Anatomy a [$3K] IICRC S500 Compliant Forensic Water Damage Inspection

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Not Providing Legal Advice For Consumers

NAERMC/Gary Rosen, Ph.D. are providing technical information to Attorneys, Public Adjusters, and Mold Assessors / Remediators by a State Licensed Insurance Adjuster as well as by a State Approved Training Provider for New Mold Assessor and Mold Remediator Licensees (NAERMC).

We are not attorneys and are not attempting to provide legal advice to Consumers.

NAERMC
National Association of Environmentally Responsible Mold Contractors

Overview of "Anatomy"
Reason #1 For S500 Compliant Inspection

Insurance Carrier Managed Repair Programs cut corners and only pay for sub-standard, non-IICRC S500 compliant dry-out work. At the same time promising Tallahassee IICRC compliance.

As a result, there is mold after drying which Carriers pay to then have covered up with stain killers and the illegal application of biocides.

After a water event/release, have the Carrier send out their Managed Repair/ Preferred Vendor to do the dry-out.

They will never perform the IICRC required/defined Pre-Drying inspection. They will just dry.

Perform an IICRC compliant Post-Drying Inspection and find the covered-up mold and document the sick, mold-infested home.

Expose the Negligent / Illegal / Failed / Sub-Standard Carrier COVERED UP dry-out work.

Overview of "Anatomy"
Reason #1 For S500 Compliant Inspection

Because IICRC S500 does not allow drying if there is mold — per S500, remediate only. Therefore:

- **If there is mold after drying, the COL is the dry-out contractor. (How can they prove otherwise?)**

Find the mold after drying. <u>Open a new claim</u> to remediate the damage.

COL: Negligent, Failed, (Often Illegal), Sub-Standard drying.

Timing of Loss: The period of the dry-out.

<u>No CAPS on new claim.</u>

Overview of "Anatomy"
Reason #2 For S500 Compliant Inspection

We perform timely IICRC S500 compliant Pre-Drying inspections to fight Carrier so-called Forensic Engineers where they always come up with (phony) reasons to deny coverage due to long term, repeated, continuous water damage exclusion or due to pre-existing damage.

But they have not performed an IICRC S500 compliant Pre-Drying Inspection to so determine.
See IICRC Definition below.

1.2.2.1 Initial (Pre-Drying) Inspection (Part 1)
Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth…
(S500-2021 1.2.2.1)

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NAERMC
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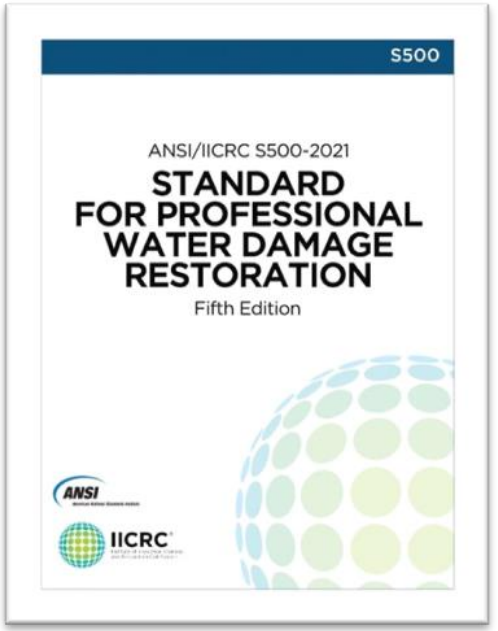
PERFORM ANSI/IICRC S500 COMPLIANT WORK.

- New Florida laws (SB76/SB1598) require Industry Standard Compliance by independents when doing Water Damage Restoration insurance work. (That means per ANSI-Approved IICRC S500-2021.)
- That certainly can be good news for both independent contractors as well as insureds. Why?
  - Means potentially better-quality work for insureds.
  - Good for independents, as Carriers must pay for Industry Standard Compliant (more expensive / extensive) restoration, remediation, and inspections.



Today we focus on ANSI/IICRC S500 Industry Standard Compliant Inspections.

S500 compliant Inspections are $$$.

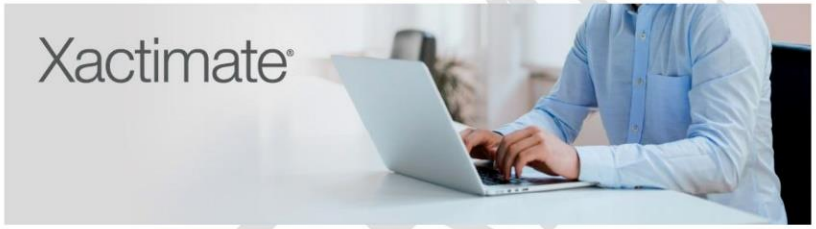
WE PROVIDE A FREE REFERENCE, LISTING ALL SIGNIFICANT REQUIRED IICRC S500 PROCEDURES.

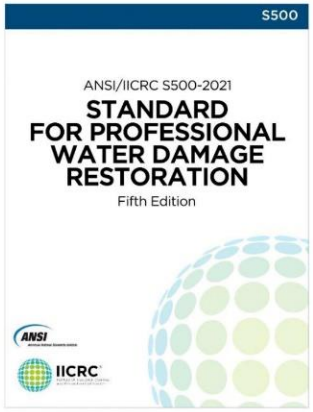
IICRC S500-2021 Standard for Professional Water Damage Restoration: Significant Required Procedures

IICRC Institute of Inspection Cleaning and Restoration Certification

ANSI American National Standards Institute

THIS LIST OF REQUIRED PROCEDURES IS USED IN THE XACTIMATE COST ANALYSIS TO CROSS REFERENCE XACTIMATE COSTS TO IICRC REQUIRED PROCEDURES.

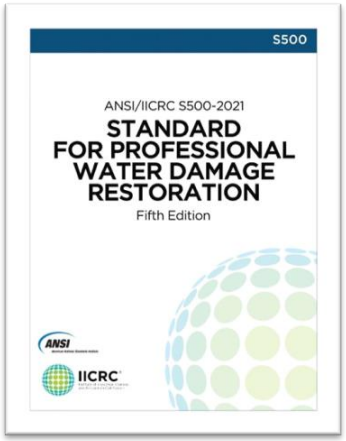




IICRC Compliance per NAERMC www.free-mold-training.org

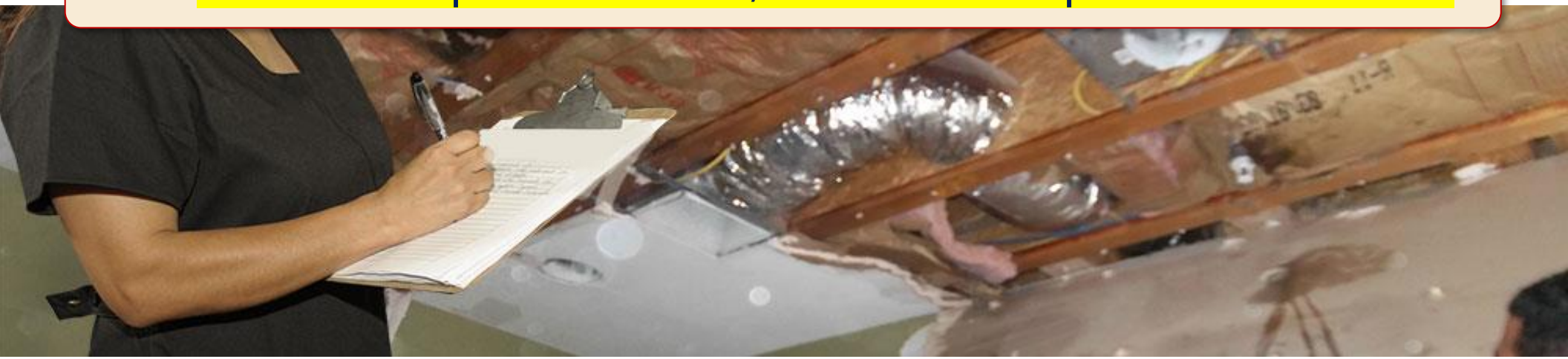
https://onedrive.live.com/?cid=2377879DC5BEC426&id=2377879DC5BEC426%2115273&parId=2377879DC5BEC426%2115270&o=OneUp

PERFORM ANSI/IICRC COMPLETE & COMPLIANT INSPECTION



- As defined by the ANSI/IICRC S500 standard, the S500 compliant Inspection is **intrusive.**
- To comply with S500, the Inspection must check inside and behind assemblies, such as remove baseboards, open walls, and / or check behind toe kicks and under cabinets (under appropriate environmental controls).
- Carrier Managed Repair Program contractors / Preferred Vendors (called **MRP/PVs** for short) never perform intrusive S500 compliant Inspections.

When Independents do, there are important benefits.



PERFORM ANSI/IICRC COMPLETE & COMPLIANT INSPECTIONS TO:

- ☑ Comply with new Florida laws (SB76/SB1598).
- ☑ Fight Carrier wrongful / improper water damage claim denials based on alleged long term continuous leaks or alleged pre-existing damage.
- ☑ To better counter Carrier expert witness opinions used to deny coverage.
- ☑ To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

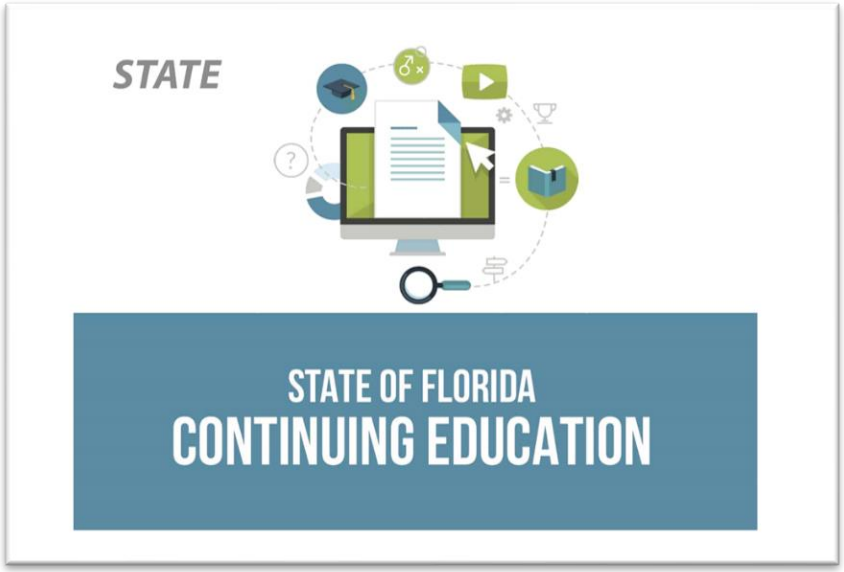
Perform an IICRC S500 compliant **Post Drying Inspection (never performed by Carrier MRP/PVs after drying).**

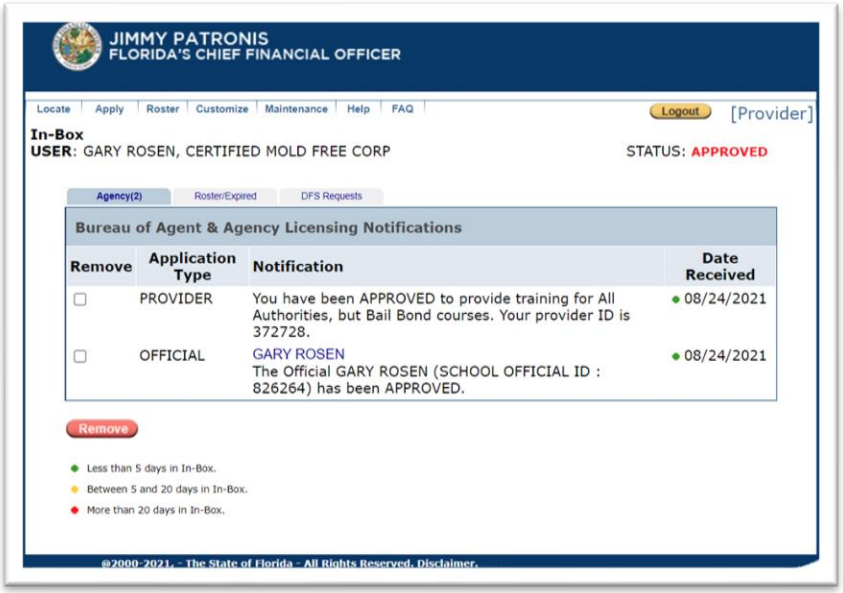
Find the failed / negligent work.

Find the hidden mold. Open a claim with no Caps.
Cause of loss = Failed / Negligent MRP/PV work.

A win for independents. A win for insureds.

CE Approvals. 2 Hours





Upon Completion of the 2-HR CE Training

Upon successful completion of this training, the Florida Licensed Mold Assessor will receive the NAERMC (National Association of Environmentally Responsible Mold Contractors):

Certified Water Damage Mitigation Assessor credential.

The credential never expires and has no renewal fees.

