

CTT Group
Textiles division

TECHNICAL REPORT

FILE #: 2858-001A

PRESENTED TO:
THE MATANE CSSS
Attn: Mr. François Dubé
333, rue Thibault
Matane, Qc G4W 1S2
And
Ozone Laundry Systems
Attn: Randy Zorn

PREPARED BY:
Valério Izquierdo
Laboratory director, CTT group

And

Martin Filteau, b. ing.
First vice-president, CTT Group

April 7, 2008

CTT Group
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1. PRESENTATION OF THE PROJECT

Mr. Francois Dubé of the CSSS in Matane called upon the services of the CTT Group in order to evaluate the efficacy of a new laundering system used in hospitals. This system consists in using washing machines currently in service and verifying the efficacy of the decontamination by using water processed by Randy Zorn and Ozone Laundry Systems equipment prior to its entry into the washing machine.

The proposed project consisted in a comparative verification of the efficacy of two decontamination methods, the current one and the replacement system. The aspect of textile durability as a function of these two decontamination methods was not part of this project.

2. PRESENTATION OF SAMPLES AND WASHES

2.1 Samples

The textiles selected for the study were as follows:

Sample 1: Surgical drape

Sample 2: Gown

Sample 3: Bed sheets

Sample 4: Quilting (bedding)

Sample 5: Bath towels

Each sample was taken from the bins of dirty laundry in the laundry room on the same day as their arrival. Samples were then cut and separated into three groups.

The first group was called the initial group, and used to perform a bacterial count on the item prior to decontamination.

The second sample group (identified A) was washed in the laundry using the existing method, and was then subjected to a bacterial count after washing, thus providing the point of reference for the washing efficacy of the third group.

CTT Group
Textiles division

Date: April 7, 2008

File #: 2858-001A

The third group of samples (identified B) was washed according to the substitute method.

Table 1: summary of the identification of samples:

Type of sample	Initial condition	After wash A (existing method)	After wash B (Replacement method)
Surgical drape	1-i	1-A	1-B
Gown	2-i	2-A	2-B
Bed sheet	3-i	3-A	3-B
Quilting (bedding)	4-i	4-A	4-B
Bath towels	5-i	5-A	5-B

Samples were taken in the presence of Mr. René Lavoie, from the RL Energy Department of (RL is the company that installed the Ozone Laundry System OLS-55 Custom MGF by Ozone Laundry Systems out of Salt Lake City, Utah for ozone treatment of water).

2.2 Laundering methods

The laundering methods were conducted using the same quantities of laundry as normal, with the following equipment:

Method A: with washing machine #1: IPSO-HF100, using program #02

Method B: with washing machine #2: IPSO-HF100, using program #22

It should be noted that the parameters for the programs were established by the Matane CSSS for method A and by Randy Zorn Ozone Laundry Systems for method B.

Drying was conducted separately, on the samples only, in the HUEBSCH #3 dryer for approximately 10 minutes at 176°F.

A wash cycle, followed by a drying cycle, was conducted for each of the two methods.

At the end of the washing and drying cycles, the samples were placed in sterile sacks to be analyzed using a bacterial count.

Date: April 7, 2008

File #: 2858-001A

3. PRESENTATION OF RESULTS

The samples taken were analyzed using a bacterial count according to USP procedures. Analyses were conducted in order to determine the total bacterial count, the assay of yeasts and molds, as well as the presence of the following bacteria: *E. coli*; *P. aeruginosa*; *S. aureus* and *Salmonella spp.*

Results are presented in table 2 below.

Table 2: bacterial counting:

Sample 1	1-i	1-A	1-B
Total microbial count (UFC/g)	120	<10	10
Yeasts-molds (UFC/g) (	<10	<10	<10
<i>E. coli</i>	Absence	Absence	Absence
<i>P. aeruginosa</i>	Absence	Absence	Absence
<i>S. aureus</i>	Absence	Absence	Absence
<i>Salmonella spp.</i>	Absence	Absence	Absence
Sample 2	2-i	2-A	2-B
Total microbial count (UFC/g)	210	150	55
Yeasts-molds (UFC/g) (	<10	<10	<10
<i>E. coli</i>	Absence	Absence	Absence
<i>P. aeruginosa</i>	Absence	Absence	Absence
<i>S. aureus</i>	Absence	Absence	Absence
<i>Salmonella spp.</i>	Absence	Absence	Absence
Sample 3	3-i	3-A	3-B
Total microbial count (UFC/g)	180	20	<10
Yeasts-molds (UFC/g) (	<10	<10	<10
<i>E. coli</i>	Absence	Absence	Absence
<i>P. aeruginosa</i>	Absence	Absence	Absence
<i>S. aureus</i>	Absence	Absence	Absence
<i>Salmonella spp.</i>	Absence	Absence	Absence
Sample 4	4-i	4-A	4-B
Total microbial count (UFC/g)	60	<10	<10
Yeasts-molds (UFC/g) (	<10	<10	<10
<i>E. coli</i>	Absence	Absence	Absence
<i>P. aeruginosa</i>	Absence	Absence	Absence
<i>S. aureus</i>	Absence	Absence	Absence
<i>Salmonella spp.</i>	Absence	Absence	Absence

CTT Group
Textiles division

Date: April 7, 2008

File #: 2858-001A

Sample 5	5-i	5-A	5-B
Total microbial count (UFC/g)	15	10	<10
Yeasts-molds (UFC/g) (	<10	<10	<10
<i>E. coli</i>	Absence	Absence	Absence
<i>P. aeruginosa</i>	Absence	Absence	Absence
<i>S. aureus</i>	Absence	Absence	Absence
<i>Salmonella spp.</i>	Absence	Absence	Absence

Analysis of the results from the tested sample population shows that:

- The presence of the target bacteria (*E. coli*; *P. aeruginosa*; *S. aureus*, and *Salmonella spp*) was not detected in the samples during the initial condition, nor after washing methods A and B
- The presence of yeasts and molds was below 10 UFC/g for each of the five items tested, both before and after each of the A and B washes.
- Wash A was more effective for 2 of the 5 samples tested, specifically for sample 1 (surgical drape) and for sample 4 (quilting (bedding))
- Wash B was more effective for 3 of the 5 samples tested, specifically for sample 2 (gown), sample 3 (bed sheets) and for sample 5 (bath towels).

Date: April 7, 2008
File #: 2858-001A

4. CONCLUSION

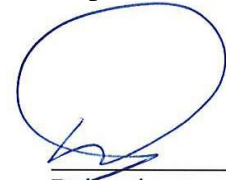
In order to evaluate the decontamination efficacy of a new decontamination method (washing with ozone treatment of water), five types of samples were washed with the ordinary decontamination method and this new method. The selected samples were sampled from one surgical drape; one gown, one bed sheet, one bed quilt; and one bath towel.

These samples were then washed with the existing method on the one hand, and washed with the new of method on the other. A bacterial count was performed on both of these samples in the initial state and after decontamination by each of the two methods.

With respect to the decontamination only, the results from the analysis showed that the new method using the water treated by Randy Zorn and Ozone Laundry Systems equipment is more effective than the currently used method for three samples out of five.

[Signed]
Prepared by:
Valério Izquierdo
Laboratory director, CTT Group

Date: April 7, 2008-05-08



Préparé par:
Valério Izquierdo
Directeur laboratoire, Groupe CTT

Date: 2008/04/07

[Signed]
Approved by:
Martin Filteau, b. ing.
First vice president, CTT Group

Date: April 7, 2008-05-08



Approuvé par:
Martin Filteau, b. ing.
Premier vice-président, Groupe CTT

Date: 2008-04-07