

Fungal Growth Associated with Ethanol-Based Collection Storage Facilities



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Modern collection storage facilities have environmental systems that strictly control temperatures, humidity, and light exposure for museum specimens. These systems assist in the long-term preservation of museum collections by limiting the exposure of an object to damaging conditions. A recent long-term high heat and humidity event within an alcohol collection storage facility at the Smithsonian Institution, Museum Support Center, was associated with a large scale fungal growth in the interior of the building. Some types of the fungal growth inside the building appear to exist in the presence of ethanol vapor that does not dissipate readily since it is heavier than air. In order to combat this problem, we have removed materials such as paper and wood to reduce fungal growth. Fungal growth outside the building also occurred, predominantly near the rooftop ethanol-laden air exhausts. The outdoor fungi revealed several species, one of them being *Baudoinia panamericana*, related to the commonly known “whiskey fungus” that has long been a problem in distillation facilities and the surrounding residential areas. Attempts to clean outdoor surfaces and structures contaminated with *B. panamericana* are only temporarily successful as the contamination reappears. One solution is to eliminate the primary catalyst that leads to its rapid growth. To accomplish that task, the HVAC system must be adapted to house a thermal oxidizer that would break down the vapor flowing through and out of the facility into more basic components such as water and carbon dioxide. In addition, titanium dioxide photocatalytic coatings can be applied to nearby surfaces that break down organic molecules into CO₂ and H₂O in the presence of ultra violet light (UVA, ~365nm) found in sunlight (and many artificial room lamps).

MCI

Topics in Museum Conservation

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MCI Theater

MUSEUM SUPPORT CENTER

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