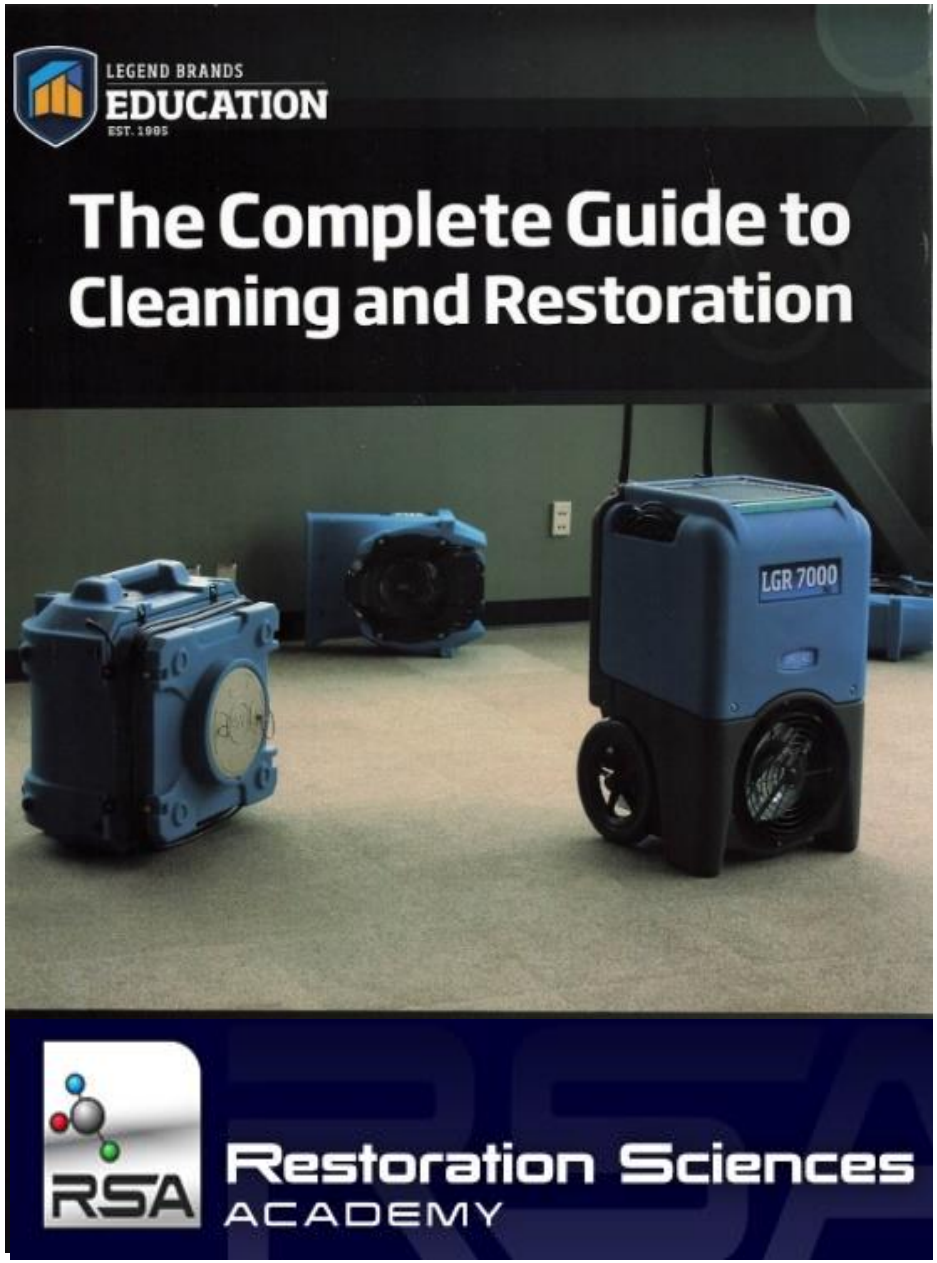
01

- WRT Training
- S500 Definitions
- Focus of Today's Training
- Legal Definition of Timing of Water Damage
- Proving the Timing of Permanent Damage

Legend/RSA WRT Training

- Legend/RSA is the #1 source for IICRC S500 Water Damage Restoration Technician (WRT) training material.
- However, the Legend/RSA training material is neither IICRC approved nor is it IICRC S500 compliant.
- IICRC approves only the WRT training providers. Not what they teach.

There are highly significant differences between WRT training and the actual ANSI-Approved IICRC S500 standard for both Inspection and Restoration.



ANSI-Approved S500 Is NOT Actually Taught

- IICRC-Approved training providers teach the Water Damage Restoration Technician (WRT) course using the not IICRC-Approved Legend/RSA training material.
- NOT by or with the actual ANSI-Approved IICRC S500 standard.

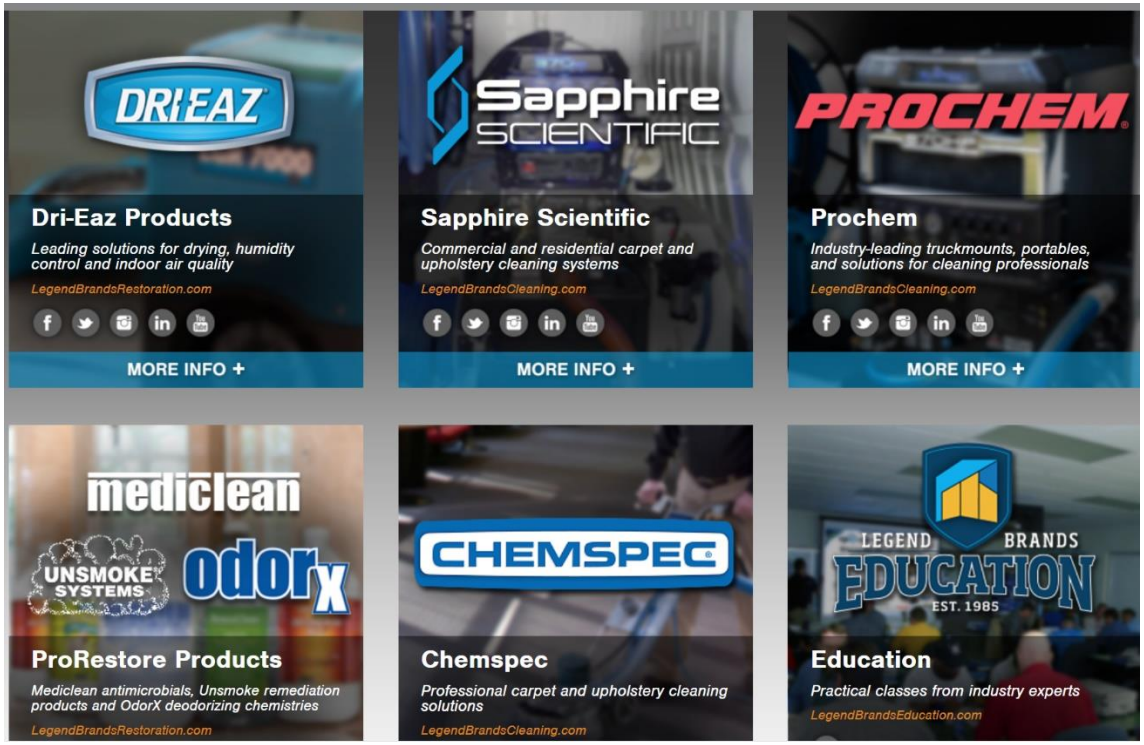
- **Again (I know hard to believe but believe it) IICRC approves only the training providers and not their training materials.**
- IICRC has no jurisdiction as to what is in the training courses except that they must cover what is on the 100 question IICRC WRT exam.

Because IICRC-approved WRT training does not teach per the IICRC S500 standard, neither Carriers nor their Managed Repair Program/Preferred Vendors WRTs (Carrier WRTs) have a clue as to what is IICRC S500 Industry Compliant. Crazy but true.

As a result, neither Carriers nor the MRP/PV WRTs ever do anything per ANSI-Approved IICRC S500.

- They have never been taught ANSI/IICRC S500. And
- **Costs too much to do things the right way.**

Legend Brand WRT Education



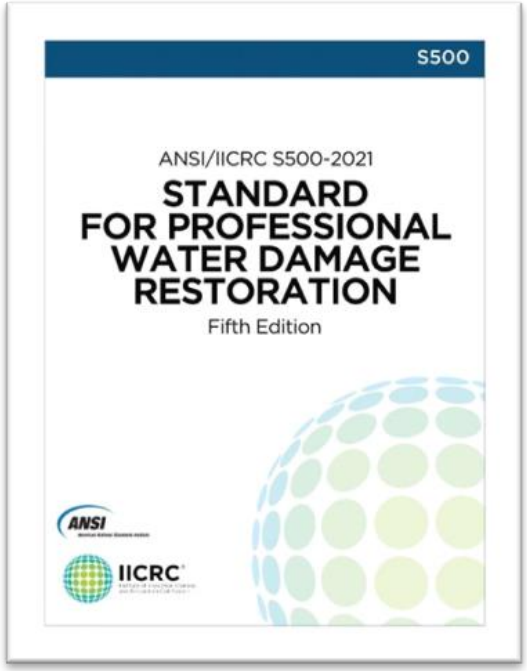
- Legend is the world's largest water damage restoration equipment and chemical / biocide supplier.
- The Legend/RSA WRT training is focused on teaching to Legend's agenda (using more equipment and more chemicals) and not <u>at all</u> what is taught in ANSI-Approved IICRC S500.

As a result, Legend/RSA training material defines a Water Damage Restoration <u>Inspection</u> completely different from IICRC S500.

IICRC S500: Initial (Pre-Drying) Inspection is Intrusive.

IICRC S500: Initial water damage restoration Inspection is intrusive.

- If mold is found, do not dry.
- Instead: Remediate/Remove.
  - Ripping out the wet materials uses a fraction of the equipment vs drying.
  - And you don't need biocides to cover up microbial growth and odors if you rip out the contaminated, odorous materials.



IICRC-Approved WRT training courses do not teach the IICRC S500 definition of a Pre-Drying Inspection which is Intrusive.

IICRC S500 requires that, before drying, one must thoroughly assess the water damage not only on surfaces but also within materials and determine if there is already bacterial odors or mold (Cat 2/3 Conditions) if so remediate/remove microbial growth. Do not dry.

Because the S500 Initial (Pre-Drying) Inspection is Intrusive. Never Taught in WRT Training.

- Because the IICRC S500 Inspection is intrusive it generally finds hidden microbial damage such as bacteria (as indicated by odors) and mold because **both grow fast after a water event especially in hot, humid tropical S FLA.**
- Per S500, if there is bacteria or mold DO NOT DRY. Remediate / remove only.

Reducing the use of dry-out contractors; drying equipment; and chemicals is not what the drying industry wants.

Therefore, the drying industry and equipment / chemical providers have come up with an alternative definition to the S500 Intrusive Inspection that is not intrusive …

In order to not find hidden mold/bacteria that would trigger remediation / removal vs. drying.

Key Take Away

- Bottom line is that MRP/PVs are not taught the ANSI-Approved IICRC S500 industry standard **Pre-Drying Inspection**. Instead, they follow what they learned in WRT training.
- As a result: Failed/Negligent work. Always mold after always non-Industry Compliant water damage work in hot, humid, tropical S. FLA.

Key Take Away: Perform an IICRC S500 compliant **Post Drying inspection** after MRP/PV dry-out and find the failed / negligent work.

Find the hidden mold. Open a claim with no Caps.
Cause of loss = Failed / Negligent MRP/PV work.
A win for independents. A win for insureds.

Section Summary

- WRTs, because they take the Legend/RSA training, do not have any idea as to what is in the ANSI-Approved IICRC S500 Standard for Professional Water Damage Restoration which is now Florida Law for Independents
- Neither do Carriers. Carriers tell Tallahassee that their MRP/PVs comply with industry standards and if Independents charge more "for the same" work they are abusers.

Carriers love the not S500 compliant (sub-standard) procedures taught in WRT training.

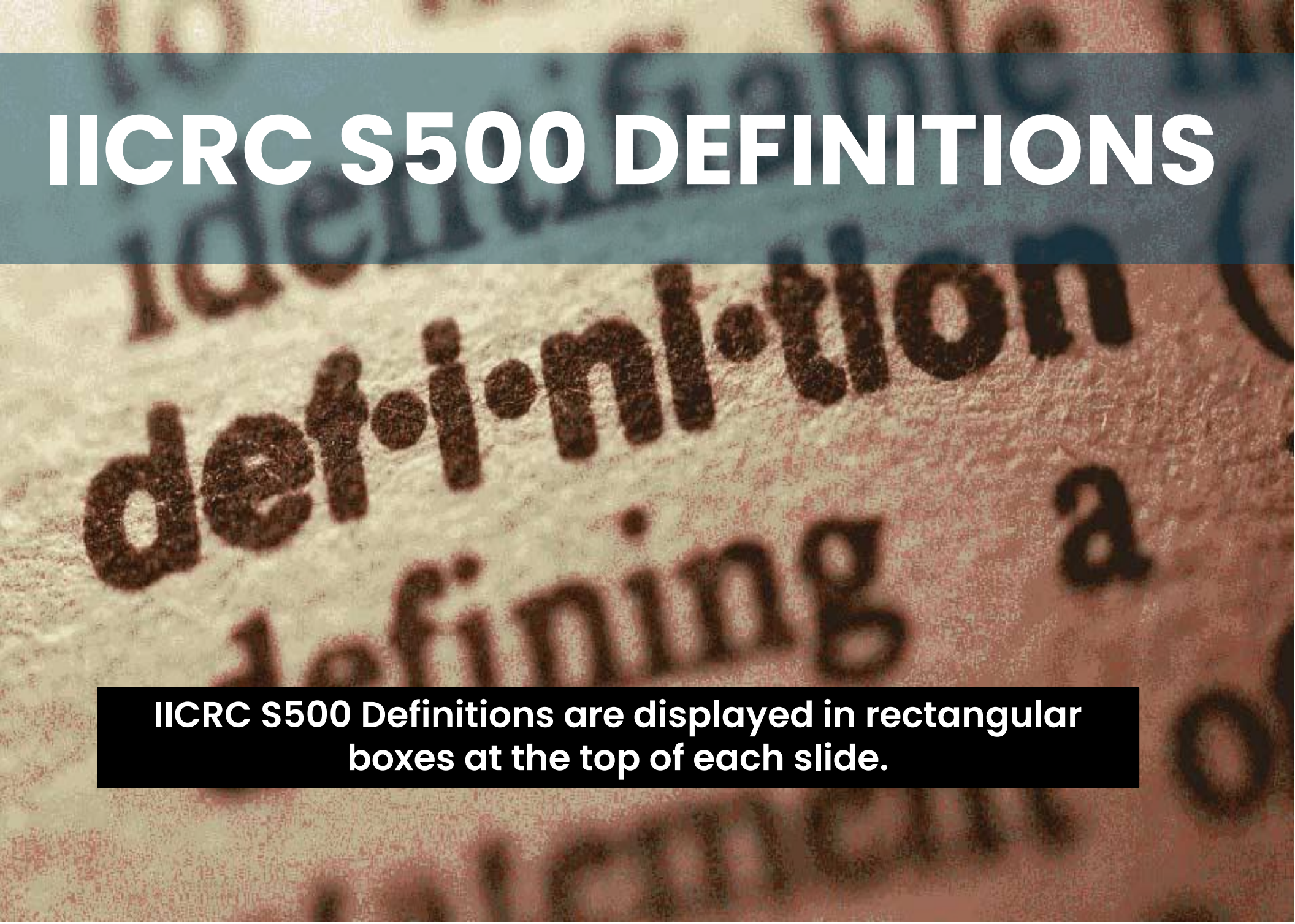
Saves them money. Drying and then painting over / covering up mold is much less expensive than remove/replace.

Carriers apparently are not concerned that sub-standard work results in mold infested sick homes…

Otherwise, they would require S500-compliant/mandated Post Drying Inspections to make sure the drying did not leave mold. But they don't allow /pay for S500 compliant Post-Drying Inspections.

Definitions coming up next are as defined by IICRC. If you've had WRT training, not at all what you've been taught.

IICRC S500 DEFINITIONS

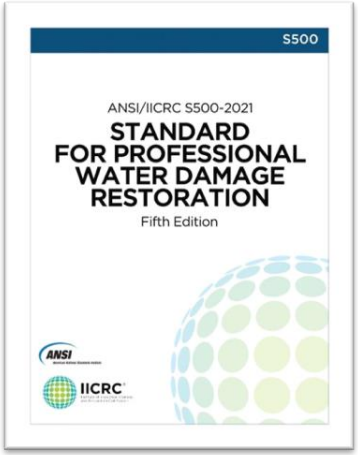


IICRC S500 Definitions are displayed in rectangular boxes at the top of each slide.

