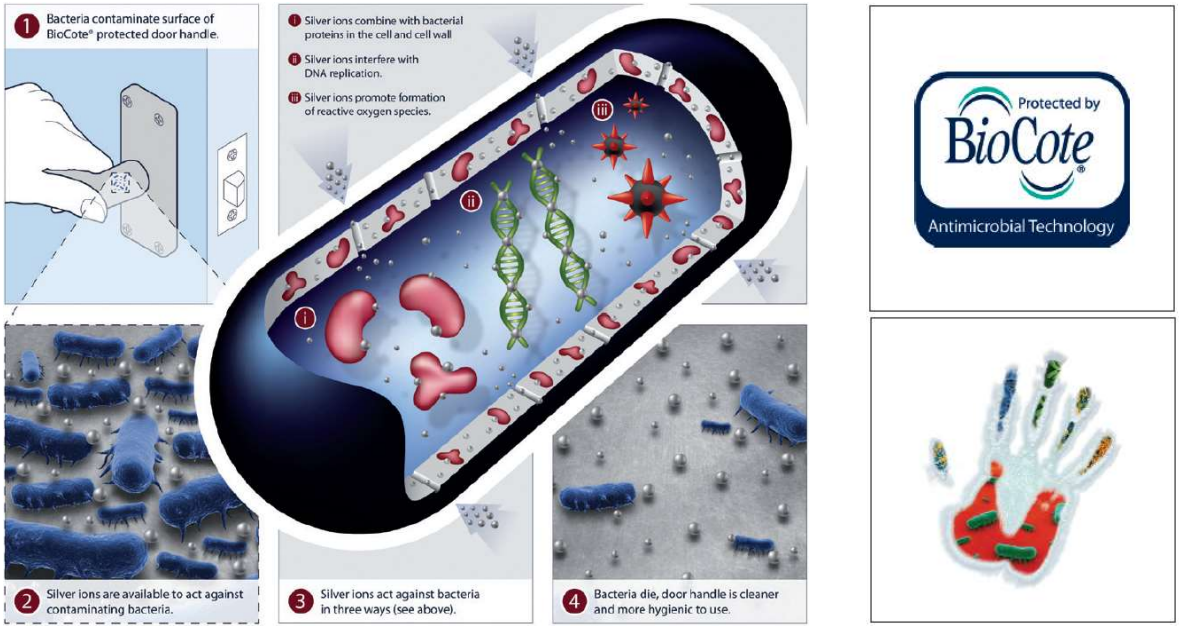
REHAU by Trench Antimicrobial Trunking - Supporting Information



Designed specifically to help reduce micro-organisms which may cause harmful infections and diseases in environments such as hospitals and schools, REHAU's cable trunking can incorporate BioCote's silver-ion antimicrobial technology which reduces the occurrence of micro-organisms and inhibits the growth of both bacteria and mould.

Tests carried out by the supplier of the technology, BioCote, have previously shown that products incorporating the ionic silver at the time of manufacture, typically help reduce levels of bacteria including MRSA, E-coli, Salmonella and Listeria, on surfaces by up to 99%.

The world's first ever antimicrobial classroom has been created at a Primary school in the UK, resulting in huge reductions in levels of bacteria. BioCote Ltd, a leader in the field of antimicrobial technology, worked in conjunction with users of its technology to create the world's first ever classroom that actively inhibits the growth of potentially harmful microbes.

For the study, the classroom was equipped with a range of products protected with BioCote antimicrobial technology. These included: Decorative Panels computer desks, Proform chairs, Salto door handles, Electrium light switches, Deb soap dispensers, Rehau cable trunking, Electrium sockets, Proform and Decorative Panels tables and bookcases, Gratnells storage trays and units, Highgrade carpets,Contour Casings radiator covers, Miele window handles, HMG Paints paint, BioClad wall cladding and a Waterlogic water dispenser. All items were provided by BioCote customers to create a safer, more hygienic learning environment. Levels of bacteria on the items of interest were measured over a period of time. Simultaneously, data was collected from comparable but untreated items in another classroom. Comparison of the levels of bacteria in these two classrooms revealed a dramatic difference.

Initial findings were impressive; the antimicrobial products in the protected classroom were shown to be over 95.68% less contaminated with bacteria than the corresponding items in the unprotected classroom.

Technical Director and microbiologist at BioCote Dr Richard Hastings said: “We are very proud to be part of the world’s first ‘antimicrobial classroom’. We were keen to undertake the study in a school environment due to the close-contact nature of children in the school classroom - providing the perfect setting for potentially harmful bacteria to spread. We are happy to announce huge bacterial reductions on BioCote treated products, affirming our aim of a cleaner classroom for young children.”

Government guidelines recommend schools prevent the spread of infections by maintaining a clean environment. BioCote treated products work effectively with standard cleaning practices, making for an even higher level of cleanliness.

The study will continue throughout the academic year and further data will be collected. The BioCote team are keen to understand if levels of contamination vary due to seasonality, the identity of microbes recovered and what potential antimicrobial technology has for reducing absenteeism due to sickness.

REHAU’s new antimicrobial trunking provides an additional level of protection against microbial organisms, which can also cause product deterioration, discolouration and bad odours.

