# Electrostatic Dust Cloth to assess occupational exposure to bioburden in Primary Health Care Centers

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Primary Health Care Centres (PHCC) in Portugal ensure the prevision of primary health care to the population of a specific geographic area and have a crucial role in health promotion and disease prevention (Santos et al. 2013). Surprisingly, there is gap of information regarding this occupational environment, although bioburden (comprising fungi and bacteria burden) assessment and control in health care facilities is currently a mandatory and vital part of prevention strategies against hospital-acquired infections (Zahar et al. 2017).

A total of 10 primary health care canters located in the city of Lisbon were investigated for the first time. The sample collection was conducted in workstations where was consider a critical risk of occupational exposure to bioburden and active and passive sampling methods were applied. Bioburden collected by the 81 electrostatic dust cloth (EDC) was analysed by culture based-methods and molecular detection using qPCR targeting 5 different fungi, namely 4 Aspergillus sections (Flavi, Fumigati, Circumdati and Versicolores) and Stachybotrys chartarum complex will be performed shortly. EDC weight, extraction and bioburden characterization by culture based-methods followed the same procedures already described elsewhere (Viegas et al. 2018). Additionally, particles measurements were performed as in the same previous study (Viegas et al. 2018).

The fungal contamination levels ranged from 0 to 53397.03 $CFU.m^{-2}$ (workers canteen). Among Aspergillus genera observed, the most prevalent was Aspergillus section Versicolores (0.09%) followed by Nigri (0.03%). Sections Candidi and Fumigati were also isolated in smaller counts (0.01%). The total bacterial contamination ranged from 0 $CFU.m^{-2}$ to 4670.91 $CFU.m^{-2}$ (treatment room). The load of Gram negative bacteria ranged from 0 to 530.79 $CFU.m^{-2}$. Among other results, statistical correlation analyses suggest that higher EDC weights are related to higher concentrations of the particles 5.0 and higher values of TPM.

It was possible to identify the PHCC with higher counts regarding fungal counts (significant differences) through EDC, enabling the decision about further need to apply different sampling approaches and also to identify potential indoor contamination sources. Thus, EDC can be applied as a screening-method for particles assessment and as complementary method for assessing bioburden, since it provides a long-term integrated sample, whereas air samples can only reflect the load from a shorter period of time.

*References*
Zahar, J.R., et al. (2017). J Mycol Med. 27 (4), 449–456
Viegas, C., et al. (2018) Atmosphere, 9, 64; doi:10.3390/atmos9020064

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**Main topic (tick the key topic of your presentation) :**

☐ Effects of biological agents on the health of workers exposed: infectiology and toxicology research, epidemiological studies, dose-response relationships, etc.

☒ Methods and strategies for the qualitative and quantitative assessment of biological risks: risk assessment methods, biometrology, methods and strategies for exposure measurement (bioaerosols, liquids, surfaces, real time), research resources (atmosphere generation, modelling), data interpretation, etc.

☐ Exposure to biological agents at the workstation: sectors and biological agents concerned, emission sources and exposure situations, characteristics of exposure (concentration, particle size distribution and biodiversity of bioaerosols, etc.), multi-exposure, biometrology, etc.

☐ Prevention measures: means available for reducing exposure, ventilation, innovative processes, personal protection, new technologies for bioaerosol removal and surface cleaning, etc.

**Preference (tick the preference for presentation):**

☒ Oral[*]
☐ Poster presentation
☐ No preference

[*] Authors selected to present oral communications will be asked to provide a short biography (5 lines) to allow the chair person of the session to introduce them.