ANSI/IICRC S500 Defines Should

should: when the term should is used in this [IICRC S500] document, it means that the practice or procedure is a component of the accepted "standard of care" to be followed, while not mandatory by regulatory [government] requirements. (IICRC S500-2021 page 12)

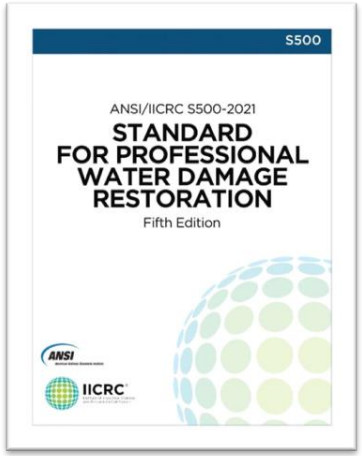
- The **American National Standards Institute [ANSI]** approved IICRC S500-2021 *Standard for Professional Water Damage Restoration* is the industry standard for both **inspecting** as well as **restoring** water damage.
- When an IICRC procedure says "**should**" (vs "recommended") the practice or procedure is a required component of the accepted standard of care.



Should in IICRC language means IICRC **required/mandatory** to comply with the IICRC standard of care.

What Is ANSI?

- The American National Standards Institute (ANSI) is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.
- There is only one ANSI-Approved Standard for Professional Water Damage Restoration.
- That's the current IICRC S500-2021 Standard (5th Edition) which is a minor update from S500-2015 (4th Edition.)



- When a new S500 release comes out, the prior release has its ANSI approval withdrawn. (S500-2015 and S500-2021 have the same definitions.)
- The Legend/RSA training guide is of course not ANSI.

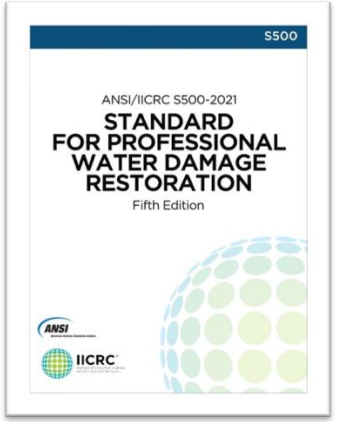
ANSI
American National Standards Institute

Key Take Away

- When preparing Xactimate based invoices for water damage restoration work, cross reference the Xactimate codes and descriptions with procedures from S500 that should ("required" to meet the Industry Standard of care) be performed.
- Explain your quote procedure to your attorney so he can be prepared to fight for you to get paid for every single IICRC required line item … which is all line items on your properly cross-referenced invoice.
- Procedures that by new Florida laws must be performed by Independents and therefore must be paid for by Carriers.

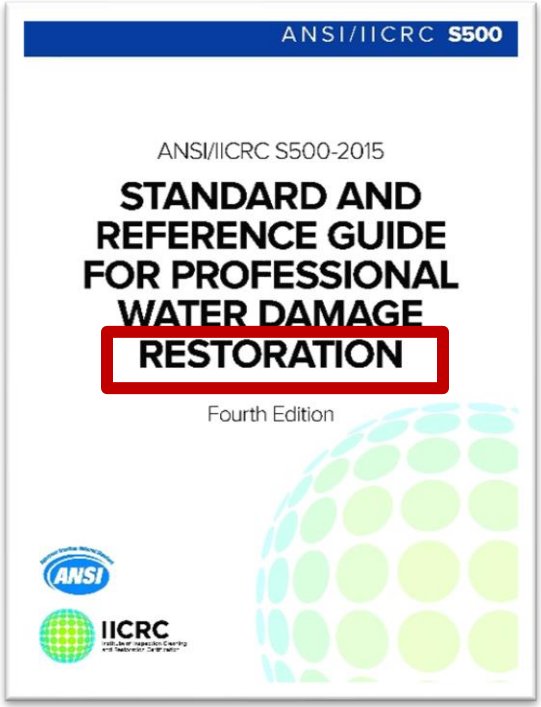
ANSI/IICRC S500 "Water Intrusion" Not Defined

- **Water Intrusion:** IICRC uses the terms water leak and water intrusion somewhat interchangeably.
- They also speak of water seepage, water loss, exposure, discharge, migration, release, and overflow.
- None of these terms are defined in S500.
- We prefer and will use the general term **water event.**



ANSI/IICRC S500 Definition: Water Damage Restoration

Restoration: to return a water damaged structure, system, or contents to a normal, former or pre-damage state. (IICRC S500-2021 page 20)



Restoration per IICRC can be either by Restorative Drying or Remediation/ Removal or both.

ANSI/IICRC S500 Restorative Drying & Drying Goals

Restorative Drying: the controlled removal of excess moisture from an indoor environment and affected materials; thereby, bringing a structure and its components, systems and contents to a pre-determined drying goal. (S500-2021 page 20)

Drying Goals: Drying goals may be at, or above the dry standard and should be documented as they relate to specific materials. The restorer **should** establish drying goals that would be expected to:

- return structure, systems, or contents to an acceptable condition; and
- **inhibit microbial growth** (S500-2021 10.6.6)

Key requirement of Restorative Drying and Drying Goals:
Inhibit microbial growth.

ANSI/IICRC S500 Remediation

Remediate/remediation: to remove microbial contamination consistent with IICRC standards. (S500-2021 page 20)

Depending on the findings from the initial ANSI/IICRC S500 Inspection, the scope of restoration work (the Restoration Response) will be either Restorative Drying or Remediation/ Removal or a combination of Restorative Drying and Remediation/Removal.

Per ANSI/IICRC S500: Remediate/Remove any microbial growth before drying.

ANSI/IICRC S500 is NOT the Drying Standard

- ANSI/IICRC S500 is <u>not</u> the Drying standard.
- ANSI/IICRC S500 is the Restoration standard. Why?
- Because for ANSI/IICRC S500, to restore a water damaged property is not only by **Restorative Drying** but also by **Remediation/ Removal** if and when Restorative Drying will not fully restore a property to pre-damage condition for example due to the presence of microbial growth, cabinet delamination/swelling, permanent stains, etc.

There is more to S500 than drying. For ANSI/IICRC S500, do not dry microbial contaminated materials. Remediate/Remove before or instead of drying.

The Mold Remediation procedures in S500 (water damage standard) are the same as in S520 (mold remediation standard.)

Permanent Damage. Not IICRC Defined

Permanent damage is physical damage that cannot be restored to pre-loss condition [pre-water event] by cleaning or restorative drying and can only be restored by remediation/ removal.

- Examples of permanent water damage that are not restorable by cleaning or drying:
  1. Wood rot, staining, rust, drywall softening, cabinet leg swelling and delamination, and **mold growth on porous or semi-porous material.**
  2. Cracking, breaking, collapse, wind related and other.
- We are today focused on permanent damage that can be analyzed to help determine the timing of a water event. That would be the first group — wood rot, staining… **mold growth.**

Coverage is triggered if there is **permanent** water damage before Day 14 such as finding microbial growth on wet or formerly wet drywall that is not cleanable or not restorable by drying — and therefore must be remediated / removed.

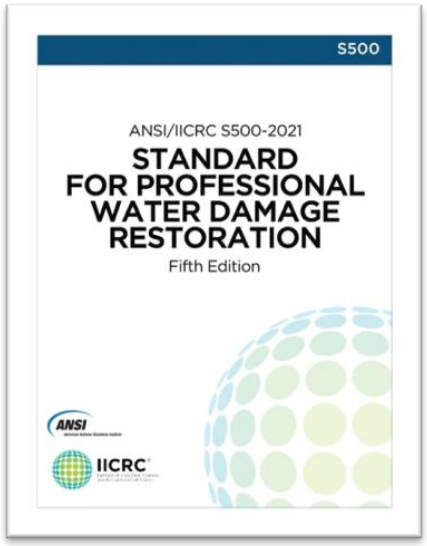
ANSI/IICRC S500 Defined Pre-Existing Damage

Pre-existing Damage the impairment of the appearance or function of a material from direct or indirect exposure to water or other conditions not related to the current water intrusion. (IICRC S500-2021 page 17)

- Perform an ANSI/IICRC S500-defined (intrusive) inspection to distinguish between:
  - **Pre-existing damage** not related to the current water event and
  - **New damage** that is from the current water event and failure to respond rapidly.

ANSI/IICRC S500 Defined Initial (Pre-Drying) Inspection

1.2.2.1 Initial (Pre-Drying) Inspection (Part 1)
Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth… (S500-2021 1.2.2.1)



The ANSI/IICRC S500 mandatory (uses the word "should") Initial (Pre-Drying) Inspection requires documenting / determining:

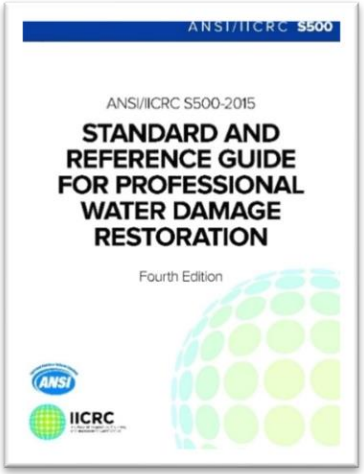
Source and time of the water event and subsequent water damage.

As well as distinguishing between **new damage** resulting from failure to respond rapidly and **pre-existing** damage.

That is the topic of today's class Parts 2, 3.

Initial (Pre-Drying) Inspection : Document Damage Inside Materials

1.2.2.1 Initial (Pre-Drying) Inspection . (Part 2)
… Professional moisture detection equipment should be used to inspect and document the extent of water migration and moisture intrusion into building materials and contents. (S500-2021 1.2.2.1)



The ANSI/IICRC S500 mandatory Initial (Pre-Drying) Inspection requires documenting the extent of water migration [and subsequent damage] **within/into** components.

Requires timely, intrusive inspection.

Note: While the Initial (Intrusive) Inspection is IICRC S500 mandatory, never done by Carrier MRP/PVs. Why?

1. WRTs not taught the S500 definition of Pre-Drying Inspection.
2. S500 intrusive Pre-Drying Inspections always find mold and therefore do not dry. Remediate. (WRTs: Go home.)

Per Dr. Ralph Moon, Prolific Insurance Defense Expert

Fungal Growth Succession on Gypsum Board Wall Assemblies

Ralph E. Moon, Ph.D. [1], Michael Bass[1], Chin S. Yang, Ph.D.[2]

[1] HSA Engineers & Scientists, Tampa, Florida
[2] Prestige EnviroMicrobiology, Voorhees, New Jersey

"The next lowest diversity was the painted front of the gypsum board and side face of the wall assembly (both 1.0 average taxa), and the painted horizontal base trim (1.1 average taxa). **Low diversity was attributed to chemical inhibitors in the paint** and low moisture content (vertical stud).

Painted drywall (drywall surface) has a mold inhibitor in it. That's why you must always look at the unpainted inside of walls as required by ANSI-IICRC S500 1.2.2.1 Initial (Pre-Drying) Inspection.

Paint Has Mold Inhibitor In It

Paints have mold inhibitors in them. One MUST check inside of walls before drying because surfaces can be free of mold but non-painted interiors full of mold (perform S500 defined intrusive Pre-Drying Inspection.)

Followed after drying by S500 defined intrusive Post-Drying Inspection.

But WRTs never perform either.

BEHR ULTRA® Interior Eggshell Enamel No. 2750

BEHR ULTRA® Interior Eggshell Enamel No. 2750 is a 100% acrylic paint and primer in one with advanced stain-blocking formula that will change the way you paint. This product, featuring NANOGUARD® Technology, forms an extra-protective shell that offers outstanding stain, scuff, mar and antimicrobial-mildew resistance and an easy-to-clean, STAYS LOOKING NEW LONGER® Finish with superior stain removal. This sophisticated color palette delivers exceptional hide and maximum moisture resistance.

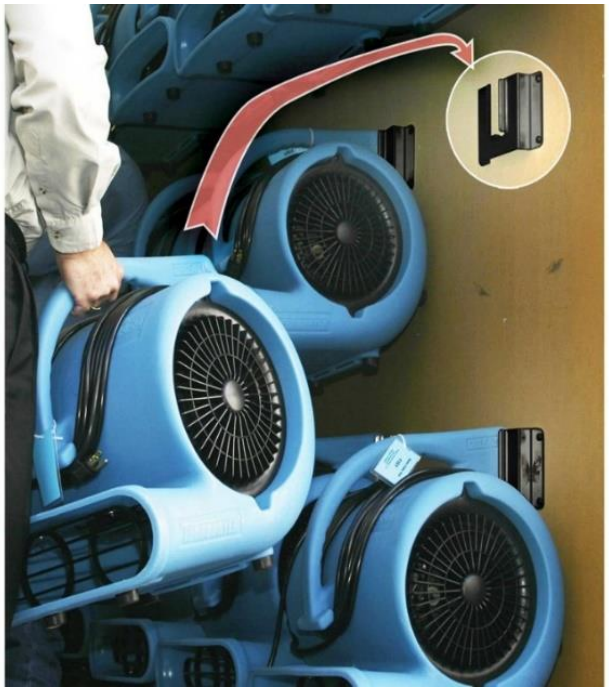
EPD

- Hide Gallery

ANSI/IICRC S500 Defined Post–Drying Inspections

Post-Drying Inspections: Once drying goals have been achieved in some assemblies, further inspection should be done to ensure prolonged exposure has not created unacceptable damage. (IICRC S500-2021 16.2.4)

- Says "should" so this is required by the Industry Standard of Care.
- Even though required by S500 (says "should"), never performed by Carrier MRP/PVs drying contractors.
- That's where we/you come in. We/you perform this required S500 compliant Post-Drying inspection **in** assemblies after MRP/PV dry-out.
  - Find the mold.
  - Hold the MRP/PV and Carrier responsible.
  - Open a new claim. No CAPS.



Key Take Away

- S500 requires intrusive inspection before drying.
- Per IICRC: If mold found in required Initial (Pre-Drying) Inspection, remove/remediate. Do not dry. Therefore, we conclude:
  - If there is mold after MRP/PV drying, it could not be considered pre-existing.
  - If there is mold after MRP/PV drying, it was caused by negligent, failed MRP/PV dry-out work.
- As a result: Timing of loss and timing of mold is the time of negligent, failed MRP/PV dry-out work.

Perform post-drying inspection. Find the mold after drying.

Cause of Loss (COL). Cause of Mold. Negligent, failed drying.
Open a new claim. No caps.

Assessors make sure you take high quality vivid pictures of the mold that resulted from negligent/ failed Carrier Drying.

Seeing is believing!

ANSI/IICRC S500 DEFINITIONS

Pockets of Saturation: Restorers **should open** assemblies (e.g., walls, stairs, flooring, wall base areas, voids, built-ins) to access pockets of saturation and remove unsalvageable, contaminated materials and components. (S500-2021 12.3.7)

Controlled Demolition of Assemblies:

If it is determined that a layer or layers of material **require removal** in order to facilitate inspection, drying, cleaning, or restoring an assembly, it **should** be done as soon as practical after the decision is made.

