April 23, 2013

Summary Report – Gelda Labs on EcoTex Ozone System

Determine the effectiveness of EcoTex ozone disinfection system in wash cycles using microbial markers

Introduction:

Tests were conducted to study the effectiveness of the EcoTex system which utilizes ozone in the wash cycle. Each cycle is challenged with a list of microorganisms that are introduced into the wash cycle in compatible materials. The EcoTex system allows the laundry to be processed at lower temperatures thus resulting in benefits to both utility and textile life.

Apparatus:

IPSO washer-extractor equipped with EcoTex ozone system.
Standard microbiological testing supplies and equipment.

Test organisms:

- Yeast – Candida albicans
- Mold – Aspergillus niger
- S. aureus
- S. aureus – MRSA
- E.coli
- C.difficile
- Mycobacteria
- Salmonella
- Psedomonas aeruginosa
- Streptococcus faecalis
- VRE – Vancomycin Resistant Enterococcus

Conclusion:

After performing two conventional cycle tests in an IPSO washer-extractor – (conventional cycle: Towel Cycle & New Linen Cycle – no ozone – hot water (150F)), it was concluded that 99.99% of all test organisms stated above were killed.

When ozone was introduced into the wash system cycle with the IPSO washer-extractor – cold water (75F), it was concluded that 99.99% of all test organisms stated above were killed.

The following pages show a detailed laboratory analysis report along with images of each organism test group and the results after a conventional cycle and after an ozone cycle. All tests conclude that 99.99% of the above test organisms were killed.

Group A: Yeast and Mold – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.

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LABORATORY ANALYSIS REPORT

Company	**Coinamatic** 301 Matheson Blvd. W. Mississauga, Ont.L5R 3G3	Tel Fax	905-755-1946 905-755-8885 wzohuri@coinamatic.com
Reported to	Walid Zohuri	Report # File	003 Page1/ Worddoc/labrep/Coinamatic
Date Submitted	Jan 14,2013	Date reported	Feb 11,13

Product	**Micro Fiber Mops**
Test	Determine the effectiveness of Enviromatic ozone disinfection system in wash cycles using microbial markers
Protocol	GSCOIN-01 dated Sep 11,2012

Results: Test Organism: Group A: **Candida albicans (ATCC10231**
Aspergillus brasiliensis (ATCC 16404),

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery from the micro fiber test material	% Recovery (Not Less Then 75%)	Recovery after the conventional cycle (% kill)	Recovery after Ozone Cycle (%Kill)
C. albicans: 6.6 X10^9	5.8 X10^9	87%	<10 (>99.99%)	30 (>99.99%)
A.brasiliensis: 0.24 X10^9	0.20 X10^9	83.3%	<10 (>99.99%)	<10 (>99.99%)

System controls			
SDA	No Growth	Positive Controls	Pass
Mops after disinfection cycle		No Growth	Pass

Conclusions:
The conventional and ozone cycles were both equally effective in killing the test organisms in mirco fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director — Dr. Sumona Guha, Lab Manager

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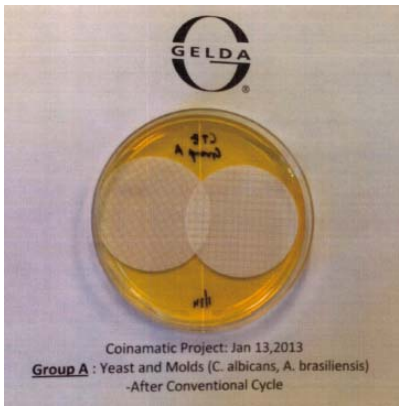
Postitive Controls

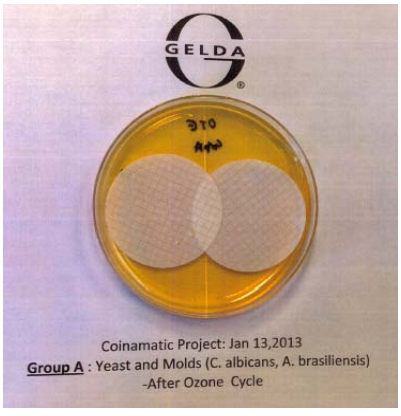
Coinamatic Project: Jan 14,2013
Group A : Yeast and Molds (C. albicans, A. brasiliensis)
-Positive controls

