

How to Read a Mold Inspection Report

Did you know that there is NO federal standard on how many mold spores should be in your home compared to the outside? And because mold is ubiquitous (means everywhere) on this planet, it is not hard to find mold when you ask an Indoor Environmental Professional (IEP) to inspect for mold. Too many times, I have seen an adjuster or a homeowner ask for a mold inspection and low and behold when the report comes back there's elevated mold spore counts per cubic meter of air compared to outside air and now the mitigation restorer is in trouble for potentially causing elevated mold spores!

Not hard to find mold when it everywhere!



- **Collection:** Typically, a specialized pump pulls 15 liters per minute (LPM) of air through a sticky cassette or petri dish over a period of 5 minutes indoors, where outdoors it is typically 10 minutes.
- **Laboratory Analysis:** A lab technician looks at the trapped particles under a microscope to count the number of spores and identify the specific mold types (genera). Only counts part of the slide and extrapolates how much there is total. Raw count vs. spored per cubic meter of air.
- **Outdoor Comparison:** The lab compares your indoor spore counts and types against an outdoor control sample. Because mold spores naturally float in from outside, an indoor count that is much higher than the outdoor baseline—or the presence of specific types of mold indoors that are not found outside—can signal an indoor growth problem.

Also, remember that an air sample is just a “snapshot” of what might be going on in your home. The way I explain it to my students is if you go outside and take a photo of the sky and when you look at your photo it has a flock of geese in the photo, does that mean we have a goose problem? No, it just means you happened to catch a flock of geese in your photo and when taking air samples in a home you could get a completely different result just around the corner in the home depending on negative air pressure drawing spores from drain lines or from HVAC system supply ducts, or there just being more airflow in a particular area giving you a better picture of amount and type of mold spores.

Excerpt from EPA Mold, Moisture and Your Home document:

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. It is impossible to eliminate all mold and mold spores in the indoor environment. However, mold growth can be controlled indoors by controlling moisture indoors.

Part of the IEP's job is to help develop a mold testing air quality sampling plan specific to your project, and to help interpret the lab results in light of discoveries made during the visual inspection of your home. I've heard mold testing described as "an art and a science," and I agree with that sentiment. Since mold is not a federally regulated contaminant it has been a little bit of the wild, wild west in terms of who tests, what they test for, and how the results are interpreted. For a customer – that should scare you! – because it has meant that anyone could call themselves mold inspectors without having adequate training or professional credentials to demonstrate their competence!

- **Air sampling:** the most common form of sampling to assess the level of mold. Sampling of the inside and outdoor air is conducted and the results to the level of mold spores inside the premises and outside are compared. Often, air sampling will provide positive identification of the existence of non-visible mold.
- **Surface samples:** sampling the amount of mold spores deposited on indoor surfaces (tape, and dust samples).

Swab Testing and Tape Lifts

These tests can be used to identify the type of mold at a point of contact that is tested. It ONLY tells us of the mold on the tested area and is not necessarily representative of the overall conditions in a building. These tests are useful when we have hidden areas or extremely wet areas with mold. Some of the more toxic molds such as *Stachybotrys* produce very few spores in the air. Swabbing the suspect areas in these instances is an important tool when used along with air testing. Swabs and tape lifts have limited use as a stand-alone test. These tests do not provide the context of the overall conditions. We often need to require additional testing when only swab or tape lift tests results are provided.

Swabs and tape lifts do not quantify the amount of mold; they only qualify the type of mold in a defined spot. The air test quantifies and qualifies, but can miss or undercount the contamination of hidden or high moisture molds. A good testing strategy considers many site conditions to obtain the most meaningful results for a proper assessment.

Some Building Biologists refer back to the [Healthy Home Standard](#) for guidance on interpreting sporetrap results:

Spore Types	Indoor Fungal Reservoir Unlikely	Cannot Exclude Indoor Fungal Reservoir	Indoor Fungal Reservoir Likely
Outdoor spore types	IA < 1.2X total OA	IA < 2X total OA	IA > 2X total OA
Penicillium/Aspergillus	IA < OA + 300	IA < OA + 800	IA > OA + 800
Stachybotrys	IA < OA	IA < OA + 10	IA > OA + 10
Chaetomium	IA < OA	IA < OA + 20	IA > OA + 20
Mycelium fragments	IA < OA + 150	IA < OA + 300	IA > OA + 300
Σ Diverse spores	IA < OA + 400	IA < OA + 800	IA > OA + 800
Values are in spores/m ³ IA = indoor air OA = outdoor air			
Reference: Spore trap matrix, German government's mold assessment and remediation guideline presented the 10 th annual VDB fungal conference. Cited in <i>Indoor Environment Connections</i> by Peter Sierck.			

Building Biology Sporetrap Interpretation Method

****As you can tell from the above chart the difference between indoors and outdoor samples needs to be significant***

It is important that the Indoor Environmental Professional (IEP) provide details on their inspection including:

1. **Objectives of testing.**
2. **Types of testing along with sampling strategy.**
3. **Photos** of where samples were taken (air & surface).
4. **Visual inspection** with photos showing any visible mold, how much, on what materials, in what rooms.
5. **Sketch** showing where samples taken (air & surface) and where mold remediation may be recommended, including any wet areas.
6. **Photos of thermo-hygrometer readings** showing temperature and relative humidity outside, inside affected, inside unaffected, and HVAC system. **Note if HVAC is functional and running (heat or A/C)*
7. **Photos of moisture content readings** utilizing a penetrating moisture meter if at all possible, noting if materials have acceptable moisture content levels or not.
8. **Photos showing conditions of the home** and whether there are unrelated moisture issues in the home or not.
9. If taking air samples to compare to outdoor samples then a **minimum of 2 outdoor samples** should be taken (windward & leeward sides of the building, noting wind speed and direction).
10. **Summary with details on remediation**, if needed, and if someone was negligent or not if allegations of incomplete drying or causing mold.