Removing exposed layer(s) of the assembly can facilitate cleaning and drying of the framing or other substructure materials. (S500-2021 16.2.3)

ANSI/IICRC S500 is not In-Place (Surface Only) Drying.

ANSI/IICRC S500 Defined "Rapid Response" Required

Rapid Response. Mitigation procedures **should** begin as soon as safely possible following the initial moisture intrusion. If building materials and structural assemblies are exposed to water and water vapor for extended periods, moisture penetrates into them more deeply. **The more water they absorb, the more time, effort and expense is required to dry them.**

With extended exposure to moisture, some materials undergo permanent damage that could have been partially or completely prevented with a more rapid response.

In addition, in most environments the extended presence of water or excessive humidity can **lead to microbial (e.g., bacteria and mold)** amplification that can cause general deterioration of environmental conditions over time, potentially leading to significant health and safety hazards for workers and occupants. (S500-2021 12.2.1)

Rapid Response required (says should). Otherwise, results in hard to dry. Otherwise, results in microbial amplification.

No Rapid Response: Carrier WRT responsible for/ caused the mold since mold GROWS FAST.

EXAMPLE CITIZEN: PROMISES MADE.

- Citizens says within 4 hours of insured's reporting a water damage claim Carrier WRT will schedule Dry-Out Services
- But bacteria according to IICRC start to grow in 8 hours. (Category 2 water).
- But mold starts to grow in only a few days. (Category 3 water).
- ANSI-Approved IICRC S500 requires remediation (remove and replace) and not drying if/when Cat 2/3 water.
- Carriers NEVER perform IICRC S500 **pre-drying** inspection to check for mold/bacterial odors before drying.
- Carriers NEVER perform IICRC required **post-drying** inspection to prove no mold/bacteria after drying

ANSI/IICRC S500 Defined Mitigation

Mitigate, mitigation: to reduce or minimize further damage to structure, contents and systems in the built environment by controlling the spread of contamination and moisture. (S500-2021 p 19)

- Other names for Mitigation are: In-Place (Surface Only) Drying; Emergency Water Damage Mitigation; Stabilization; and Structural Drying.
- In theory, Mitigation is only meant to stabilize the structure while the Carrier sends out an adjuster to assess the situation prior to Restoration.
- In reality, **mitigation delays S500 Restorative Drying and results in mold since mold grows fast.**

Mitigation is **not** IICRC S500 compliant Restoration.
As a rule, Carrier Mitigation / In-Place (Surface Only) Drying is performed instead of IICRC compliant Restoration.
LEAVING INCOMPLETE DRYING AND SICK MOLD-INFESTED HOMES.
FIND THE MOLD AFTER CARRIER DRYING. OPEN NEW CLAIM.
NO CAPS. CAUSE OF LOSS. FAILED CARRIER WRT DRYING. LEFT MOLD.

ANSI/IICRC S500 and Illegal Antimicrobial (Biocide) Use

Antimicrobial (biocide) Risk Management
Restorers should obtain a written informed consent from the customer before they are applied, and occupants should be evacuated prior to application.
Restorers shall follow label directions and comply with federal, state, provincial, and local regulations. (S500-2021 12.3.10.1)

- MRP/PV drying contractor required to obtain written **informed** consent before applying biocides.
- This is not a line in the contract / work order that says that Carrier WRT may or will use biocides/ antifungals.

Even though widely sprayed on drywall and carpet, there are NO EPA Registered Biocides that can legally be used on any porous or semi-porous materials (such as drywall or carpet). Use on drywall or carpet is contrary to Federal Law.
Find the illegal use of biocides by Carrier MRP/PVs, find the illegal contracting.

ANSI/IICRC S500 Defined Water Categories

Category of Water: the categories of water, as defined by this [S500] document, refer to the range of contamination in water, considering both its originating source and quality after it contacts materials present on the job site. (S500-2021 page 15)

- Cat 1 water. Clean.
- Cat 2 water. Example: Bacterial contamination.
- Cat 3 water. Example: Mold contamination.

Category of Water identifies the cleanliness of the water not only at the time of release but also by the time the dry-out crew arrives after flowing over "dusty" floors and under "dirty cabinets and under "dirty" wall cavities picking up microbial contaminants.

S500 does not permit drying of Cat 2 or Cat 3 water.

Remediate. Do not dry Cat 2/3 water.

See S500-2021 16.2.2.1 & 16.2.2.2.

Microbial Contaminants: Major Component of Indoor Dusts

Both bacteria and fungi, along with their various components and by-products, constitute a major portion of indoor dusts. In a dry environment subject to routine cleaning (e.g., dust removal), such reservoirs are normally non-problematic. However, as water intrudes, or moisture condenses onto surfaces and materials, the microbial ecology begins to change with potentially detrimental effects.

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ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration

Microbial contaminants are a **major** portion of floor dust per ANSI/IICRC S500.

Clean water (Cat 1) will change category to non-clean water (Cat 2/3) quickly as clean water flows across **always** microbial contaminated indoor dusts and mold and bacteria grow fast.

Carriers and their so-called defense experts (parroting WRT training that contradicts IICRC S500) always state that a water event that originates from a clean water source always remains a clean water event.

ANSI/IICRC Category 1. Change Can Be Immediate

Category 1 Water:

Category 1 water can deteriorate to Category 2 or 3. Category 1 water that flows into an uncontaminated building does not constitute an immediate change in the category. However, Category 1 water that flows into a contaminated building can constitute an immediate change in the category. (S500-2021 page 15)

All buildings always contain microbial contaminants.

As per IICRC S500, microbial contaminants "constitute a major portion of indoor dusts."

Category 1 originates as clean water but always picks up dust borne contaminants as the water flows on floors, under cabinets, in attics.

Per IICRC: Change from Category 1 to Cat 2/3 can be **immediate.**

Therefore, if Carrier Response is not RAPID there will be mold.

Cause of Loss = Carrier Failure to Respond Rapidly.

Per IICRC: Change in Category 2 ➔ Category 3

Category 2 Water:

Category 2 water can deteriorate to Category 3.

Once **microorganisms** become wet from the water intrusion … they can begin to grow in numbers and can **change the category of the water**. (S500-2021 page 16)

Per IICRC: Once microorganisms become wet, Cat 2 water can deteriorate to Cat 3 (mold contaminated).

S500 does not permit drying of Cat 2 or Cat 3 water.

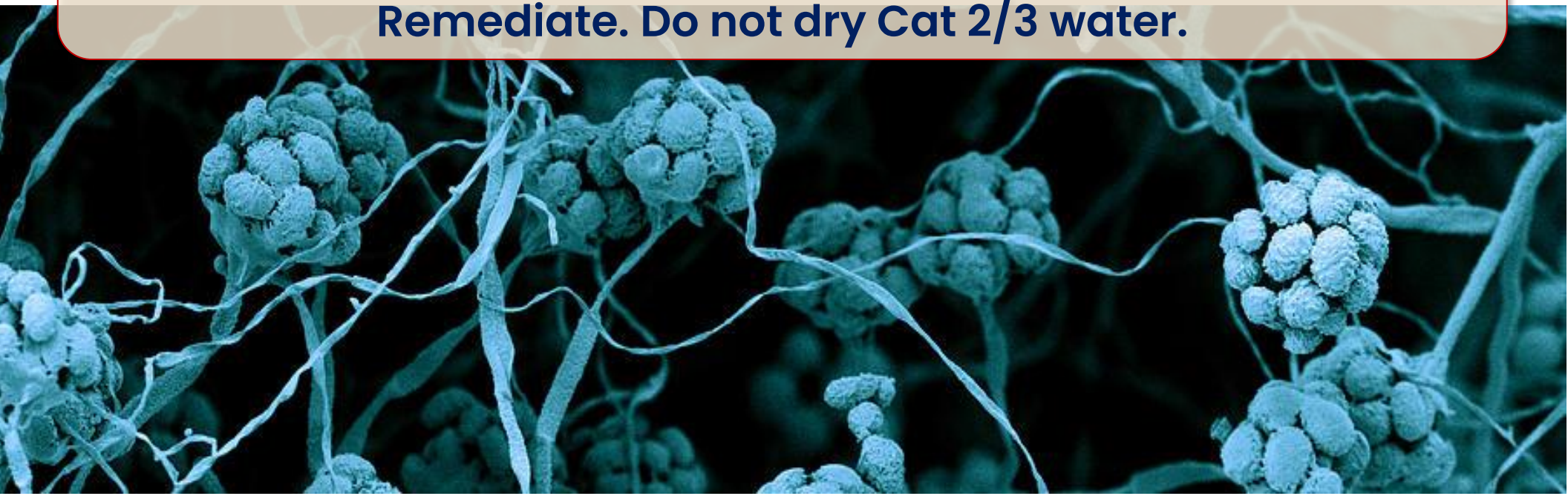
Remediate. Do not dry Cat 2/3 water.

Per IICRC: Remediate Mold Before Drying

Category 3 Water:

… should remediate mold before drying. (S500-2021 page 16)

Per IICRC: Should (Required) to remediate mold before drying.
S500 does not permit drying of Cat 2 or Cat 3 water.
Remediate. Do not dry Cat 2/3 water.



IICRC S500 Defined "Preliminary Determination"

10.6.7 Preliminary Determination

The "preliminary determination" is the determination of the **Category of Water.**

If the preliminary determination is that the water is Category 1, then the restorer can proceed without contamination controls e.g., erecting containment barriers, establishing pressure differentials).

With regard to Category 2 or 3 water intrusions, remediation should occur prior to restorative drying and restorers shall use contamination controls and appropriate worker protection.

Make a Preliminary Determination of the Water Category as a part of the IICRC S500 required Initial (Pre-Drying) Inspection .

Will never be Cat 1 (Clean) unless there is Rapid Response.

Drying not allowed if Category of Water is not clean (not Cat 1). But they never inspect. Always mold after drying.

Regulated, Hazardous Materials and MOLD

… should remediate mold before drying.

Per S500: Remediate mold before drying.

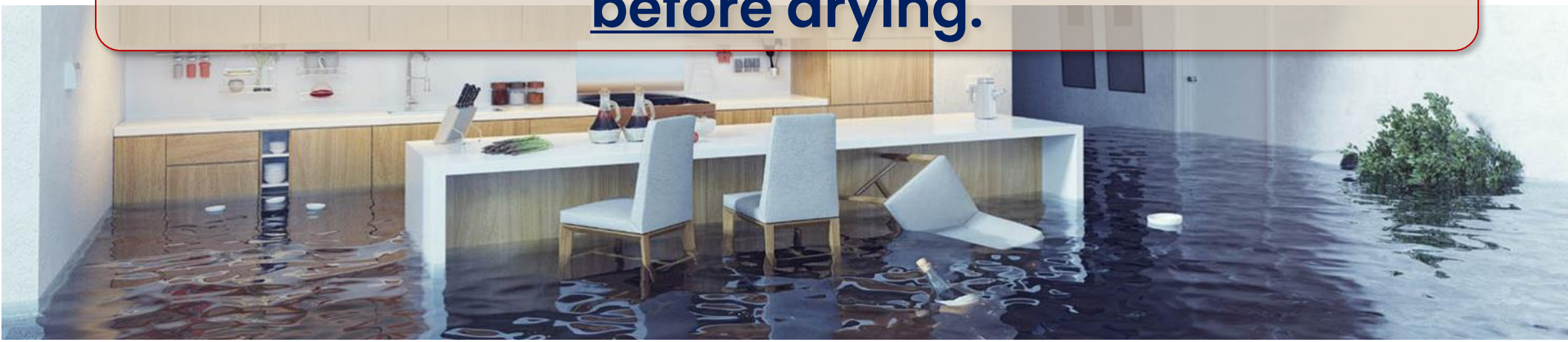
S500 –2021 12.3: Remediation Procedures for Cat 2/3

Remediation Procedures for Cat 2/3 (S500-2021 12.3):

Remediation **should** occur **prior** to restorative drying…
Contaminated environments can result from:

- **Category 2 or 3 water**;
- Condition 2 or 3 mold contamination (S520 definition);
- Trauma or Crime Scene;
- Hazardous or regulated materials.

Remediate contamination before drying.



ANSI/IICRC S500 Remove and Replace in Category 3 Intrusions

Remove and Replace in Category 3 Intrusions (S500-2021 16.2.2.2):

Following a Category 3 [mold contaminated] water intrusion, affected materials or assemblies that should be removed and replaced include, but are not limited to:

- **Gypsum wallboard**
- **Wall insulation**
- **Wallpaper**
- **Wood paneling**
- **Carpet and pad**

Here and elsewhere, IICRC says "water intrusion" but as Water Category change can be immediate, the same Remove and Replace requirements apply **whether water originated (intruded) as a Cat 3 intrusion or degraded to Cat 3**.

Remember that WRT training states that Categories of Water Do Not Change. Contradicting IICRC.

An IICRC S500 Compliant Science-Based **Forensic** Inspection

- A science-based **forensic** IICRC S500 compliant inspection is a **timely, intrusive** inspection to help determine:
  - Source, timing, location and extent of a water event and subsequent permanent damage such as mold growth.
  - Whether damage is pre-existing or new.
  - The Category of Water.
- Forensic water damage inspection includes testing.

We determine Category of Water during an S500 defined Initial (Pre-Drying) Inspection to answer the question:
Can we dry or must we remediate?
If there is mold or bacteria growth/odors (Water Category 2/3):
Remediate/Remove. Drying not permitted by IICRC.

An IICRC S500 Compliant Science-Based **Forensic** Inspection Is <u>Also</u> …

- A science-based analysis of the location, extent, type of:
  - Wood rot, staining, cabinet leg swelling and delamination, rust, drywall hardness and **especially mold growth on porous or semi-porous material**.
- Many common mold species (dry molds) start to grow (germinate) quickly after a water event (within a few days) before materials are water saturated.
- While others (wet molds) are typically slower to germinate and only grow with saturated water conditions.*
- Performing a timely analysis of mold growth can helps answer questions about the timing and duration water damage.

