

STONY BUILDING MATERIALS AS RECORDS OF POLLUTION

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The elements of the built environment have the potential to constitute records of contamination as they react and fixate pollutants. Several aspects related to the potential application of stony materials in this regard would be discussed here.

While the conditions of fixation of pollutants by humans and by materials surfaces have major differences, the studied of surfaces can be valuable in the comparison of exposition conditions. There is a special interest in the study of recent works and recent cleaned surfaces since there is higher potential for discrimination of signatures of pollution sources.

Built surfaces can be used as passive samplers that are permanently exposed to the pollution agents, allowing the study of the cumulative load up to the moment of sampling and avoiding the problem of definition of time interval for collection of samples. Indoor and sheltered outdoor surfaces would be specially valued places where there would be cumulative absorption and dry deposition of pollutants without leaching. In favourable conditions (assuming homogeneous fixation conditions), patterns of distribution can also help to study patterns of circulation of pollutants both horizontally and vertically.

Categorical and quantitative analytical studies can be performed in the characterization of the substances present in decay features. Spatial analysis of categorical studies, including the distribution of the frequency of decay features and identified substances can help to assess regions with higher pollution load (concentration of occurrences of a given substance). Qualitative studies might be useful in the screening and selection of locals for more detailed studies as well as definition of monitoring networks.

Quantitative analytical studies could be used to compare samples of different regions or to compare the alteration features with the substrate. One must be aware of the effect of differences of exposition time and in conditions that might affect fixation such as reactivity of substrates, environmental parameters and also morphological aspects of aspects of buildings.

Besides the characterization of surfaces at a given time, longitudinal studies on cleaned materials might contribute to assess the persistence of pollution sources. In favourable conditions and depending of the time framework of interest, studies of periodically cleaned surfaces might help to assess variations in time of the pollutants.

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