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SAMPLING ELEMENTARY SCHOOLS - A COMPREHENSIVE APPROACH FOR MICROBIAL INDOOR AIR QUALITY ASSESSMENT

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Background

Indoor air quality (IAQ) is an important determinant of children's health since children spent around 90 % of their time in the indoor environment (1). In schools, children may be exposed to bioaerosols (such as viruses, bacteria, and fungi), in their classrooms, libraries, canteen, gymnasiums/sports hall, and toilets.

Portugal only established protection thresholds and reference conditions for indoor air pollution in commercial and service buildings and assessment methodology through Portaria n.º 138-G/2021, neglecting schools as a specific indoor environment.

Aims

This project aims to applying a multi-approach protocol (sampling and assays), to assess microbial contamination (bacteria and fungi) in Portuguese elementary schools and to suggest guidance for exposure assessors from the field to the lab.

Methods

Targeting 6 schools and 10 houses in rural setting and 6 schools and 10 houses in urban setting, during warm and cold season (Figure 1). In Schools, sampling will take place ins (classrooms, Library, Gymnasium, Toilet, Canteen, and extracurricular room and outdoor). In Houses (living room, in the child room and kitchen) (Figure 1).

Active sampling: Impaction and Andersen 6-stage, Impinger and Filtration (Figure 1).

Passive sampling: EDC (electrostatic dust cloths, EDCT (EDC-t-shits), Settled Dust, Dust filters, Swabs (doors, table and floor) and mops.

Culture-based methods alongside with molecular tools and other assays as describes in Figure 1 will be applied.

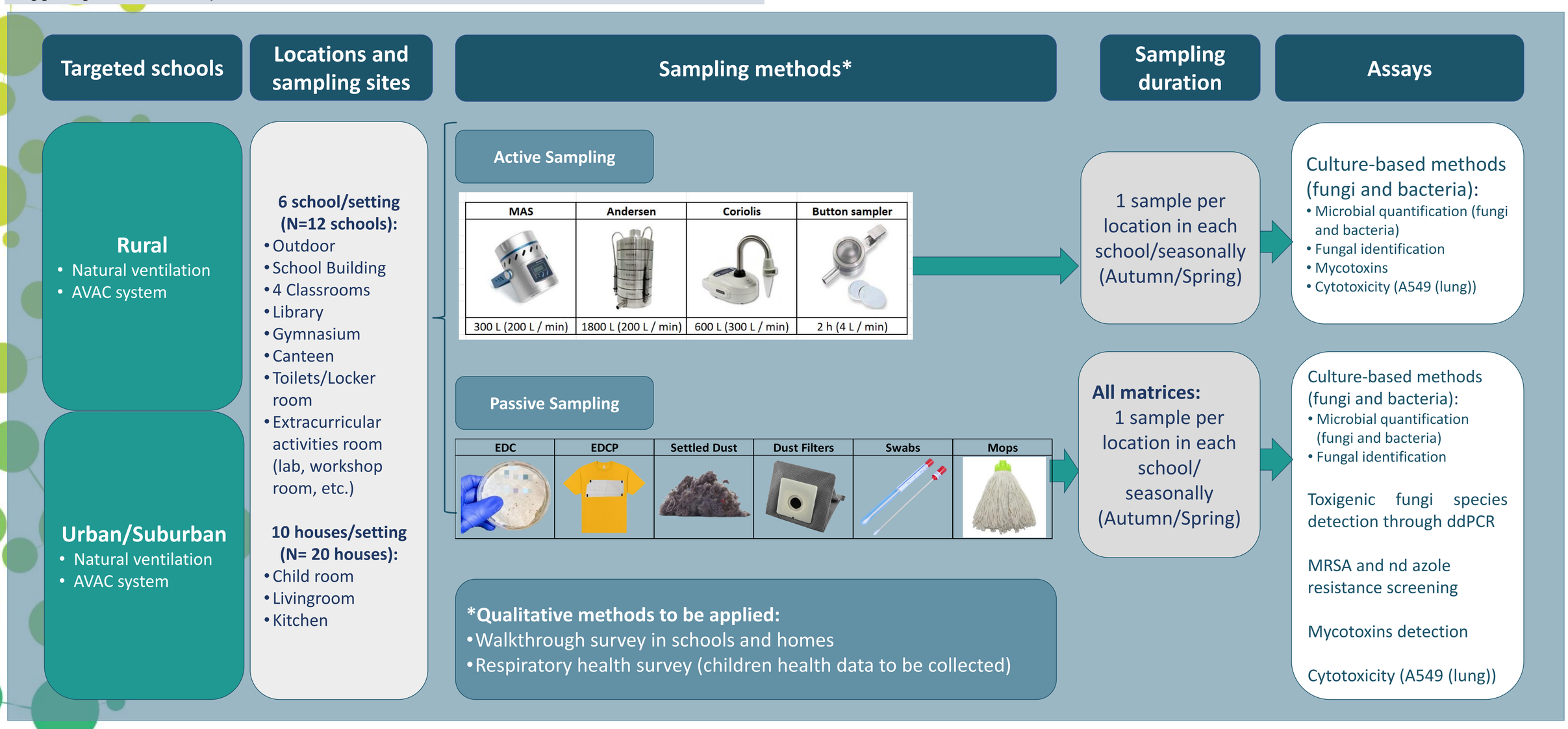

Figure 1. Microbial sampling approach for schools and homes

Conclusions

Although there are some guidance on microbial research and surveillance (4,5), no exposure assessment guidelines established protection thresholds for indoor air microbes in schools. A comprehensive assessment of microbial contamination in Portuguese elementary schools is crucial to ensure the improvement of children's health and to contribute to specific guidelines for exposure assessment in this specific environment as well as contribute to effective risk management.

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