The IICRC S500 compliant **Forensic** Water Damage Inspection **includes mold testing.**

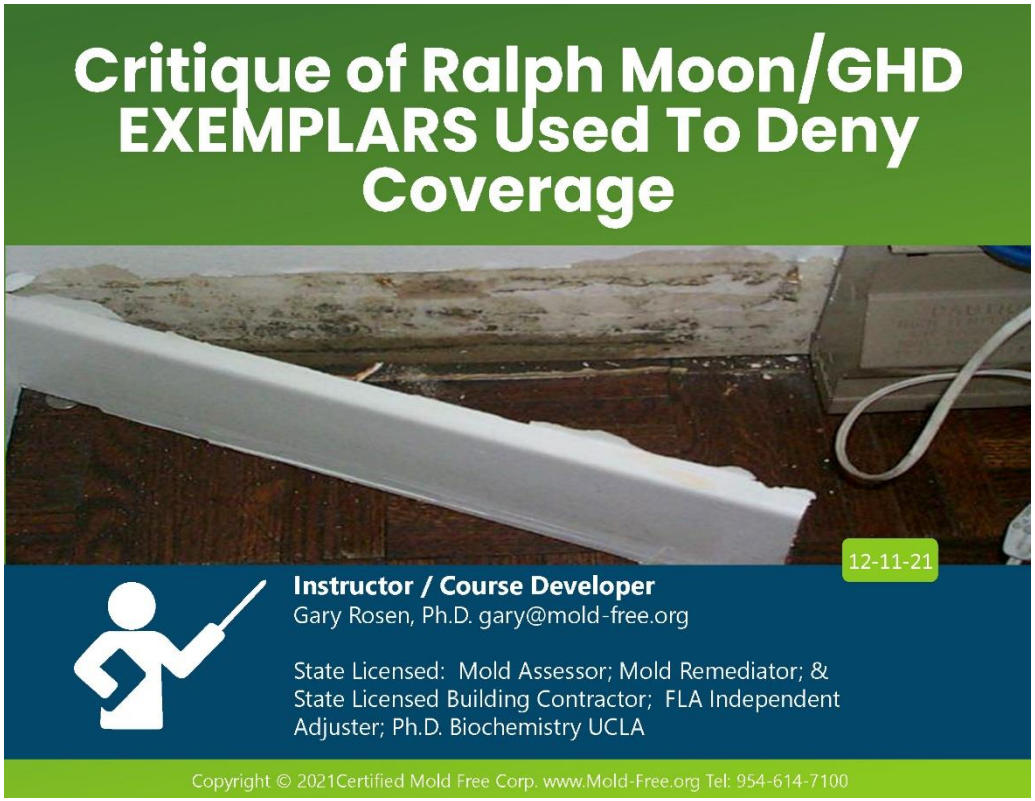
*** If there is a pressurized line break and a flood with immediate water saturated conditions, wet molds can start to grow immediately.**

Key Take Away

- Carriers never perform proper, timely, scientific IICRC S500 compliant forensic Inspections where they directly and scientifically analyze the water damaged/ exposed materials immediately after the water event to answer questions about:
  - The timing and duration of the water event.
  - Whether any damage is pre-existing or new.
  - Category of Water.
- Rather, Carrier "experts" have invented the concept of using pictures of water damage from "studies" (they call the pictures from the studies "Exemplars" to sound more scientific) which they compare to pictures of the insured's, months or years after the water event.
- Then claim that the water event was long term / constant / repeated damage /pre-existing. Deny claim.

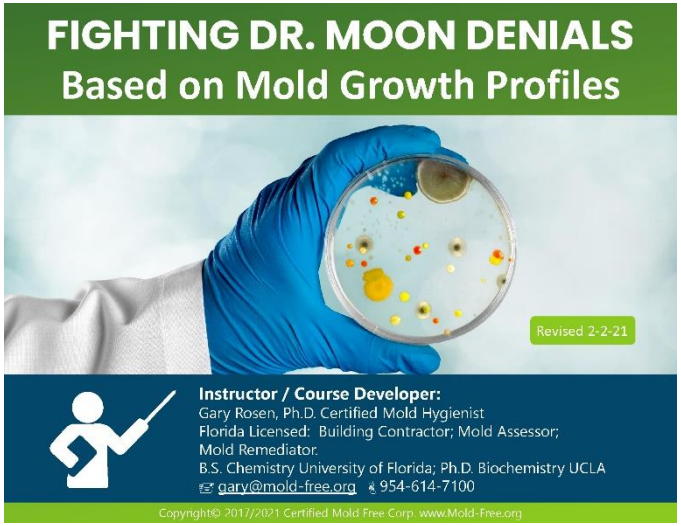
Proof That Carrier Defined Exemplars Are Junk Science

- The use of Exemplars, almost always months or years after the water event, is not a valid substitute for a timely S500 compliant Inspection.
- **Download** our PowerPoint on Exemplars that proves that the proprietary pictures, produced for Insurance Carriers, have no basis — are complete nonsense. They are fiction. Junk.



Proof That Carrier Defined Exemplars Are Junk Science

- Additional PowerPoints (free downloads) that provide critical analysis of Ralph Moon studies that are commonly used by Carriers and their Forensic Engineers to deny claims can be found **here**. Conclusion: Fictional. Junk Science.



How Do Carriers Get Away With This Nonsense?

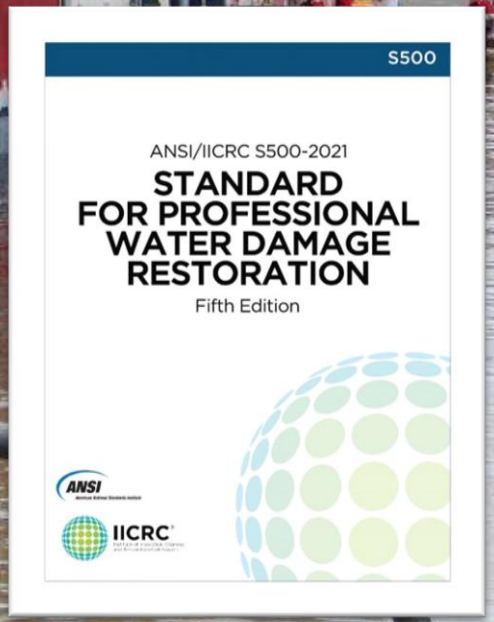
- How do Carriers get away with using these fictional studies to deny claims in lieu of proper, timely IICRC compliant Inspections?
- They falsely claim that these "studies" which were done in people's homes or offices (and not laboratories under controlled conditions) and paid for by Insurance Carriers are science, **peer-reviewed by independent experts**. **NOT.**
- And even though studies that produced "exemplars" were done years earlier, Carrier so-called "experts" claim that they were (miraculously) under the same environmental conditions (lighting, temperature, humidity, type of cabinets, type of drywall, etc.) as the insured's home. Just Junk/Pseudoscience.

Keep In Mind Regarding Insurance Claims

- Consider: If there is a 10-minute leak (clearly short-term leak) inside a wall, especially a wall with insulation, or under or behind cabinets, the water is trapped and dries slowly.
- Even if dried out promptly by professionals there will almost always be residual trapped moisture.
- Mold growth, rust, water staining, cabinet damage will continue for many weeks or months after the short-term leak.
- Often not easy to determine timing or duration of leak by looking at water damage within a wall or under or behind cabinets … even if an IICRC S500 compliant inspection is performed.

However, the insured's obligation is only to promptly notify the Carrier of a leak.
It is the Carrier's responsibility (burden) to determine the timing of the leak. And if the damage is pre-existing or not.
(Impossible to do so reliably/scientifically without a timely Initial S500 compliant water damage inspection.)

Focus of Training. Five Key Areas.



Focus of Today's Training. Five Key Areas

How to perform an ANSI/IICRC S500 compliant forensic (science-based) pre or post drying water damage restoration inspection and water damaged material analysis in order .to:

1. **Comply with SB 1598/SB76**
2. Fight Carrier wrongful / improper water damage claim denials based on alleged long-term constant or repeated leakage or alleged pre-existing damage.
3. Fight Negligent/ Failed / Sub-Standard and often Illegal Carrier Managed Repair Program / Preferred Vendor (MRP/PV) dry-out by properly documenting, non-compliant, failed work that has resulted in sick, mold-infested homes.
4. To better counter Carrier expert witness opinions.
5. To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

Florida SB 1598/SB76 are new laws (July 2021) that stipulate that insurance work by independents must be performed per **accepted industry standards**.

ANSI-Approved IICRC S500 is the only Water Damage Restoration Standard.

Carrier MRP/PVs have no such requirements.

SB 1598 Lines 258-264

(11) Each public adjuster must provide to the claimant or insured a written estimate of the loss to assist in the submission of a proof of loss or any other claim for payment of insurance proceeds within 60 days after the date of the contract. The written estimate **must** include an itemized, per-unit estimate of the repairs, including itemized information on equipment, materials, labor, and supplies, in accordance with **accepted industry standards.**

- SB 1598 requires an itemized estimate of repairs in accordance with **accepted industry standards** (as does SB76).
- Before one can prepare an estimate for repairs per **accepted industry standards**, one must perform an IICRC S500 compliant inspection.

An inspection per **accepted industry standards** means performing **all** inspection procedures that ANSI/IICRC S500 says "should" be performed. (That means "required" to comply with the ANSI/IICRC S500 standard of care.)

If an Independent does not do so, the invoice is not valid.

Review: ANSI/IICRC S500 Defined Initial (Pre-Drying) Inspection

1.2.2.1 Initial (Pre-Drying) Inspection
Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth. Professional moisture detection equipment should be used to inspect and document the extent of water migration and moisture intrusion into building materials and contents.

- A science-based **forensic** IICRC S500 compliant inspection is an **intrusive** inspection to investigate (try to determine):
  - Source, timing, location and extent of a water event and subsequent permanent damage.
  - Whether damage is pre-existing or new.
- By scientifically analyzing the location, extent, type of:
  - Wood rot, staining, cabinet leg swelling and delamination, rust, drywall hardness and **especially mold growth on porous or semi-porous material which involves mold testing.**
- An S500 (intrusive) inspection requires containments. Testing. And sometimes rebuilding. Expensive. (But expensive is good, and now required by Law.)

Focus of Today's Training

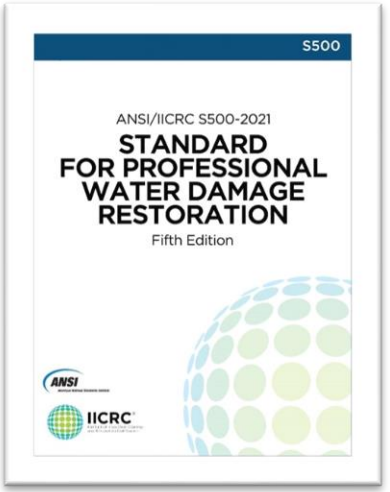
How to perform an ANSI/IICRC S500 compliant forensic (science-based) pre or post drying inspection and analysis in order to:

1. Comply with SB 1598/SB76.
2. **Fight Carrier wrongful / improper water damage claim denials based on alleged long-term constant or repeated leakage or alleged pre-existing damage.**
3. Fight Negligent/ Failed / Sub-Standard often Illegal Carrier Managed Repair Program / Preferred Vendor (MRP/PV) dry-out by properly documenting, non-compliant, failed work that has resulted in sick, mold-infested homes.
4. To better counter Carrier expert witness opinions.
5. To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

How can following the S500 required inspection procedures help fight Carrier wrongful / improper water damage claim denials?

Fight Wrongful Insurance Claim Denials

- Improper / wrongful water damage property insurance claim denials have been increasing and are usually based on an insurance Carrier classifying any new water damage as either pre-existing or long-term / constant / repeated / continuous damage without a timely IICRC S500 defined/required inspection.
- We fight improper / wrongful Carrier water damage claim denials by performing timely S500 compliant science-based, intrusive, forensic water damage inspections that include among other things:



Scientifically showing by testing and analysis that the water damage is recent and from the current identified water event.

We show you how in “Anatomy” Parts 2, 3.

Successfully Fight Carrier Wrongful / Improper Water Damage Claim Denials Based on Alleged Long-Term Leak

If a Carrier denies a claim after MRP/PV dry-out, based on alleged long term damage exclusion, **there is an excellent way to counter / win.**

- Since IICRC requires inspecting for mold before drying.
- Since IICRC prohibits drying if there is mold.

Therefore, if/when we find (with an S500 compliant post drying inspection) mold after MRP/PV drying, we always attribute the cause/origin of mold growth to failed dry-out. (How can they prove otherwise?) Furthermore …

We always attribute the timing of the mold growth to the time of the failed drying. (How can they prove otherwise?)

Focus of Today's Training

How to perform an ANSI/IICRC S500 compliant forensic (science-based) pre or post drying inspection and analysis in order to:

1. Comply with SB 1598/SB76.
2. Fight Carrier wrongful / improper water damage claim denials based on alleged long-term constant or repeated leakage or alleged pre-existing damage.
3. **Fight Negligent/ Failed/ Sub-Standard often Illegal Carrier Managed Repair Program / Preferred Vendor (MRP/PV) dry-out by properly documenting non-compliant, failed work that has resulted in sick, mold-infested homes.**
4. Counter Carrier expert witness opinions.
5. To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

How can following the required procedures in the ANSI/IICRC S500 definition of an inspection help fight Negligent/ Failed/ Sub-Standard Carrier MRP/PV dry-out?

Document Failed Carrier MRP/PV Dry-Out Work Open New Claim. No Caps.

- S500 requires intrusive inspection before drying.
- If mold found, remove/remediate. Do not dry.
- Therefore, if there is mold after MRP/PV drying it could not be pre-existing.
- If there is mold after MRP/PV drying it was caused by negligent, failed MRP/PV dry-out work.

Perform an S500 compliant intrusive Post Drying inspection after MRP/PV dry-out.

Find the mold. Document the mold with testing and high quality, vivid pictures.

And hold the MRP/PV and Carrier responsible.

Open a new claim.

No Caps. Cause of Loss is MRP/PV negligence.

More FREE Resources

2-Hour Zoom Training Course is now available. Free **download.**
Contact Linda Rosen linda@mold-free.org for more information.

Focus of Today's Training

How to perform an ANSI/IICRC S500 compliant forensic (science-based) pre or post drying inspection and analysis in order to:

1. Comply with SB 1598/SB76.
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4. **Counter Carrier expert witness opinions.**
5. To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

How can following the required procedures in the ANSI/IICRC S500 definition of an inspection help fight / counter Carrier expert witness opinions?

Counter Carrier Expert Witness Opinions

Click on the image to read article

- The article advises: "To address the coverage issue in light of summary judgment, the trial court quickly turned to the experts, and notably, highlighted their **experience** in the order".

I have a problem with the word "experience". That usually means having a resume a mile long, where their experience has been falsely denying water damage claims for years using junk science and pseudoscience. That's not experience.

And the so-called expert has no formal training, knowledge, or certification in IICRC S500 defined inspections.

Counter Carrier Expert Witness Opinions. Continued

- The article advises: "To address the coverage issue in light of summary judgment, the trial court quickly turned to the experts, and notably, highlighted their experience in the order".

Even better is when the Plaintiff expert (IICRC WRT certified) has performed a timely, industry standard, IICRC-compliant, ANSI/IICRC-required Inspection and the Carrier expert has not.

You were there, on site and the Carrier so called Expert was not. You inspected and tested with an IICRC S500 compliant inspection, the Carrier did not. When accompanied by high high-quality pictures of mold and mold testing, you have a major advantage over the Carrier and their so-called Experts.

