AIRFLOW AND IT'S MICROBIAL CONTAMINATION IN AN OFFICE ENVIRONMENT

Cross-contamination is well understood, yet the transmission of potentially harmful microbes by air movement is less well documented. BioCote's team of microbiologists looked to better understand the role of airflow in microbial contamination.

When we think about cross contamination we tend to think about microbes being transferred from person to person, person to surface contact or, of course, surface to person.

The role we play in the spreading of microbes is well understood and in some environments, such as healthcare, precautionary methods such as improved hand hygiene has played a significant role in the reduction of HAI's (Hospital Acquired Infections).

Awareness of this issue has also seeped into the public consciousness. How often do you see people using alcohol wipes or similar gels in public to sanitise their hand or surfaces they need to touch?

What has been less well documented, is the transmission of potentially harmful microbes by air movement.

BioCote's team of microbiologists, led by Dr. Michail Karavolos have recently carried out a study to better understand internal air quality and the role that air movement plays in the distribution of microbes within the workspace.

Surfaces were selected around the BioCote office, in a number of locations, with varying proximity to air-conditioning units, doors, thoroughfares, and windows. Settle plates, used to capture any microbes were placed in those locations for a period of two hours. The study separates into two sample sets:

Sample set 1:
Plates recovered - air conditioning turned OFF.

Sample set 2:
Plates recovered - air conditioning turned ON.

After collecting both sets of plates, they were incubated at 30°C for 48 hours to allow any microbes present the best conditions for growth.

Following incubation total colony forming units on the plates were counted. The results are shown on the next page.

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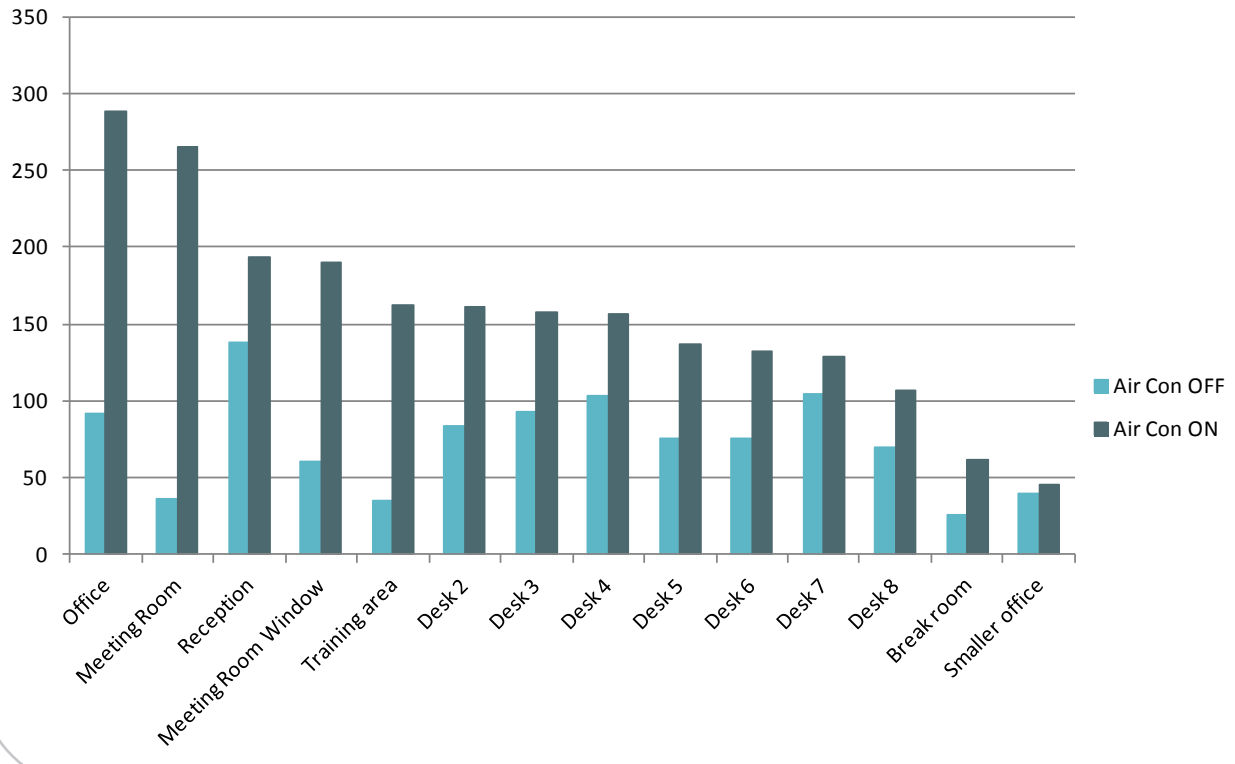
RESULTS

FIGURE 1: TOTAL COLONY FORMING UNITS PER OFFICE ITEM



We can see from the results, every sampled surface demonstrated an increase in total microorganism count when the air conditioning was in action.

This was also the case in rooms which remained unoccupied during the sample period – reducing any likelihood additional microbes were being introduced or distributed by other means.

The detected microbes were predominantly fungi, organisms which would have been distributed as spores. We can therefore use the above results as a potential indicator (or model) for distribution of microbes in general within the environment.

These figures demonstrate that the air-conditioning or air movement played a role in increasing the number of microbes detected by the samples plates.

This is a good indication that the distribution of microbes in an environment can be effected by air-condition or air flow.

Either the additional microbes detected were released by the air conditioning or the subsequent air movement has redistributed microbes that already existed in the environment sampled, but which were not detected in part one of the test.

The idea that air-conditioning can impact the count of microorganisms on a surface could be considered a serious issue. Most buildings of whatever purpose are equipped with either air conditioning or heating systems that rely on convection, which itself increases air movement.

With the data generated we can begin to better understand the role air flow and movement can have in the ongoing passage of microbes within any environment. This in turn highlights the potential for microbes to colonise surfaces not usually considered susceptible to microbial contamination by other means – such as touch, and the role antimicrobial technology can play in mitigating this impact.

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