After Conventional Cycle



Coinamatic Project: Jan 13,2013
Group A : Yeast and Molds (C. albicans, A. brasiliensis)
-After Conventional Cycle

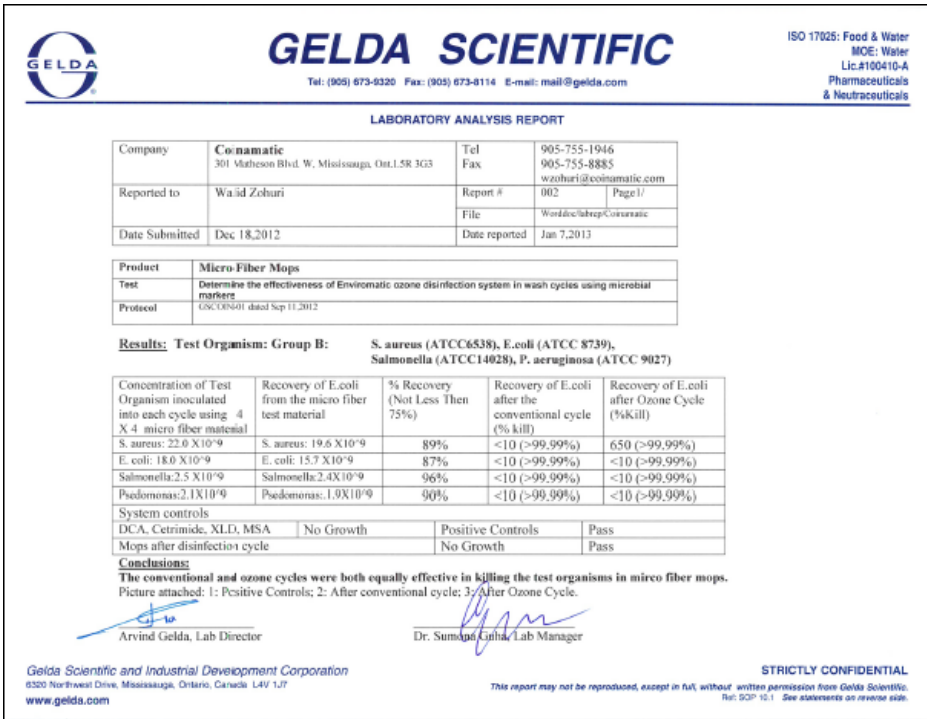
After Ozone Cycle



Coinamatic Project: Jan 13,2013
Group A : Yeast and Molds (C. albicans, A. brasiliensis)
-After Ozone Cycle

Group B: S. aureus, E.coli, Salmonella, Pseudomonas – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.



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Company	**Coinamatic** 301 Matheson Blvd. W, Mississauga, Ont.L5R 3G3	Tel Fax	905-755-1946 905-755-8885 wzohuri@coinamatic.com
Reported to	Walid Zohuri	Report # File	002 Page1/ Worddoc/labrep/Coinamatic
Date Submitted	Dec 18,2012	Date reported	Jan 7,2013

Product	**Micro-Fiber Mops**
Test	Determine the effectiveness of Enviromatic ozone disinfection system in wash cycles using microbial markers
Protocol	GSC/ON/01 dated Sep 11,2012

Results: Test Organism: Group B: **S. aureus (ATCC6538), E.coli (ATCC 8739), Salmonella (ATCC14028), P. aeruginosa (ATCC 9027)**

