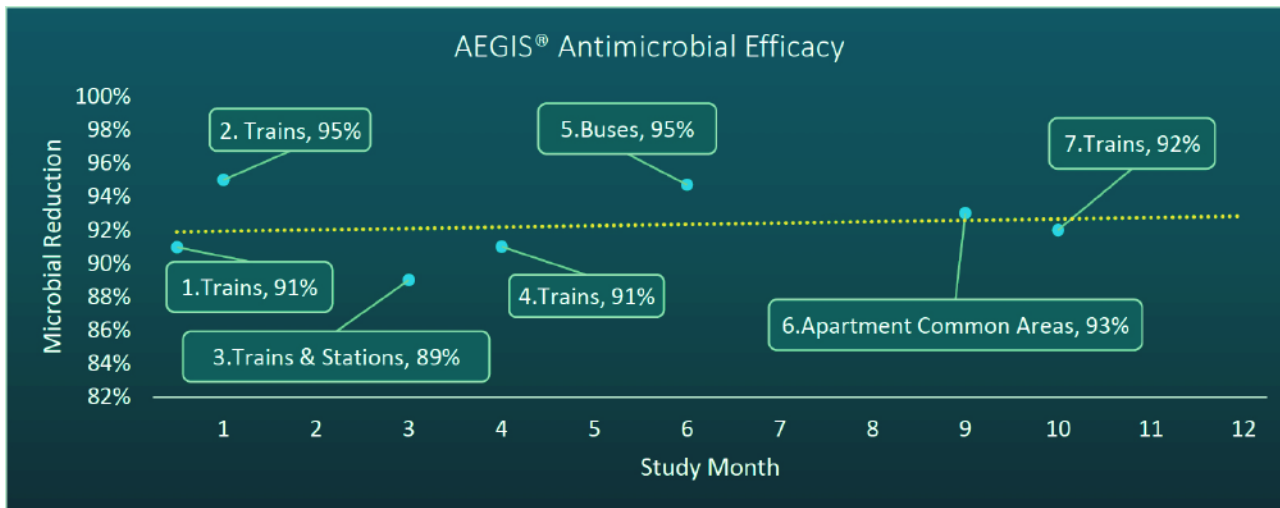


Figure 13 Results for the enumeration of Total Heterotrophic Bacteria on various surfaces of the Street Car #4154 before (May 27, 2009) and after (June 9, 2009) treatment with AEGIS, Microbe Shield Technology. Follow up March 26, 2010 Sites showing > 500 cfu initially.

AEGIS ANTIMICROBIAL EFFICACY – TRANSIT CASE STUDY SUMMARY

The transit industry is the best place for AEGIS to demonstrate a history of antimicrobial confidence and long-term durability. A single bus or train can have up to several thousand riders in a single day, each of whom bring in variety of microbial surface contaminants. Buses and trains are also one of the few places where fluctuating humidity levels are hard to control, as each time the doors open the vehicle is exposed directly to the outdoor environment. The combination of high-volume rider turnover and varying environmental conditions can provide a suitable environment for microbial growth, if not controlled.

Each of the studies summarized in the chart below were completed with major transit commissions from across Canada, the United States, and Mexico in trains, buses, and their respective stations' high-touch surfaces. Studies ranged from 2 weeks up to 10 months and demonstrated an average 91.7% reduction in microbial growth over each study period. A separate high-touch surface study that was conducted over a 9-month period at an apartment has also been provided as a means of cross-industry comparison.



The table below summarizes each study in terms of country of origin, study length and type, as well as the calculated microbial reduction. Microbial reductions were calculated using a geometric average, comparing the baseline to each subsequent post-AEGIS application test.

Study Overview

	Country	Study Length	Study Type	Microbial Reduction
1. Commuter Trains	Canada	2 Weeks	ATP	91%
2. Commuter Trains	United States	1 Month	ATP	95%
3. Commuter Trains & Stations	Canada	3 Months	ATP	89%
4. Commuter Trains	Mexico	4 Months	Agar Plate	91%
5. Buses	Canada	6 Months	ATP	95%
6. Apartment Common Area	Canada	9 Months	Agar Plate	95%
7. Commuter Trains	Canada	10 Months	Agar Plate	92%