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**Diagnostic Bacteriology  
St Mary's Hospital Medical School  
Norfolk Place  
London  
W2 1PG**

**Direct No: 020 7886 1547**

**e-mail: [stuart.philip@st-marys.nhs.uk](mailto:stuart.philip@st-marys.nhs.uk)**

## **EnviroCair Trial**

### **Airborne micro-organisms.**

	<b>TB lab</b>	<b>CL3 lab</b>	<b>Store Room</b>
Pre EnviroCair release	38cfu/m <sup>3</sup>	76cfu/m <sup>3</sup>	30cfu/m <sup>3</sup>
3 hours post release	3cfu/m <sup>3</sup>	12cfu/m <sup>3</sup>	7cfu/m <sup>3</sup>
24 hours post release			3 cfu/m <sup>3</sup>
% reduction	92%	84%	90%

The organisms grown were a mixture of Staphylococci, Micrococci and Bacillus which are commonly found in the air.

cfu – colony forming unit

### **Surface micro-organisms.**

	<b>Machine top</b>	<b>Sink drainer</b>	<b>Bench top</b>
Pre EnviroCair release	14cfu	6cfu	0
2 hours post release	10cfu	4cfu	0
14hrs post release	0	0	0
% reduction	100%	100%	N/A

The organisms grown were a mixture of Staphylococci, Bacillus and filamentous fungi which are commonly found on environmental surfaces.

cfu – colony forming unit

### **Direct challenge on micro-organisms**

When directly challenged with the liquid EnviroCare, we observed zones of inhibition with E.coli, Staph aureas, MRSA, Pseudomonas aeruginosa and Enterococcus faecium.

### **Liquid dilution challenge against MRSA**

Dilutions of the EnviroCare were prepared in Brain Heart Infusion Broth, from 1 in10 down to 1 in 100,000. A suspension of MRSA was inoculated into all tubes, including a control tube, which did not contain EnviroCare. The results are as follows:

	<b>24 hours</b>	<b>72 hours</b>	<b>7 days</b>
Control tube	growth	growth	growth
1 in 10 dilution	no growth	no growth	no growth
1 in 100 dilution	no growth	no growth	no growth
1 in 1000 dilution	no growth	no growth	no growth
1 in 10000 dilution	no growth	no growth	no growth
1 in 100000 dilution	growth	growth	growth

This experiment shows that EnviroCare is bactericidal to MRSA down to a dilution of 1 in 10000.

### **Surface challenge on MRSA**

A dilution of MRSA was made in saline to give a final load of 1500 cfu/ml. Using cards which have Teflon coated circles on them, 100 micro-litres of the suspension was placed onto each circles and spread out with a loop. This was dried in the hot room for one hour. One card was kept as a control, the other was exposed to EnviroCair for up to 3 days. The results are as follows:

	<b>Control</b>	<b>Test</b>
Pre exposure	77 cfu	75 cfu
Post 7 hours	75 cfu	45 cfu
Post 24 hours	60 cfu	31 cfu
Post 3 days	7 cfu	no growth

The results show that MRSA levels are reduced faster when exposed to EnviroCair. MRSA may survive in higher numbers and for longer periods in skin scales and dust.

**Stuart Philip**  
**Monica Rebec**  
**24<sup>th</sup> June 2003.**

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## **Aspergillus Contamination**

Many of our important cultures, such as bronchial alveolar washings, being processed in the Containment Level 3 laboratory have been getting contaminated with an environmental fungus, *Aspergillus*. This is probably due to the building work being carried out next to our laboratory and the resultant dust in the air. This fungus can cause human disease, therefore when we grow the fungus, it is difficult for us to know whether it is an environmental contaminant or a genuine infection.

We have sampled the air in the laboratory and the corridor, the dust from various surfaces in the laboratory, and have recovered *Aspergillus* in huge numbers from all sites. Over the past 48 hours, we have had the EnviroCair machine running in the CL3 laboratory.

Sampling after 12 hours showed some reduction of the fungus in the air, but little effect on fungi in the dust, but after 48 hours, the air is now free of fungal spores and the dust cultures have a small number of weakly growing colonies. Where the dust has been cleaned away, the surfaces are fungus free. Air testing in the corridor still reveals large numbers of fungi contaminating the air.

Stuart Philip  
18<sup>th</sup> July 2003

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### **The effect of EnviroCair on the normal, human upper respiratory tract flora.**

An experiment was carried out to study what happens to the normal bacterial flora of the nose in a worker who was exposed to EnviroCair in the air of a small laboratory over a two day period. The results of the nose swab culture are as follows:

9am on the first day	Heavy growth of Staphylococcus
5pm on first day	Light growth of Staphylococcus with reduced colony size
9am on the 2nd day	Heavy growth of Staphylococcus
5pm on 2nd day	Light growth of Staphylococcus with reduced colony size

### **Conclusion**

The normal upper respiratory tract flora of a worker exposed to EnviroCair over an eight hour period is greatly reduced in quantity and vigor. The flora returns to its original status overnight, when the worker is not exposed, and then it is again reduced on further exposure. We are not sure of the significance of this finding, but it is clear that EnviroCair is entering the upper respiratory tract and is probably being absorbed by the body through the mucus membranes.

Stuart Philip  
30<sup>th</sup> July 2003.