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery of E.coli from the micro fiber test material	% Recovery (Not Less Then 75%)	Recovery of E.coli after the conventional cycle (% kill)	Recovery of E.coli after Ozone Cycle (%Kill)
S. aureus: 22.0 X10^9	S. aureus: 19.6 X10^9	89%	<10 (>99.99%)	650 (>99.99%)
E. coli: 18.0 X10^9	E. coli: 15.7 X10^9	87%	<10 (>99.99%)	<10 (>99.99%)
Salmonella:2.5 X10^9	Salmonella:2.4X10^9	96%	<10 (>99.99%)	<10 (>99.99%)
Psedomonas:2.1X10^9	Psedomonas:.1.9X10^9	90%	<10 (>99.99%)	<10 (>99.99%)

System controls			
DCA, Cetrimide, XLD, MSA	No Growth	Positive Controls	Pass
Mops after disinfection cycle		No Growth	Pass

Conclusions:
The conventional and ozone cycles were both equally effective in killing the test organisms in mirco fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director

Dr. Sumana Guha, Lab Manager

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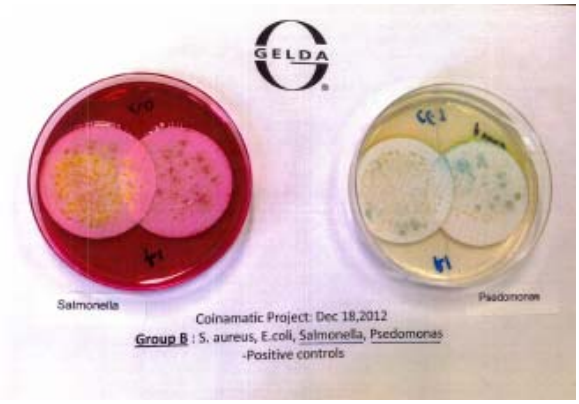
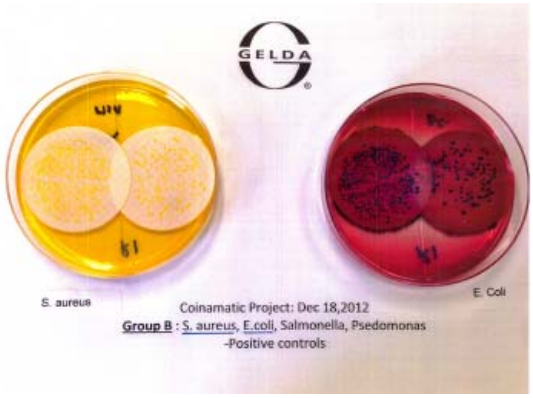
Positive Controls: Salmonella, Psedomonas

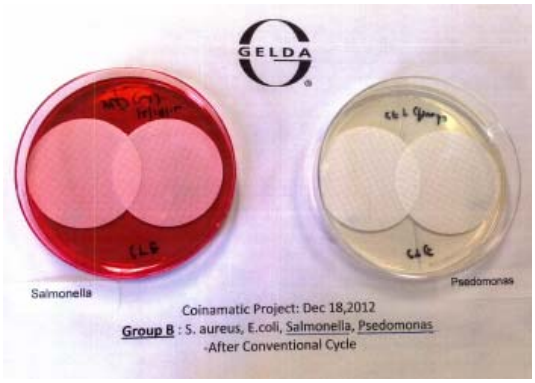


Positive Controls: S. aureus, E.coli

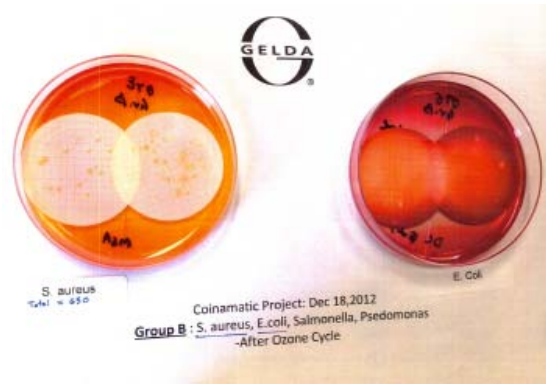


After Conventional Cycle: S.aureus, E.coli

Positive Controls: Salmonella, Psedomonas



After Ozone Cycle: S.aureus, E.coli



After Ozone Cycle: Salmonella, Psedomonas

Group C: Staphylococcus aureus – MRSA – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.

