

Bioaerosol Total Mold Spores:

Industry Guidelines for Bioaerosol

Ideally, total mold spore concentrations should be lower than the outdoor control sample and absent elevated levels of “marker” molds (i.e. *Aspergillus/Penicillium*, *Chaetomium*, *Cladosporium*, *Stachybotrys*) which are specifically related to indoor moisture issues. Based on variability of outdoor mold spore concentration and distribution, caution should be used when comparing indoor to outdoor mold concentrations. When interpreting indoor air quality, the following industry guidelines were used to provide parameters to evaluating the degree of potential indoor airborne mold amplification. The guidelines are based on a “Clean” building which is free from current or historical water intrusions or elevated moisture conditions and free from elevated biological, cellulose or synthetic fibers.

Mold (Spores/m ³)	Mold Types	Description
<1,000	Penicillium, Aspergillus, Cladosporium	Indoor Source Unlikely
1,000 – 5,000	Penicillium, Aspergillus, Cladosporium	Possible Indoor Source
5,000 – 10,000	Penicillium, Aspergillus, Cladosporium	Indoor Source Likely
>10,000	Penicillium, Aspergillus, Cladosporium	Chronic Indoor Amplification
Indoor < Outdoor	Chaetomium, Stachybotrys	Indoor Source Unlikely
Indoor to Outdoor Difference ≤ 5 Spores	Chaetomium, Stachybotrys	Possible Indoor Source
Indoor to Outdoor Difference > 5 Spores	Chaetomium, Stachybotrys	Indoor Source Likely
<2,000	All Types	Indoor Source Unlikely

- Amplification of *Aspergillus/Penicillium* types: if the difference between the indoor and outdoor samples is <300 Spores/m³ then indoor source is unlikely, 300-800 Spores/m³ an indoor source is possible or >800 Spores/m³ indoor source is likely.
- Amplification of *Cladosporium* types: if the difference between the indoor and outdoor samples is 1 to 1.4 times the outdoor concentration then an indoor source is unlikely, lower than or equal to 1.6 times the outdoor concentration then an indoor source is possible or more than twice the outdoor concentration then an indoor source is likely.

Standards or Threshold Limit Values (TLV’s) for airborne concentrations of molds, or mold spores have not been set. Currently there are no EPA regulations or standards for airborne mold contaminants. The American Conference of Governmental Industrial Hygienist (ACGIH) recommended approach to assessing and controlling mold exposures relies on visual inspection, assessing occupant symptoms, evaluating building performance, monitoring potential environmental sources and application of professional judgement.