

**Investigation of the efficacy of JLA OTEX ozone disinfection for Microfibre
cloths and mops.**

**Dr Heather Aird
FW&E Scientist
NNUH Microbiology Department
17th May 2007**

Investigation of the efficacy of JLA OTEX ozone disinfection for Microfibre cloths and mops.

No in-house validation of the JLA OTEX system has been performed at the Norfolk and Norwich University Hospital. The DOH recommends laundering of Microfibre items using thermal disinfection and as this is not currently being practised at the NNUH a small investigation was commissioned by the Infection Control Department to verify the efficacy of the JLA OTEX system for in-use Microfibre items.

A critical assessment of the product information provided by JLA was made. This report details results of the efficacy of the OTEX system with bacterial suspension tests, the effect of the laundering system on protein soil and the cleaning of stained materials. Overall the evidence presented suggests that the OTEX system is superior to thermal disinfection for removal of bacteria (including *C.difficile*), viruses, yeasts and mould.

In-house validation of laundering of Microfibre cloths and mops using the JLA OTEX system.

Method

1. Used cloths and mops were collected by infection control staff.
2. Each item was cut in half (approximation) using sterile scissors.
3. One half of each item was placed in a sterile bag and retained as the pre-laundered sample.
4. The other half of each item was laundered as recommended by the JLA OTEX method.
5. After laundering and drying this half was placed in a sterile bag as the post-laundered sample.
6. All samples were sent to the microbiology department where they were analysed for Aerobic Colony Counts per item and for the presence or absence of *C.difficile*.

Results

It is evident from Table 1 that laundering of the Microfibre cloths lead to a >99.9% reduction in the number of bacteria present in seven of the 10 items tested (log reductions of 3-8.6 logs). One of the Microfibre cloths was found to contain *C.difficile* prior to laundering. *C.difficile* was not isolated from the post laundered cloth.

Of the three items giving reductions of less than 99.9%, one (high duster) showed a 99.4% reduction (log reduction of 2.24 log) but was considered satisfactory. The results obtained from the remaining two items (blue duster and a mop) did lead to some concern as only a 95.4% and less than 93.4% reduction was achieved by the laundering process (log reductions of <1.184-1.337 logs).

Both of the items causing concern were laundered in a machine along with items that gave rise to satisfactory results.

Table 1 Results of an in-house validation of the JLA OTEX Laundry system for microfibre cloths and mops.

Sample Description	Source	Washing machine and Dryer Details	Laboratory No. Pre-laundered sample	Laboratory No. Post-laundered sample	ACC Result of pre-laundered sample	ACC Result of post-laundered sample	% reduction Log reductions
Microfibre floor mop	Edgefield on Brundall Floor Bay 8	WM 1 5014506 D4 5014503	1a W2422/07	1b W2423/07	2.2x10 ⁷ <i>C.difficile</i> Not Isolated	2.1x10 ³ <i>C.difficile</i> Not Isolated	99.991% 4.02 logs
Microfibre pink sanitary cloth	Edgefield in bathroom toilet	WM 1 5014506 D4 5014503	2a W2424/07	2b W2425/07	5.0x10 ⁷ <i>C.difficile</i> Not Isolated	3.1x10 ³ <i>C.difficile</i> Not Isolated	99.994% 4.2 logs
Microfibre blue duster cloth	Edgefield Bay	WM 1 5014506 D4 5014503	3a W2426/07	3b W2427/07	4.0x10 ⁸ <i>C.difficile</i> Not Isolated	<1.3x10 ² <i>C.difficile</i> Not Isolated	>99.999% 8.6 logs
Microfibre (sleeve) High duster	Edgefield Bay	WM 1 5014506 D4 5014503	4a W2428/07	4b W2429/07	3.5x10 ⁵ <i>C.difficile</i> Not Isolated	2.0x10 ³ <i>C.difficile</i> Not Isolated	99.428% 2.24 logs
Microfibre floor mop	Elsing Bay	WM 1 5014506 D4 5014503	5a W2430/07	5b W2431/07	8.7x10 ⁷ <i>C.difficile</i> Not Isolated	1.6x10 ⁴ <i>C.difficile</i> Not Isolated	99.982% 3.73 logs
Microfibre blue duster cloth	Elsing Bay	WM 2 5014505 D5 5014502	6a W2432/07	6b W2433/07	5.0x10 ⁵ <i>C.difficile</i> Not Isolated	2.3x10 ⁴ <i>C.difficile</i> Not Isolated	95.4% 1.337 logs
Microfibre pink sanitary cloth	Elsing Toilet	WM 2 5014505 D5 5014502	7a W2434/07	7b W2435/07	3.8x10 ⁷ <i>C.difficile</i> ISOLATED	1.1x10 ⁴ <i>C.difficile</i> Not Isolated	99.971% 3.538 logs
Microfibre floor mop	Elsing bathroom floor	WM 2 5014505 D5 5014502	8a W2436/07	8b W2437/07	>2.9x10 ⁸ <i>C.difficile</i> Not Isolated	1.9x10 ⁷ <i>C.difficile</i> Not Isolated	<93.448% <1.184 logs
Microfibre blue duster cloth	Elsing Bay	WM 2 5014505 D5 5014502	9a W2438/07	9b W2439/07	4.6x10 ⁷ <i>C.difficile</i> Not Isolated	3.9x10 ⁴ <i>C.difficile</i> Not Isolated	99.915% 3.072 logs
Microfibre pink sanitary cloth	Sanitary Cloth	WM 2 5014505 D5 5014502	10a W2440/07	10b W2441/07	1.0x10 ⁷ <i>C.difficile</i> Not Isolated	7.9x10 ³ <i>C.difficile</i> Not Isolated	99.921% 3.102 logs

Conclusion

Based on the findings of this investigation 70% of microfibre items laundered using the JLA OTEX system had their bacterial load reduced by more than 99.9%. It was however evident that 30% of the items investigated did not show such a marked reduction. Only one of the items investigated was shown to harbour *C.difficile*. Laundering using the JLA OTEX system did however appear to be effective in removing this organism from this cloth.

Further investigation is necessary to increase confidence in this process.

Dr Heather Aird
FW&E Scientist
NNUH Microbiology Department
17th May 2007