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LABORATORY ANALYSIS REPORT

Company	**Coinamatic** 301 Matheson Blvd. W, Mississauga, Ont.L5R 3G3	Tel Fax	905-755-1946 905-755-8885 wzohuri@coinamatic.com
Reported to	Walid Zohuri	Report # File	004 Page1/ Worddoc/labrep/Coinamatic
Date Submitted	Dec 10,2012	Date reported	Feb 11,13

Product	Micro Fiber Mops
Test	Determine the effectiveness of Enviromatic ozone disinfection system in wash cycles using microbial markers.
Protocol	GSCOIN-01 dated Sep 11,2012

Results: Test Organism: Group C: Staphylococcus aureus - MRSA (ATCC33591)

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery from the micro fiber test material	% Recovery (Not Less Then 75%)	Recovery after the conventional cycle (% kill)	Recovery after Ozone Cycle (%Kill)
2.5 X10^9	2.4 X10^9	96%	<10 (>99.99%)	<10 (>99.99%)

System controls			
DB-MRSA Agar	No Growth	Positive Controls	Pass
Mops after disinfection cycle		No Growth	Pass

Conclusions:
The conventional and ozone cycles were both equally effective in killing the test organisms in mirco fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director

Dr. Sumona Gelda, Lab Manager

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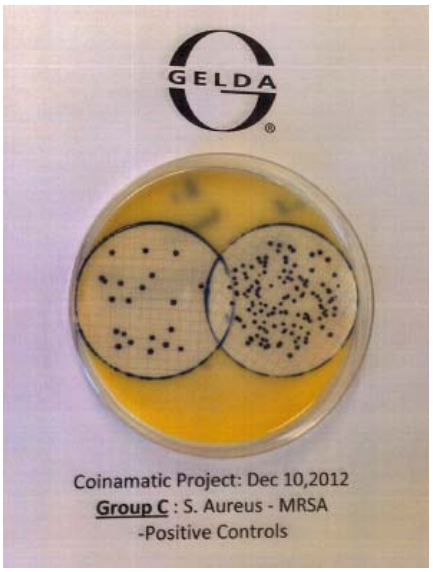
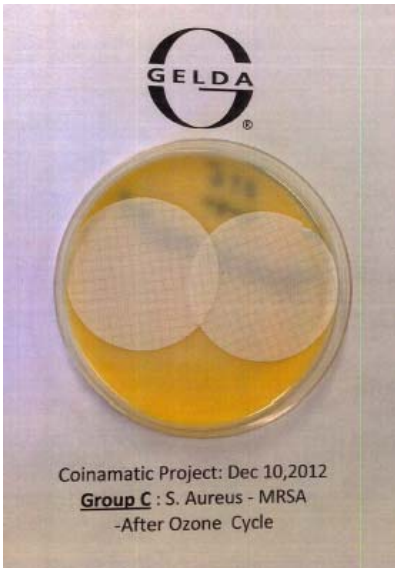
Positive Controls



After Conventional Cycle

After ozone Cycle



Group D: Clostridium Difficile – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.

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Company	**Coinamatic** 301 Matheson Blvd. W, Mississauga, Ont.L5R 3G3	Tel Fax	905-755-1946 905-755-8885 wzohuri@coinamatic.com
Reported to	Walid Zohuri	Report # File	007 Page1/ Word/doc/labrep/Coinamatic
Date Submitted	Mar 19,2013	Date released Date reported	Mar 21,2013 April 8,2013

Product	**Micro Fiber Mops**
Test	**Determine the effectiveness of Enviromatic ozone disinfection system in wash cycles using microbial markers**
Protocol	GSCON-01 dated Sep 11,2012

Results: Test Organism: Group D: Clostridium difficile (ATCC700057)