Focus of Today's Training

How to perform an ANSI/IICRC S500 compliant forensic (science-based) pre or post drying inspection and analysis in order to:

1. Comply with SB 1598/SB76.
2. Fight Carrier wrongful / improper water damage claim denials based on alleged long-term constant or repeated leakage or alleged pre-existing damage.
3. Fight Negligent/ Failed/ Sub-Standard often Illegal Carrier Managed Repair Program / Preferred Vendor (MRP/PV) work by properly documenting non-compliant, failed work that has resulted in sick, mold-infested homes.
4. Counter Carrier expert witness opinions.
5. **To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.**

Carriers promise fast response. IICRC S500 says Response MUST Be Rapid in order to avoid mold growth, but mold grows fast. Inspect after drying. Find the Carrier failure to respond rapidly resulting in hidden mold.

Legal Ruling: Timing of Permanent Damage

Timing of Permanent Water Damage

In this section, we examine the language of the 2018 court ruling on constant or repeated seepage or leakage exclusion.

Rumberger | Kirk writes: Fifth DCA Strikes Blow To Popular Policy Exclusion

> *"The Fifth District Court of Appeal recently issued a decision that will likely force homeowner's insurance Carriers to rewrite one of their stalwart policy exclusions that pertains to "**constant or repeated seepage or leakage**" within the insured's residence…*
>
> *The Fifth District determined that the "over a period of 14 days or more" language of the exclusion does not unambiguously exclude losses caused by seepage or leakage that occurs within the first 13 days. Therefore, **the court construed these terms against the Carrier and in favor of coverage**. Further, **the court found that the burden is on the Carrier to prove that a particular loss was sustained after the thirteenth day and is therefore not covered under the policy."***

Carriers continue to wrongfully deny water damage claims based on repeated damage exclusions.

Timing of Permanent Water Damage

What this means from a practical perspective on a water damage claim:

- Coverage is triggered if there is **permanent** water damage before Day 14 (**recent** water damage) such as mold on wet or formerly wet drywall that is not cleanable or not restorable by drying.
- If there is additional damage (additional mold growth or other damage) after Day 13, it does not result in denial of coverage.
- Why? If the drywall or cabinets need to be replaced by Day 14, they need to be replaced. Additional damage no impact on this.
- The burden is on the Carrier to prove no damage related to the current identified water event before Day 14.
- The insured has only to show the loss occurred.

By law, the insured does not need to prove timing of the permanent damage.
However, as a practical matter, one must rebut Carrier denial and perform an IICRC S500 compliant, timely, forensic inspection.

Importance of an S500 Forensic Inspection

Property insurance policies exclude slow, long-term / constant / repeated / continuous water damage where there is no permanent damage before Day 14.

Only **recent** / **short-term (before Day 14)** water damage is covered.

Policies cover only sudden events such as burst pipes and not slow leaks such as dripping sink P-traps that take many weeks or months for there to be any water damage.

But mold and cabinet damage are always fast if there is a burst pipe. Well before Day 14. <u>This puts the Carrier at a disadvantage.</u>

Determining the Timing of the Damage

At first glance, getting the timing of permanent water damage right seems crucial. Yet, it is oftentimes impossible to determine timing **accurately**.

- But just how important is accurately determining the timing of the damage?
- That depends on how the term "accuracy" is defined.

The critical issue regarding accuracy of determining the timing of permanent water damage is to reasonably determine that after the water event at least some permanent water damage occurred before Day 14 that triggers coverage.

That is the extent of accuracy needed. And that's easy.

And after a sudden significant water release there is always mold growth and cabinet damage (permanent damage that triggers damage) within days.

Proving The Timing of Permanent Damage

Review: Examples of Permanent Damage

Permanent damage *is physical damage that cannot be restored to pre-loss [pre-water exposure] condition by cleaning or restorative drying and can only be restored by remediation / removal [appropriate material removal and replacement.]*

- Examples of permanent damages are mold growth on porous or semi-porous (non-cleanable) materials; irreversible swelling of cabinet bottom or flooring; and flooring or cabinet staining / discoloration / warping/ delamination.

Covered damage = permanent damage as a result of a recent covered water event that at least partially occurred before Day 14.

Is Permanent Damage Pre-Existing or Not?

Is the permanent damage recent? Did it at least partially occur before Day 14?

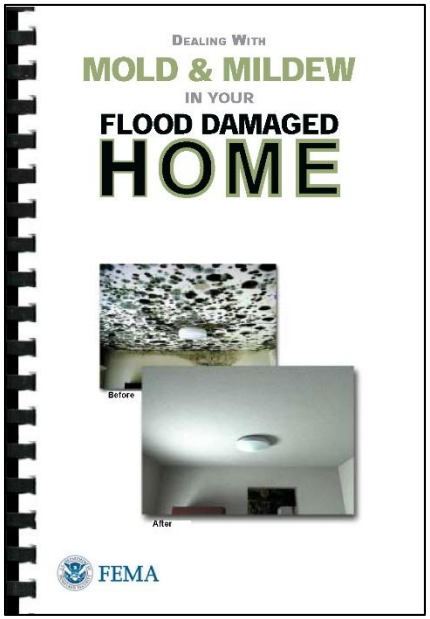
Or was the permanent damage pre-existing, present before the new water event?

We analyze / test mold contaminated water damage (Category 3 water damage — "mold" growth for short) as part of a timely S500 compliant inspection to help answer those questions.

Determining the Timing of Permanent Mold Damage

Because mold grows fast after a water event (per EPA/FEMA can start after 24-48 hours following a water event), there is always hidden mold growth before Day 14 on wet drywall that will trigger coverage.

- Use science to counter the Carrier's superficial inspection. Their report may appear professional, with numerous charts and graphs and will likely "find" some earlier wear and tear in the new water event area, and call that long term, pre-existing water damage, in order to unfairly justify claim denial.
- Perform a scientific S500 compliant inspection with testing.



FEMA: Mold growths, or colonies, can start to grow on a damp surface after 24 to 48 hours.

But keep in mind, there is always mold growth and cabinet damage before Day 14 with a burst pipe.

Then why inspect? Because you comply with S500 required inspection procedures and the Carrier did not.

Dr. Ralph Moon (Prolific Carrier Defense Expert)

Fungal Growth Succession on Gypsum Board Wall Assemblies

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Study on the rate of growth of different species of mold that Moon states is Peer Reviewed.

Moon: "Mold Grows Fast". Triggering Coverage

Fungal Growth and Sequence: Predictable fungal growth sequences were observed. Small, diffuse mats of mycelial growth were visible within two-three days of incubation. Visible growth first occurred on 50% of the wood sill plates where moisture was in direct contact with the assembly (Table 1). *Aspergillus* and *Trichoderma* structures were identified on Day 4 and 7 respectively. Immature *Chaetomium* ascomata and *Cladosporium* were observed on Day 14. Individual *Chaetomium* spores, *Alternaria and Pestaliopsis* were identified on Day 28. *Penicillium* was identified on Day 46; *Bipolaris* was identified on Day 50. *Curvularia* was identified on Day 53.

Moon study shows/proves: Mold grows fast within a few days.

Just as EPA/FEMA state in their Federal Guidelines.

Moon: "Mold Grows Fast". Triggering Coverage.

Table 1. First Appearance Sequence

Identification	Frequency *	Experimental Day								
		2	4	7	14	28	46	50	53	101	117
Mycelium	50%	X									
Aspergillus	50%		X								
Trichoderma	17%										
*Chaetomium**	34%				X						
Cladosporium	34%				X						
Chaetomium	83%					X					
Alternaria	17%					X					
Pestaliopsis	17%					X					
Penicillium	17%						X				
Bipolaris	17%							X			
Curvularia	50%								X		
Mites	50%										X

* Observed walls/total walls on first day of appearance

** Immature *Chaetomium* ascomota

In the Moon study, some species of mold grow slow and some fast.

Moon will reference this paper and conclude that if slower growing mold species are found, the water event was long term, continuous, repeated (etc.). Deny coverage.

But since coverage is triggered by the growth of any mold before Day 14 (duration is not a factor); and since he shows some very common mold species grow in days … **Moon's study proves that there is always coverage due to always rapid mold growth after a water event as fast mold growth always triggers coverage.**

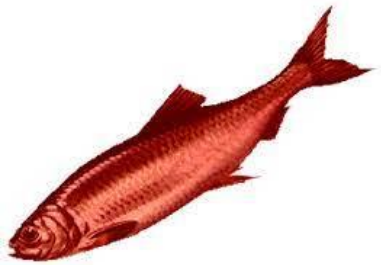
Carriers Focus on Finding So-Called Slower Growth Molds

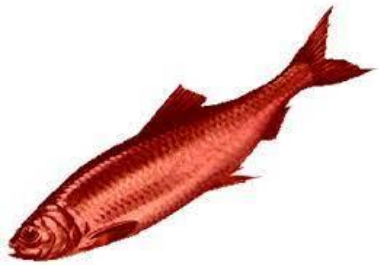
Carriers focus on finding (so-called) slower growth (so-called wet) molds to prove long term leak. But finding slower growth molds is a Red Herring.

Any kind of mold growth will trigger coverage and mold will always start to grow in days.

The fact that there may be some molds that grow slower than others is not relevant to coverage determination. A Red Herring.

<u>If there is a burst pipe and flood, so-called slower growth molds can start to grow fast in only a few days.</u>





Perform ANSI/IICRC S500 Intrusive Inspections To:

1. Comply with new Florida laws.
2. Fight Carrier wrongful / improper water damage claim denials based on alleged long term continuous leak or alleged pre-existing damage.
3. Fight Negligent/ Failed / Sub-Standard Carrier MRP/PV work by properly documenting failed dry-out that results in sick, mold-infested homes.
4. To better counter Carrier expert witness opinions.
5. To attribute mold growth to Carrier failure to respond rapidly given that mold grows fast.

Perform ANSI/IICRC S500 Intrusive Inspections

Because Carriers will not pay for timely S500 compliant intrusive initial or post drying inspections, Carrier experts must instead rely on using what they call Exemplars to (attempt to) prove long term, continuous, repeated leak. Deny claim.

Your S500 compliant, pre or post drying inspection using scientific testing and analysis will give you the edge.

A review of scientific methods for determining timing and duration of water damage follows in Parts 2, 3.

Part 1 Summary

1. Mold on wet drywall grows fast, well before Day 14 of a water event, as a result there will always be mold growth that will change the IICRC defined water contamination Category from Category 1 (clean) to Category 3 (mold contaminated) by Day 13.
2. But Carriers do not allow / pay for either IICRC required Initial (Intrusive) Inspections or required Post-Drying Inspections.
3. The IICRC does not permit restorative drying of Cat 3 (mold-contaminated) porous or semi-porous materials. But Carrier MRP/PVs always dry.
4. Always (99% of the time) MRP/PV dry-out leaves mold after drying.

Perform an S500 compliant inspection after MRP/PV dry-out. Find the mold. Find the failed dry-out.

Open claim. No Caps. Cause of Loss = Negligent Dry-Out.

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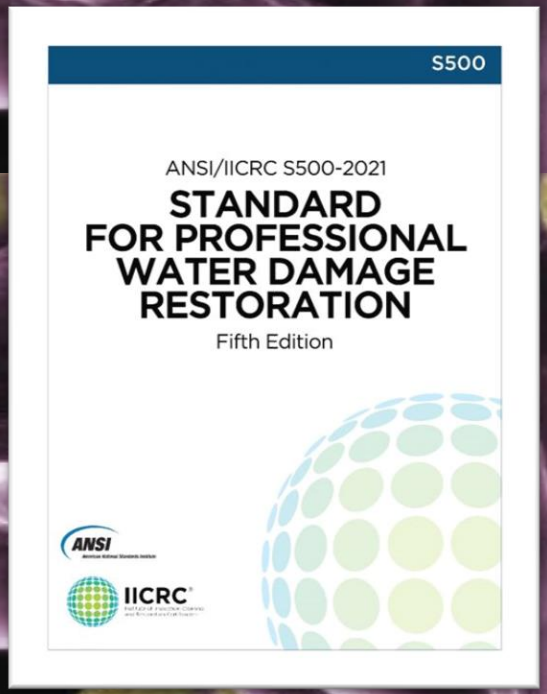
02

NAERMC
National Association of Environmentally Responsible Mold Contractors

Review: Categories of Water



REVIEW: ANSI/IICRC S500 Category of Water Determines The Restoration Response

Category of Water refers to the range of contamination in water, considering both its originating source and its quality after it contacts materials present on the job site. (IICRC S500-2021. p 15.)

Review: The water damage restoration response (drying vs. remediation/removal) is based on the IICRC S500 compliant (intrusive) inspection that determines the Category of Water.

REVIEW: Microbial Growth and IICRC Water Damage Categories

<u>Review:</u> With respect to damage from microbial growth, IICRC S500 defines three Categories of Water which determine restoration response (restorative drying or removal.)

- Clean water. Category 1 water. Per S500, restoration response: Dry.
- Bacteria contaminated water damage is a form of Category 2 water damage. Per S500, restoration response: Do not dry. Remediate / Remove.
- Mold contaminated water damage is a form of Category 3 water damage. Per S500, restoration response: Do not dry. Remediate / Remove.

IICRC requires: The Initial (Pre-Drying) Inspection MUST be intrusive in order to find hidden microbial growth — in order to determine Water Category that drives Restoration Response.

In contradiction: WRT training defines the Initial (Pre-Drying) Inspection as not intrusive. Never finds hidden mold. Cannot determine Water Category.

More Contradictions Between WRT Training and S500

Category 1 Water:
Category 1 water can deteriorate to Category 2 or 3. Category 1 water that flows into an uncontaminated building does not constitute an immediate change in the category. However, Category 1 water that flows into a contaminated building can constitute an immediate change in the category. (IICRC S500-2021 p 15)

- In addition to the contradictory position of WRT training that Initial (Pre-Drying) Inspection is not intrusive …
- Also in direct contradiction to IICRC S500, WRT training teaches that a water event is ALWAYS Category 1 if from a clean water source even though S500 says change can be immediate.
- WRT training teaches: Water that starts out clean, stays clean. Therefore there is never a concern for hidden bacteria or mold.

Per IICRC: Change from Category 1 to Cat 2/3 can be **immediate.**
Almost never in the real world is there Cat 1 (clean) Water when the dry-out crew arrives because: Mold and bacteria grow fast.

Key Take Away

Because Carrier Adjusters and MRP/PVs only know from the WRT training and not the actual Standard …

- **As a result, Carriers deny that an intrusive inspection is ever required because WRT training says clean water does not change category. Why look inside of walls if clean water stays clean? Rapid Response is never needed.**
- **As a result, Carriers only allow MRP/PVs to dry in place. Why remediate/remove when clean water always stays clean?**
- **(The concern about possible pre-existing mold and the fact that mold / bacteria growth is fast (immediate) are conveniently overlooked.)**

By taking this position Carriers save money at the expense of the homeowner who is left with mold filled walls after MRP/PV dry-out.

But this is Fantasy Land. (Others would call it FRAUD.)