Case Study – Proven Reduction InBacteria In A School Environment School classrooms present the classic factors important for the efficient spread of microbes; close contact of people for prolonged periods, numerous commonly touched, communal surfaces and

isolated cleaning. Hygiene in these environments is, therefore, important in order to reduce the risk and consequences of microbial cross contamination. Inevitably, good hygiene guidance for education providers from government1 includes regular, thorough environmental cleaning. However, developments in antimicrobial technology now offer the ability to create indoor environments composed of materials that act continuously by reducing the presence of microbes contaminating them.

The rationale for hygienic classrooms is obvious. Does the application of antimicrobial technology to a classroom have a beneficial impact?

Study Aim

To measure and compare the numbers of bacteria in two classrooms in the same primary school after antimicrobial technology has been extensively applied to one whilst the second is unchanged.

Method

In the autumn of 2014, a medium-sized UK primary school was selected as suitable for the purposes of this environmental study. A classroom was refurbished computer desks, chairs, door handles, light switches, liquid soap dispensers, cable trunking, sockets, tables, storage trays, bookcases, storage

units, castors, carpet, radiator covers, window handles, wall and ceiling paint, PVC wall cladding and a drinking water dispenser all treated with BioCote® antimicrobial technology. Products were donated for the purpose of this study by BioCote Ltd Partners.

A second classroom was included in this study to serve as a control environment. The demographics of both classrooms was suitably comparable. Both classrooms were used and cleaned as normal. Typical daily cleaning of school classroom involves the wiping of sinks, draining board and table tops, sweeping the hard floor and vacuuming carpet. In addition, a weekly clean involved dusting of computers, shelves and worktops and mopping of non-absorbent floors.

A weekly collection of swab samples began in November and extended for three weeks. Antimicrobial products were swabbed from the antimicrobial classroom whilst corresponding, untreated products and surfaces in the control classroom were swabbed at the same time. Swabs were collected before and after the school day and processed appropriately in the microbiology laboratory to isolate, count and where possible, identify bacteria (data not shown here) recovered from the study classrooms.

Results

Total environment. The difference in total bacterial counts between the classrooms: 95.68%. A comparison of the average number of bacteria recovered from all BioCote treated products with all corresponding products in the control classroom revealed almost 96% less bacterial contamination in the antimicrobial classroom.

Product-Type. The difference in average numbers of bacteria recovered from the various products of each classroom varied from 30.3% to >99.99% (Table 1).

Table 1: Differences in average colony counts per product in the treated and untreated classroom

Table 1: BioCote treated products within the study

Treated Product Manufacturer Difference in average colony count	
Treated Product & Manufacturer	**Difference in average colony count**
Computer Desk Decorative Panels	92.65%
Computer Desk Chair Proform	79.90%
Sink Splash Back BioClad	99.73%
Soap Dispenser Deb	96.26%
Door Handle Salto	98.58%
Cable Trunking Rehau	99.90%
Socket Electrium	86.24%
Desk Table Proform/Decorative Panels	87.23%
Desk Chair Proform	97.12%
Desk Tray Gratnells	52.38%
Storage Tray Gratnells	97.22%
Storage Tray Rack Gratnells	91.90%

Storage Tray Rack Castor Gratnells/Guy-Raymond	**85.84%**
Bookcase Decorative Panels/Proform	**97.43%**
Carpet Highgrade	**70.09%**
Light Switch Electrium	**30.30%**
Radiator Covers Contour Casings	**90.54%**
Window Handles Miele	**34.78%**
Painted Surfaces HMG	**91.30%**
Wall Cladding BioClad	**>99.99%**
Water Dispenser Waterlogic	**96.79%**

Discussion

The two classrooms studied were chosen due to their similarities in use, location and demographics. From this basis, the difference between the two classrooms was the presence of antimicrobial technology. It is reasonable to view the reduced counts of bacteria on the antimicrobial products, comparted to the control classroom's counterparts, is a direct result of those products' continued antimicrobial performance. Before release into the market, products treated with BioCote® technology are validated for acceptably high antimicrobial efficacy. In theory, then, reduced counts of bacteria contaminating BioCote treated products deployed in working environments, compared to equivalent but untreated products should be expected.

Previous environmental studies measuring bacterial counts on antimicrobial surfaces also reported them to be less contaminated than untreated counterparts 2,3.

Antimicrobial technology should not be viewed as a replacement to cleaning. However, the repeated observation of considerably fewer bacteria present on antimicrobial products, regardless of product type and when the observation was made, compared to those counts made from the control classroom, presents a compelling case for the application of antimicrobial technology to hygiene-critical environments.

References

1 Gov.uk. (2014). Guidance on infection control in schools and other childcare settings. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/353953/Guidance_on_infection_control_in_schools_11_Sept.pdf. Last accessed 19th Feb 2015.

2 Taylor, L., Phillips, P., Hastings, R. (2009) Reduction of bacterial contamination in a healthcare environment by silver antimicrobial technology. Journal of Infection Prevention. 10 (1): 6-12.

3 Taylor, L., Phillips, P., Hastings, R. (2009) Silver ion antimicrobial technology: decontamination in a nursing home. British Journal of Community Nursing. 14 (5): 51-53.