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery from the micro fiber test material	% Recovery (Not Less Then 75%)	Recovery after the conventional cycle (% kill)	Recovery after Ozone Cycle (%Kill)
0.82 X10^9	1.13 X10^9	138%	<10 (>99.99%)	<10 (>99.99%)

System controls			
Cl.difficile Selective Agar	No Growth	Positive Controls	Pass
Mops after disinfection cycle		No Growth	Pass

Conclusions:
The conventional and ozone cycles were both equally effective in killing the test organisms in mirco fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director

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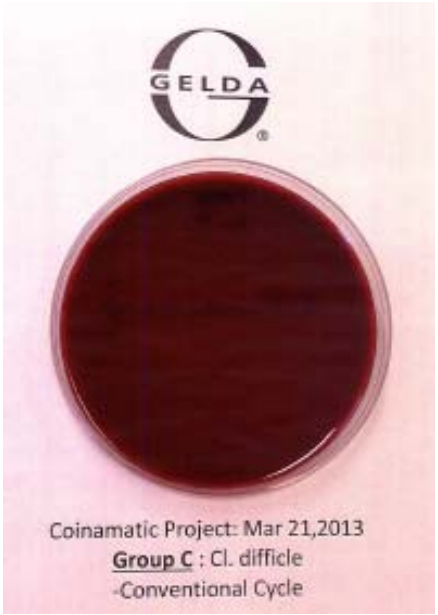
Positive Controls

Conventional Cycle



Ozone Cycle

Group F: Streptococcus faecalis – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.

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Reported to	Walid Zohuri	Report # File	005 Page1/4 Wrahi/Library/Coinamatic
Date Submitted	Jan 8,2013	Date reported	Feb 11,13

Product	Micro Fiber Mops
Test	Determine the effectiveness of Environatic ozone disinfection system in wash cycles using microbial markers
Protocol	GSC0041 dated Sep 11,2012

Results: Test Organism: Group F: Streptococcus faecalis (ATCC 29212)

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery from the micro fiber test material	% Recovery (Not Less Then 75%)	Recovery after the conventional cycle (% kill)	Recovery after Ozone Cycle (%Kill)
13.0 X10^9	12.6 X10^9	97%	<10 (>99.99%)	<10 (>99.99%)
System controls				
ME Agar	No Growth	Positive Controls	Pass	
Mops after disinfection cycle		No Growth	Pass	

Conclusions:
The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director

Dr. Sumana Mishra, Lab Manager

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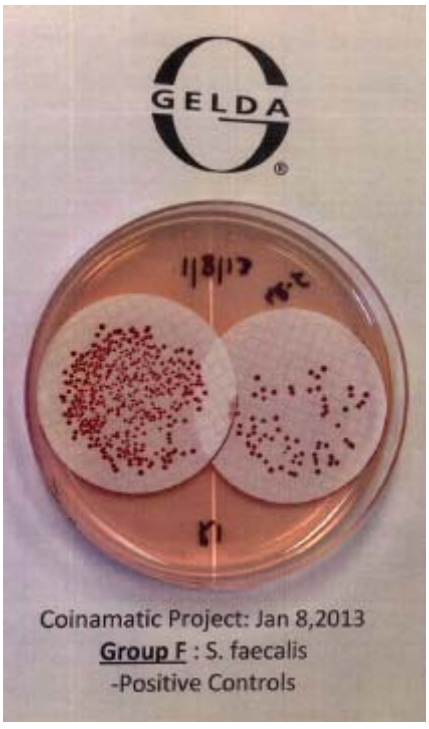
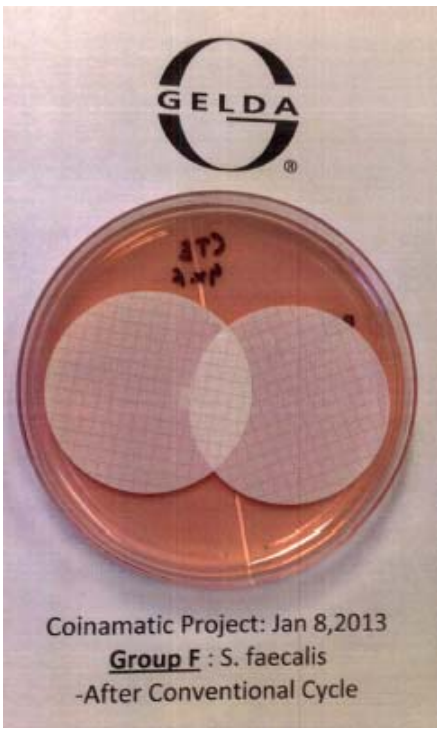
Test results relate only to items tested. See attachments on reverse side.