Thornton Mellow (Rodney Dangerfield)
From Back to School

Living in: Fantasy Land.

REVIEW: ANSI/IICRC S500 Defined "Rapid Response" Required

Rapid Response. Mitigation procedures **should** begin as soon as safely possible following the initial moisture intrusion. If building materials and structural assemblies are exposed to water and water vapor for extended periods, moisture penetrates into them more deeply. **The more water they absorb, the more time, effort and expense is required to dry them.**

With extended exposure to moisture, some materials undergo permanent damage that could have been partially or completely prevented with a more rapid response.

In addition, in most environments the extended presence of water or excessive humidity can **lead to microbial (e.g., bacteria and mold)** amplification that can cause general deterioration of environmental conditions over time, potentially leading to significant health and safety hazards for workers and occupants. (S500-2021 12.2.1)

Mold according to Carrier expert Dr. Ralph Moon, mold is shown to start to grow in days.
If the Carrier or Carrier MRP/PV or referred dry-out contractor's response is not rapid, cause of loss is delayed response.
Find the mold after drying. Open new claim. No CAPS.
Cause of Loss: Failed Drying. No Rapid Response.

REVIEW: ANSI/IICRC S500 on Visible Material Deterioration

Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth. (IICRC S500 1.2.2.1 Initial (Pre-Drying) Inspection)

- **Time of water event:** Document /investigate / attempt to determine the time of the water event using scientific methods considering: mold, rust, particle board swell and other factors as we will soon discuss.
- Sometimes easier said than done. But at least you will have complied with Industry Standards and the Carrier NOT.

The inspection is not IICRC-compliant if it does not (attempt) to document / determine the timing of the water event and subsequent damage as well as what is pre-existing or not.

REVIEW: Visible Material Deterioration

Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth. (IICRC S500 1.2.2.1 Initial (Pre-Drying) Inspection)

- **Visible material deterioration:** permanent damage (other than mold growth) that cannot be restored to as new by cleaning or drying that occurred either before the new water event or as a result the new water event and failure to response rapidly.

Examples include:

a. Permanent staining of wood or stone.
b. Particle board or Medium Density Fiberboard (MDF) expansion
c. Cabinet delamination

The inspection is not IICRC-compliant if it does not (attempt to) determine visible material deterioration both on and within material assemblies.

Assessing Pre-Existing Damage

Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, pre-existing damage and visible microbial growth. (IICRC S500 1.2.2.1 Initial (Pre-Drying) Inspection)

- **Pre-Existing Damage:** Permanent damage that cannot be restored to as new by cleaning or drying, which occurred before the new water event.
- Restorers must attempt to distinguish pre-existing damage from new damage.

The Initial (Pre-Drying) Inspection —performed immediately after the new water event—is not IICRC-compliant if it does not attempt to determine pre-existing damage.

This would include damage to cabinets, metal, drywall etc.

Documenting Visible Mold Growth

Restorers should inspect and document the source and time of the water intrusion, visible material deterioration, visible microbial growth. (IICRC S500 1.2.2.1 Initial (Pre-Drying) Inspection)

- **Visible mold growth:** an example of permanent damage if it occurs on porous or semi-porous materials that can only be restored to as new by material removal — not by cleaning or drying. Note: Spraying with Biocides is not remediation. Spraying with biocides does not restore to as new / pre-loss condition.

While testing for Visible Microbial Growth is important it is only to back up a visual inspection.

Find and document by good quality pictures visible microbial growth. The grosser the pictures the better.

Caution on Pre-Existing Damage

- All wall interiors have:
  1. Pre-existing mold from the time of construction, or due to,
  2. Earlier small (non-catastrophic) water events.
- Studies have shown that all new drywall and all new wood used in building construction have some amount of mold spores and/or mold growth on the materials. And,
- Except for brand new homes there are almost always small earlier leaks (especially in kitchens) that result in small amounts of mold growth.

Then, as a result of a new catastrophic water event in combination with elevated temperatures (found in wall cavities as they are connected to hot attics and as the result of the elevated temperatures associated with drying) one may find extensive mold growth in only a few days.

Caution: Pre-Existing Damage

We have lived in our home for 20 years. New when we moved in.

During the last 20 years we have had 6 small, non-catastrophic kitchen leaks. There is now some "pre-existing" mold that to an insurance Carrier would be used to deny a new claim from a catastrophic water event.

Carriers will hire so-called Forensic engineers who will produce studies funded by insurance Carriers that say mold takes months to grow and call any mold pre-existing or long term continuous. Deny claim.

Best to always have a timely, and proper (S500 compliant), science-based intrusive inspection to counter these false denials.

Category 3 Water Damage vs. Mold

Carriers will claim that if the wet material subsequently has mold growth on it, it is no longer water damage. It is mold.

So there is a major flood that has caused $200K of water damage. Homeowner is on vacation and comes back two weeks later to find everything wet is covered with mold.

The Carrier will then say this is mold and not Cat 3 (mold contaminated) water damage and it is under the $10K mold cap.

Makes no sense but that is what they ALWAYS do.

Inspections Must Be Intrusive & Timely

Answering questions regarding origin and timing of permanent damage, and whether it is pre-existing, requires intrusive inspections. This regularly includes:

- Removing baseboards
- Pulling out dishwashers
- Opening walls

Per IICRC, **intrusive inspection** after a water event is not only permitted and is in fact it is S500 required.

In order to answer questions about timing of water event and time and source of damage the **inspection must be timely.**

Pre-Existing Damage, But Not a Total Loss?

Often there is pre-existing damage but the kitchen or vanity or floor was not a total loss before the new water event.

What is new damage and what is old (pre-existing) damage?

Is the pre-existing damage considered normal wear and tear?

How much pre-existing damage is there versus new damage?

Answering such questions is not the job of the Assessor. That is the job of attorneys and adjusters. Assessors simply assess.

Base Findings on Testing & Observations

- The mold assessor/ water damage assessor bases his findings on FACTs. Not opinions.
  - That means timely S500 Compliant Intrusive Inspections.
  - That means testing using scientific methods.
  - That means high-quality photos.

Always document damage using high quality photos or videos.

When it comes down to: The “He said/ She said” battle of the experts, the expert that performed the inspection per IICRC and the expert with the best pictures is at a distinct advantage.

Provide Scientific Basis

The mold (and water damage) assessor's job is to use science-based testing, analysis, and methods according to accepted industry standards to help adjusters, attorneys, and juries make coverage determinations / conclusions. The assessor does not make coverage determinations (unless they are also adjusters.)

Sometimes it is not possible, for example, to distinguish new damage from old or the timing of the damage, but you still get paid.

What Conditions Are Needed for Fast Mold Growth?

What Are the Conditions for Fast Mold Growth?

Under what conditions can molds grow fast?
The answer: Under Florida conditions … pretty much all year round!

Mold Needs FOUR Things to Start to Grow Fast

1. Water/ Moisture (in some cases only humidity) to start germination

2. Warm or hot temperature for fast growth

3. Food source — Starch such as the cellulose on the paper face of drywall or the glue that attaches the drywall paper to the gypsum core.

4. Abundant Mold Spores in order to start to grow fast.

Conditions Ideal in South Florida

- Conditions in hot, humid, tropical South Florida are ideal for mold growth all year round.
  - We do have water and/or water damage all year round.
  - Temperature pretty much always warm or hot with very few exceptions.
  - And of course, there is always plenty of food in water damaged homes (drywall, cabinets, wood baseboards etc).

But what about mold spores? Those are certainly needed for germination. Are they always around?

Yes, they are, with few exceptions.

Mold Spores ALWAYS in our Florida Outdoor Air

No doubt in the northern U.S. during a snow storm there are few to perhaps no mold spores in the air, but in Florida mold is found in the air and in house dust all year round.

Fungi Identified	Outdoor data			Typical Outdoor Data by Date Month: February (n=1980)			
	Cfu/m3	Very low	Low	Med	High	Very high	Freq %
Acrmonium		7	8	12	18	25	2
Alternaria	12	7	7	12	24	35	14
Aspergillus (total)	47	7	7	14	35	60	30
Aspergillus niger	24	5	7	12	24	35	13
Aspergillus sydowii	24	6	7	12	32	51	2
Aspergillus ustus							<1
Aspergillus versicolor		7	7	12	25	58	8
Aureobasidium	12	7	7	12	24	35	14
Basidiomycetes		8	14	59	160	370	8
Chaetomium		7	7	12	20	35	2
Cladosporium	160	12	24	120	440	860	80
Curvularia						-	<1
Epicoccum	12	7	7	13	28	48	12
Fungi w/o identifying traits (total)**	24	7	12	21	47	71	62
Arthrospores-former		12	20	52	130	250	4
Non-sporulating fungi	24	7	12	21	36	67	60
Nigrospora						-	<1
Paecilomyces		4	7	12	22	35	5
Penicillium	120	10	12	35	100	180	67
Rhizopus		5	7	11	12	18	3
Strachybotrys chartarum						-	<1
Torula						-	<1
Ulocladium	12	7	7	12	18	24	3
Yeasts	24	7	12	23	47	79	38
TOTAL CFU/m3	**420**						

Mold Spores ALWAYS in the Air

We find Aspergillus, Penicillium and Cladosporium in the outside air 365 days a year in Florida except during very heavy rains.

Mold spores are always present both inside and outside homes.

The is almost always mold spores being released from AC ducting which unless the home is brand new, will always have some amount of mold growth inside.

Mold Spores in the Air But No Stachybotrys

- We note that there is almost no Stachy found in the outdoor air.
- But Stachy growth on drywall is common.
- Seems to make no sense.

(Stachy is pronounced Stacky)

Fungi Identified	Outdoor data			Typical Outdoor Data by Date Month: February (n=1980)			
	Cfu/m3	Very low	Low	Med	High	Very high	Freq %
Acrmonium		7	8	12	18	25	2
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Aspergillus versicolor		7	7	12	25	58	8
Aureobasidium	12	7	7	12	24	35	14
Basidiomycetes		8	14	59	160	370	8
Chaetomium		7	7	12	20	35	2
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Curvularia						-	<1
Epicoccum	12	7	7	13	28	48	12
Fungi w/o identifying traits (total)	24	7	12	21	47	71	62
Arthrospores		12	20	52	130	250	4
Non-sporulating fungi	24	7	12	21	36	67	60
Nigrospora						-	<1
Paecilomyces		4	7	12	22	35	5
Penicillium	120	10	12	35	100	180	67
Rhizopus		5	7	11	12	18	3
Stachybotrys chartarum						-	<1
Torula						-	<1
Ulocladium	12	7	7	12	18	24	3
Yeasts	24	7	12	23	47	79	38
TOTAL CFU/m3	**420**						

Stachybotrys Ubiquitous in S FLA

Stachybotrys is ubiquitous in Florida (and most parts of the country) but not in the air. It is found on:

Soil & decaying plant substrates

Decomposing cellulose

Leaf litter and

Seeds

Stachybotrys Ubiquitous in FLA Soils

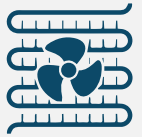
Stachybotrys is ubiquitous in FLA soils.

It is tracked in by people, pets and by insects living in walls.

Stachybotrys spores are always around just not commonly found in the air because they are very heavy and settle out quickly when airborne.

Stachy Mold Spores Always Present. How Many? Unknown.

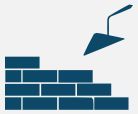
In homes (unlike in laboratory conditions)
Stachy spores are always found:



Entering from the outside through a door or window and accumulating in house dust.

Dragged in on shoes and pet paws.

On clothes that were worn outside.



In wall cavities because walls cavities are connected to vented attics (never airtight).

In the dirt under cabinets and under carpet and pad.

SECTION SUMMARY: HIGHLIGHT ON STACHYBOTRYS

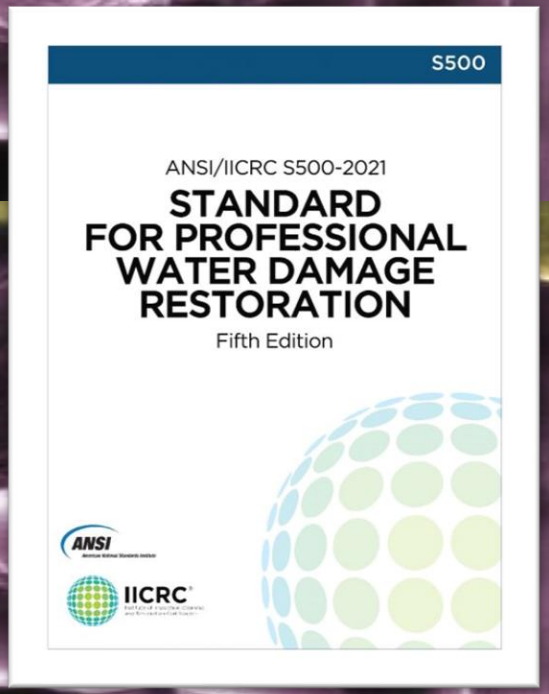
- Under what conditions can Stachybotrys grow quickly?
- Under typical South Florida conditions … where there's lots of wet food (drywall, cabinets, etc) and warm or hot weather pretty much all year round.
- Mold spores must be present for mold to start to grow but they may come from either the air; and/or dusty floors; and/or flood water.
- Since there is no Stachy (or very little) in the air, can Stachy growth sometimes be delayed? Yes.

Carriers will present non-peer reviewed studies paid for by Carriers that claim that Stachybotrys always takes weeks or months to grow.

Therefore, per Carriers, if Stachy is found, it means long term damage. Deny claim.

RED HERRING. Why?

High Temperature Associated With Drying Accelerates Mold Growth



Temperature Affects the Category of Water

Category of Water … Time and temperature can affect or retard the amplification of contaminants, thereby affecting its Category. (IICRC S500-2021 p 15)

Clean water will change to non-clean water (changing category) quickly as **microbial growth is fast** once materials are wet depending on not only time, **but also temperature**.

- Elevated temperature speeds up microbial growth.
- In Florida, wall cavities (which are connected to the attic) are almost always hot compared to air-conditioned interior space.
- Because temperatures inside wall assemblies are hot which accelerates mold growth, there is almost always hidden microbial growth in wall cavities by the time the dry-out contractors arrive.

Not a problem if you never look inside of walls for hidden mold as with the Carrier MRP/PV programs.

Water Category [Microbial Contamination] Changes Based on Temperature

Personal communication from Ken Larsen: Temperature is more important than Time when it comes to the rate of microbial growth (bacteria and mold.)

Elevated Temperatures from Drying Causes Mold

Controlling Temperature to Accelerate Evaporation
… The greater the temperature of wet materials, the more energy is available for evaporation to occur. (IICRC S500-2021 12.5.4)

- This statement shows the enormous influence equipment manufacturers have on the drying industry.
- The huge amount of equipment brought into homes to rapidly dry increases temperature to accelerate drying, here with no concern about accelerating mold growth.

