Sampling Protocols for Mold

The following can serve as some general guidelines for responses and actions to determine as a basis of analytical results and visual observations.

- Bird or bat droppings accumulating in air intakes, ducts, and/or rooms frequently contain virulent pathogenic fungi, such as Cryptococcus neoformans and, in some geographic areas, Histoplasma, as well as fungi of lower virulence such as the toxigenic Aspergillus fumigatus. These organisms are not all reliably detected by sampling air or droppings; accumulated droppings should automatically be regarded as hazardous sources of pathogenic fungi. Appropriate action should be taken for the safe removal of any accumulations of bird or bat droppings.
- The persistent presence, demonstrated on repeated sampling, of toxigenic fungi (e.g., Stachybotrys atra, toxigenic Aspergillus, Penicillium, and Fusarium spp.) indicates that further investigation and appropriate action should be taken.
- The confirmed presence of one or more fungal species occurring as a significant percentage of a sample in indoor samples and not similarly present in concurrent outdoor samples is evidence of a fungal amplifier. Appropriate action should be taken.
- The “normal” air mycoflora is qualitatively similar to and quantitively lower than that of outside air. The number of fungal isolates in outdoor air is affected by the sampling technique, the season, weather conditions, activities, etc. Published data on the range of “normal” values are not readily available, and those that are available may be based on sampling techniques unlikely to be applied in modern indoor studies. It is noteworthy, however, that many television newscasts include mold and pollen counts as part of their weather segments.
- If more than 50 CFU/m^3 (in either indoor or outdoor air) of a single species (other than Cladosporium or Alternaria spp.) are detected, there may be reason for concern. Further investigation should be considered if a repeat sample confirms the finding and establishes that it is based on an indoor source.
- Up to 150 CFU/m^3 is acceptable if there is a mixture of species reflective of the outdoor air spores. Higher counts suggest dirty or inefficient air filters or other problems.

- Up to 500 CFU/m^3 is acceptable in summer if the species present are primarily Cladosporium or other tree or leaf fungi. Values higher than this may indicate failure of the filters or contamination of the building.
- The visible presence of fungi on moldy ceiling tiles, humidifiers, diffusers, air supply ducts, or other surfaces (including microscopically visible fungi in humidifiers) requires investigation and remedial action regardless of the airborne spore load.
- The sensitivity of air sampling for the detection of fungal amplifiers is imperfect, and false negative results can occur; some species are detected particularly poorly, especially stachybotrys which may be masked by other molds which are more viable, or may not be easily detected in air because the spores are in a sticky sack, resulting in less likelihood of passive aerosolization. If a fungal amplifier is suspected, other means of investigation should be used, as described elsewhere.

The ultimate goals of diagnostic indoor air mold studies are:

- To determine if sufficient mold propagules, particularly those bearing irritating or immunosensitizing chemical components, are being produced and dispersed within the building to account for (or predict) symptomology; and
- If a connection between molds and symptoms is likely, to find and eliminate sites of mold amplification within the building.