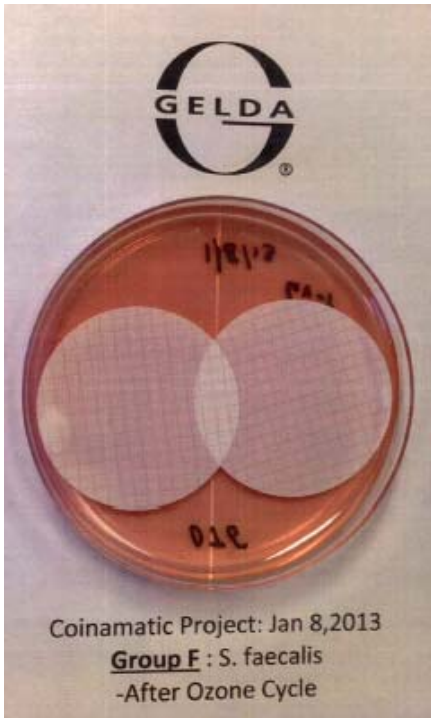
Positive Controls



After Conventional Cycle



After Ozone Cycle



Group G: VRE – Vancomycin Resistant Enterococcus – 99.99% bug kill

Conclusions: The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.

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LABORATORY ANALYSIS REPORT

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Reported to	Walid Zoheir	Report # File	086 Page1/4 Worddoc/labrpt/Coinamatic
Date Submitted	Jan 3,2013	Date reported	Feb 11,13

Product	Micro Fiber Mops
Test	Determine the effectiveness of Environmatic ozone disinfection system in wash cycles using microbial markers
Protocol	GSD/086/01 dated Sep 11,2012

Results: Test Organism: Group G: VRE-Vancomycin Resistant Enterococcus (ATCC 51299)

Concentration of Test Organism inoculated into each cycle using 4 X 4 micro fiber material	Recovery from the micro fiber test material	% Recovery (Not Less Than 75%)	Recovery after the conventional cycle (% kill)	Recovery after Ozone Cycle (%Kill)
20.0 X10^9	16.88 X10^9	84.4%	<10 (>99.99%)	<10 (>99.99%)
System controls				
ME+Vana Agar	No Growth		Positive Controls	Pass
Mops after disinfection cycle			No Growth	Pass

Conclusion:
The conventional and ozone cycles were both equally effective in killing the test organisms in micro fiber mops.
Picture attached: 1: Positive Controls; 2: After conventional cycle; 3: After Ozone Cycle.

Arvind Gelda, Lab Director

Dr. Sumana Datta, Lab Manager

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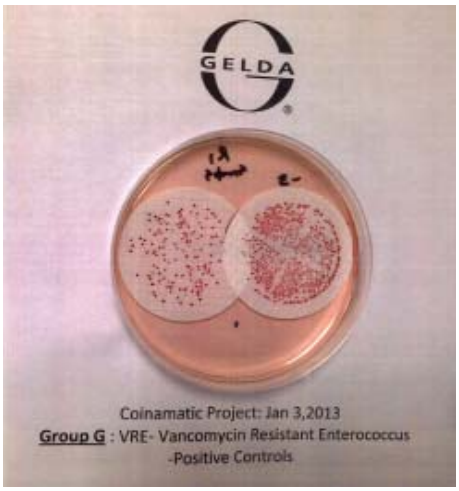
Positive Controls



After Conventional Cycle

After Ozone Cycle

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