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Top 10 Questions to Ask the Indoor Environmental Professional Before You Hire Them

Indoor Environmental Professionals (IEPs) are who you hire to test for mold or asbestos typically on water losses. Too many times we hire them without a specific plan or agreed upon sampling strategy and when the results come back and they found visible mold, elevated mold spore counts indoors, or some materials tested positive for asbestos, we struggle to identify if the mold came from this water loss, are any materials still wet, could there be unrelated water issues in the structure, and is any mold related to incomplete drying by restorer? Did asbestos fibers get aerosolized and spread to unaffected areas and who caused the cross-contamination? How about the HVAC system? Visible mold found or just elevated mold spore counts compared to outdoor samples and any contamination from the dreaded "cross-contamination" of mold spores or asbestos fibers? Any evidence of cross-contamination?

It is critical we have a "huddle" with the IEP to discuss what information we need and agree upon a specific sampling strategy PRIOR to the IEP's inspection!



Not too hard to find mold since mold is ubiquitous on this planet and many older buildings still have asbestos containing materials (ACM) in some common building materials, e.g., insulation, floor & ceiling tiles, and joint compound.

See Top 10 Questions I recommend you ask before hiring an IEP and sending them to find mold or asbestos:

- 1. Education/Certifications** – Certified Industrial Hygienist (CIH), Certified Indoor Environmentalist (CIE), etc. Do they have the IICRC AMRT mold remediation certification or are they AHERA certified? Any state licenses required? State Regulations for mold or asbestos?
- 2. Sampling Strategy** – air samples AND tape lift/surface samples? I recommend air samples taken 4-6 feet off the ground with air pump set for 15 LPM for 5 minutes indoors in occupied areas and 10 minutes outdoors if it is a windless day, otherwise 5 minutes outdoors is fine. Need 2 outdoor samples (1 from the windward side of home and 1 from the leeward side of home). Need indoor air sample from each affected room and 1 from an unaffected room to set a baseline. In addition, we need tape lift samples of

anything that looks like visible mold to identify if it is mold or not and what species of mold.

3. Photos – need good photos of all affected rooms and any potential visible microbial growth, how much and where located (level of home/room/wall/floor/ceiling, etc.). Also, photos of any potentially unrelated damage that could have been caused by water (water stains, dark staining on wood materials, deterioration of materials, etc.). Finally, we need photos of all readings.

4. Conditions of the home – description with photos showing the conditions of the home (clean, messy, dirty, filthy, etc.). Any signs of pets in the home or unrelated damage?

5. Sketch – sketch with dimensions of all affected areas, showing areas to be remediated or abated, if needed, and where potential visible microbial growth or wet materials were found. Ask for sketch to correspond to photos with room labels, walls 1, 2, 3, 4, etc., with doorways shown in the sketch and to note any unrelated damage on the sketch, as well as where samples were taken (air & surface).

6. Readings – both psychrometric with a thermohygrometer and moisture content with a penetrating moisture meter, if possible. Need psychrometric conditions outside, inside affected, unaffected, and HVAC system on day of inspection. Need moisture content readings of any potentially affected materials in affected areas or where there might be unrelated moisture issues. *Ask for photos of the readings labelled where reading was taken *Ask for readings to be labelled, e.g., Living Room/Wall 1/Sill Plate/22% or Dining Room/Wall

7. Evidence of Negligence – If mold or wet areas found, does the inspector think it's related to areas the mitigation contractor dried, and could it represent signs of incomplete drying or could there be unrelated moisture issues in the home? Any signs of dust, debris, sloppy workmanship, etc.?

8. Laboratory Used to evaluate samples – recommend we obtain all breakdowns of species of mold, spores per cubic meter by affected and unaffected rooms compared to outdoor samples. Turn around time for test results to be provided?

9. Clearance Criteria – what criteria do they use to identify if there is a mold issue and what criteria do they use to judge successful mold remediation? *No national standard on how much mold is healthy or unhealthy

10. Cost for testing – initial test for mold or asbestos, including writing a protocol for mold remediation and cost for post-remediation verification test? *Always ask for a verbal summary of their report to discuss results

Finally, I recommend asking for their opinion, if visible mold was found, if they think it was pre-existing or related to a recent water loss?

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MEET ED

Instructor Ed Jones has more than 30 years of experience in the industry, has the title of Master Water Restorer, is an Institute of Inspection Cleaning and Restoration Certification (IICRC)-approved instructor, and has served on the S500-2021 consensus body committee to develop the most recent standard.



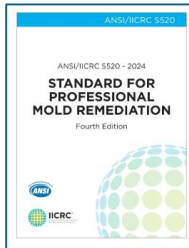
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In summary, it is critical that you choose an independent IEP that has the proper credentials, including ACAC (American Council for Accredited Certification): which offers CESB-accredited credentials like the CRMI (Council-certified Residential Mold Inspector), which requires verifiable field experience, rigorous exams, and ongoing recertification. IICRC Applied Microbial Remediation Technician (AMRT) certification, IICRC Water Restoration Technician certification (WRT) and the IICRC Applied Structural Drying certification (ASD).

Go over the objectives of the inspection and ask for the list above before the inspection is performed, and finally, debrief after the inspection to go over their report with them, including their recommendations. **The IEP MUST be independent from the mitigation or remediation contractor** and should be hired by someone that is unbiased. Follow the IICRC S520 Mold Remediation Standard for remediation practices and procedures.

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