

Scope, Application and Summary of Methods Used for Analysis by CEI Labs, Inc.

Scope and Application: Spore Traps

Spore trap cassettes allow for the sampling of a volume of air for the presence of both viable and non-viable mold spores, as well as other particulates that may be present in air including, but not limited to: pollen grains, animal dander, debris, skin cells, fibers, soot, etc. A spore trap analysis cannot differentiate whether a mold spore is viable or non-viable, but does allow for identification to genus level utilizing optical microscopy for most common indoor molds. This SOP covers the analysis of any type of spore trap commercially available, including the Air-O-Cell, Allergenco-D, Cyclex-D and Micro 5.

Summary of Method: Spore Traps

A pre-cleaned slide is first labeled with the sticker corresponding to the sample. The cassette is carefully pried open and the sample slide is removed. The sample slide is placed face up and affixed to the pre-cleaned slide using clear nail polish. The sample slide is stained with lactophenol cotton blue, and then a cover slip is placed over the top. Analyzing the slide involves the identification and counting of each particle (fungal spores and mycelial fragments, pollen grains, skin cells, fibers and debris) observed in the area of deposition at a minimum of 600X magnification. This number is reported as counts per cubic meter of air, which is calculated using the area of deposition examined (100%), the volume of air collected, and the number of particles counted.

Scope and Application: Tape Lifts

This method applies to the optical analysis of surface samples for vegetative and reproductive structures/fruitlet bodies of fungi. It is of great value for sampling surfaces that cannot be dismantled or removed. This non-cultured method allows for the detection of fungal spores, fruiting bodies, mycelial fragments, pollen grains, insects and insect parts, as well as non-living particles such as debris and fibers. The method provides results that are expressed as relative concentration (Massive, Numerous, Many, Few or None Detected) rather than numerically.

Summary of Method: Tape Lifts

The adhesive side of a piece of transparent tape approximately 2-3" long is used to pick up fungal spores and particles from a surface suspected of having growth or deposition. A pre-cleaned slide is labeled with the corresponding sample number, and then the tape is placed on the slide over a drop of lactophenol-cotton blue. The fungal spores and fragments are identified and reported as a relative concentration for each mold in relation to the total area sampled.

Scope and Application: Cultured Air

This method applies to the culture and analysis of air samples for colony forming units (vegetative hyphae/spores). This method is used to determine whether the air in an area suspected of fungal involvement contains viable mold spores or vegetative hyphae, and if so, how many of these units per cubic meter of air.

Summary of Method: Cultured Air

Culture plates containing air samples are placed in an incubator for a period of up to two weeks to allow growth of any colonies that may arise from the sample. The plates are checked daily to avoid overgrowth, and each colony is identified and counted. These raw counts are multiplied by a factor determined by the quantity of air sampled, and the results are reported as Colony Forming Units (CFU) per Cubic Meter (m³).

Scope and Application: Cultured Swab/Bulk

This method applies to the culture and analysis of swab, bulk and dust samples for colony forming units (vegetative hyphae/spores). This method is used to determine whether a sample suspected of fungal involvement is capable of producing a colony (viable), or is simply discoloration or a dead colony incapable of producing further growth (non-viable). The results can be expressed as the number of colony forming units per weight, area or sample, or simply as presence or absence.

Summary of Method: Cultured Swab/Bulk

Swabs: Swabs can be either directly plated or washed in a measured volume of sterile water then plated to determine the number of spores per swab. This can then be extrapolated to the area sampled.

Bulk: Bulk samples can be weighed then washed in sterile water for plating. The results can then be expressed to reflect the number of colony forming units per weight.

Dust: Vacuum samples are handled in the same manner as bulk samples and reported as colony forming units per weight and/or area.