If there is not mold growth before the dry-out contractors arrive (often is) there is always (99% of the time) mold growth after drying because **the elevated temperatures associated with drying greatly accelerates mold growth.**

Elevated Temperatures from Drying Causes Mold

Controlling Temperature to Accelerate Evaporation

… Increasing the temperature of wet materials can be accomplished by using the sensible (thermal) energy gained by airmovers, dehumidification, and portable heating equipment or existing HVAC systems. (IICRC S500-2021 12.5.4)

- S500 recommends further elevating the indoor temperature with portable heating equipment and/or using the home's existing HVAC system to add heat.
- (Cranking up the heat to accelerate drying.)
- Without concern that the elevated temperature accelerates mold growth.

Carriers never have S500 compliant intrusive Post Drying Inspections performed.

When you do one, you will find the mold after dry-out, find the failed MRP/PV dry-out.

Open new claim. No caps. COL = Failed Dry-Out

Finding, Testing, and Analyzing Mold Species

Testing for mold species on drywall can be useful for determining the timing of permanent damage.

Mold growth on drywall (Cat 3 water damage) is always a combination of mold species.

1. Different mold species germinate at different rates due to how wet the conditions are.
2. By performing specialized (culture-based) testing for mold species and then analyzing the ratio of faster to germinate (so called "dry") molds versus slower to germinate (so-called "wet") molds, one can scientifically determine (or gain insight) as to the timing of the water damage.

The term faster vs slower germinating mold is a function of water saturation timing.

Keep in mind that wet molds will start to grow fast if there is immediate water saturation.

Fast or Slow to Germinate Molds

- Molds should not be classified as Fast Growth or Slow Growth but as Faster to Germinate and Slower to Germinate. Why?
- Dry molds (Pen/Asp) are faster to germinate because dry molds grow first in a not water saturated situation.
- Wet molds (Stachybotrys and Chaetomium) are slow to germinate after a typical water event/release because they need saturated water conditions to germinate which often takes time to build up.

However, with a burst pressured water pipe, there is immediate saturated water conditions.

Wet molds will start to grow immediately. They are not slow growth (sometimes called tertiary growth) molds.

Onset of Mold Germination in 48-72 Hours

Mold grows fast according to EPA and FEMA and Peer Reviewed studies.

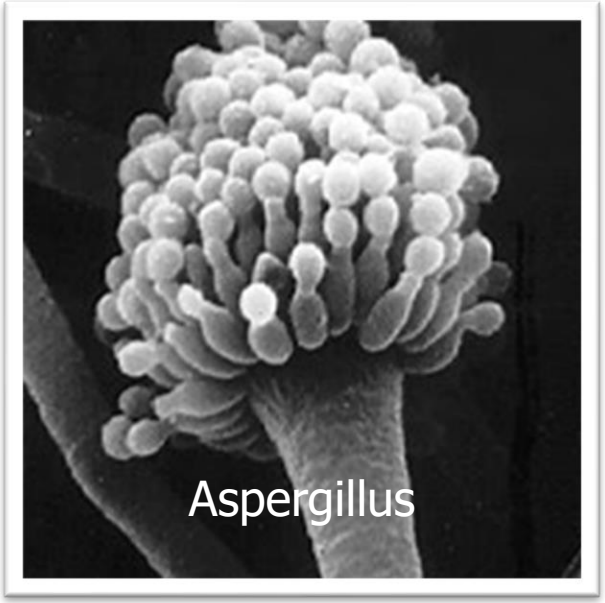
Dry molds (some species of Aspergillus, Penicillium that only need limited water) can germinate very quickly (in a few days) and show significant (visible) growth within the first week under typical Florida conditions.

Other molds such as the wet mold Stachybotrys (require a lot of water) will appear after Aspergillus and Penicillium as moisture accumulates.

Peer-reviewed studies show Stachybotrys germination is only a bit slower (only a few days slower) to germinate than Aspergillus and Penicillium with sufficient water.

Dry Molds

- Dry Molds, such as many species of Penicillium and Aspergillus (Pen/Asp for short) are the first molds to grow after a water event as moisture starts to accumulate.
- Dry Molds are capable of growing (germinating) at water activities below 0.85 (Dry.)
- Dry molds can **germinate only with humidity.** They don't need an actual water leak.



Dry molds are the first to grow and include many or most species of Aspergillus and Penicillium molds. As the amount of moisture (water activity grows) other molds needing more water will appear.

Not Quite So Dry Molds

- Not Quite So Dry Molds are the second group of molds to grow as things get wetter and as time passes.
- Not Quite So Dry Molds germinate best at intermediate water activities of 0.85 to 0.90. (Moist.)

Not Quite So Dry Molds generally start to grow somewhat (a few days) later than Dry Molds as the amount of wetness increases and include most common species of Cladosporium as well as Aspergillus flavus.

Cladosporium can grow with only humidity but not as well as Pen/Asp.

Wet Molds Including Stacybotrys

- Wet Molds generally appear last, as these need very wet conditions to germinate (not with only humidity).
- At water activities greater than 0.90 (wet), Wet Molds appear.
- **Keep in mind that if the water conditions start out very wet there may not be much of a delay in the growth of Wet Molds.**
- Wet Molds include Stachybotrys.

Stachybotrys

Stachybotrys spores are not commonly found in the air, and is the reason there is sometimes no quick onset of Stachy growth even after a flood.

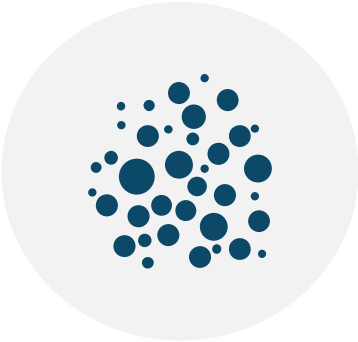
Stachy does start to grow somewhat slower than Dry and Not Quite So Dry molds but that does not mean taking weeks or months.

With sufficient moisture, Stachy can germinate in approximately 1 week according to peer-reviewed studies coming up next.

Independent Studies Prove Fast Mold Growth

Independent Studies Prove Mold Grows Fast and not only for Dry Molds.

First we present a peer reviewed, Korean Government funded study showing fast mold growth on wall paper including **rapid growth of Stachybotrys mold.**



Next a study by EMLabs where a full spectrum of mold was growing from an outside air spore sample after only 7 days.

Next is a peer reviewed European study of **rapid growth of Stachybotrys mold on drywall.**

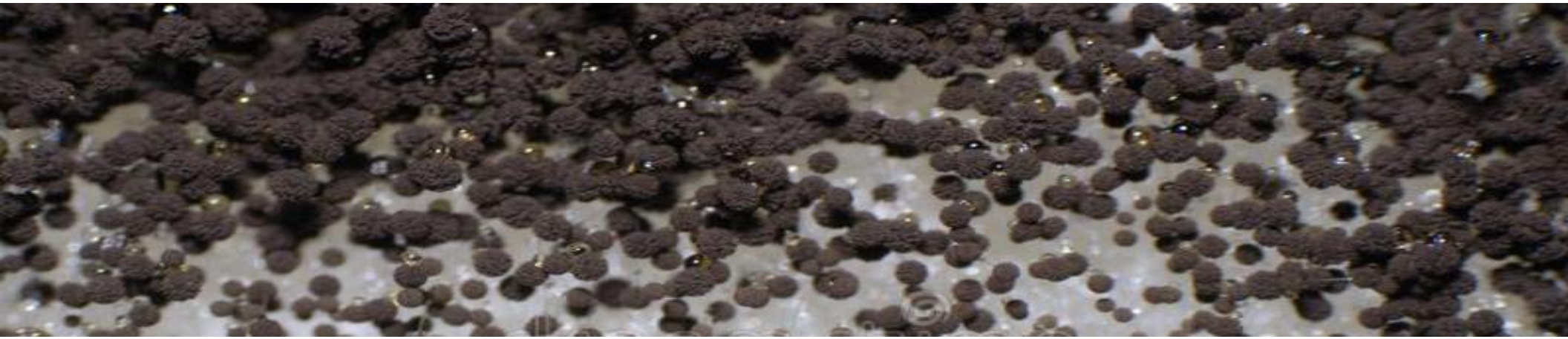
Korean Government Study: Mold Growth Visible in 3-4 Days

Mould germination and the growth rate on wallpapers with different physical properties and the surface structures

Seung Ho Ryu, Hyeun Jun Moon

First Published March 21, 2014 | Research Article | Check for updates
https://doi.org/10.1177/1420326X14524808

- In a Peer Reviewed published study funded by the Korean Government:
  - Aspergillus mold was observed growing on wallpaper after only 3 days of incubation.
  - **Stachybotrys was observed growing on wallpaper after only 5 days of incubation.**



Eurofins (EmLab) Data

- *Aspergillus, Cladosporium, Penicillium* from mold spores collected from the outside air within 7 days. See table next page …
- Fast mold growth consistent with germination (starting to grow) within 24-48 hours.

Eurofins (EMLab) 7 Day Test Results

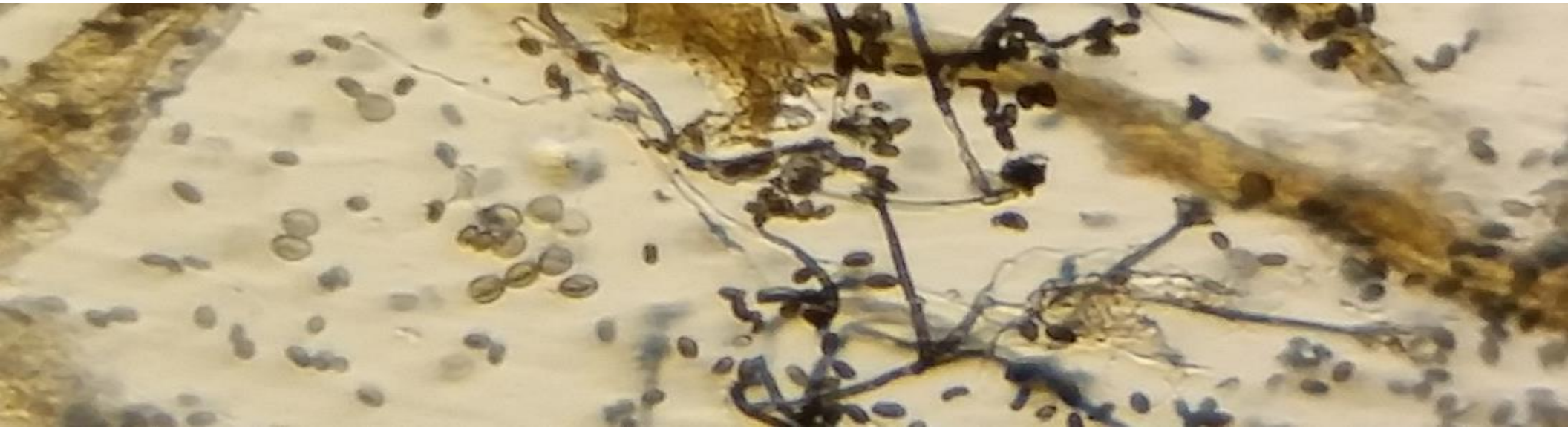
- Sample taken from the outside air.
- Full range of mold growth at 7 days (Aspergillus, Cladosporium, Penicillium) from mold spores sampled from the outside air.
- Note that there is no Stachybotrys in the outdoor air. That is common. Why?
- Stachybotrys spores are heavy and settle out quickly.
- Stachybotrys spores will be found in floor dust but rarely in the air.

CULTURABLE AIR FUNGI REPORT			
Location	1: Outside Reference		
Comments (see below)	None		
Lab ID- Version	4591077-1		
Medium	MEA		
	Raw ct	%	cfu/m3
Acrmonium blochii			
Alternaria alternata	1	3	12
Aspergillus niger	2	6	24
Aspergillus sydowii	2	6	24
Aspergillus ustus			
Aspergillus versicolor	1	3	12
Aureobasidium pullulans	12	33	140
Cladosporium cladosporioides	2	6	24
Cladosporium sphaerospermum	1	3	12
Epicoccum nigrum	2	6	24
Non-sporulating fungi			
Paecilomyces lilacinus	8	22	94
Penicillium aurantiogriseum	2	6	24
Penicillium brevicompactum			
Penicillium decumbens			
Penicillium purpurogenum			
Penicillium variable	12	7	7
Rhizopus stolonifer	24	7	12
Stachybotrys chartarum			

But What About on Drywall?

The Reeslev (European) study focuses on growth of Stachybotrys mold on culture media and on drywall.

The Wet Mold Stachybotrys starts to grow quickly after incubation both on culture media & drywall.



Reeslev Peer Reviewed Study

APPLIED AND ENVIRONMENTAL MICROBIOLOGY, July 2003, p. 3996–3998 Vol. 69, No. 7
0099-2240/03/$08.00+0 DOI: 10.1128/AEM.69.7.3996–3998.2003

Quantifying Mold Biomass on Gypsum Board: Comparison of Ergosterol and Beta-*N*-Acetylhexosaminidase as Mold Biomass Parameters

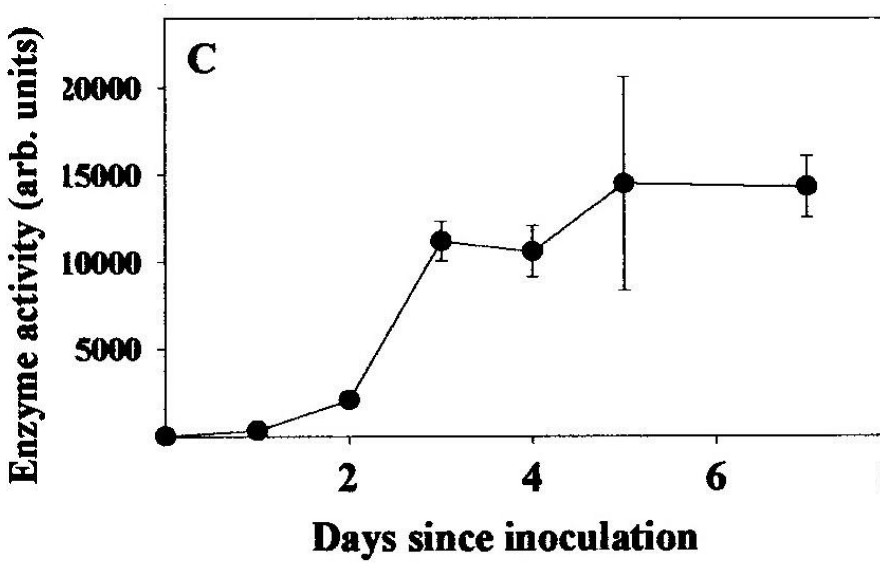
M. Reeslev,[1]* M. Miller,[1] and K. F. Nielsen[2]

Department of General Microbiology, University of Copenhagen, Copenhagen,[1] and Biocentrum, Technical University of Denmark, Lyngby,[2] Denmark

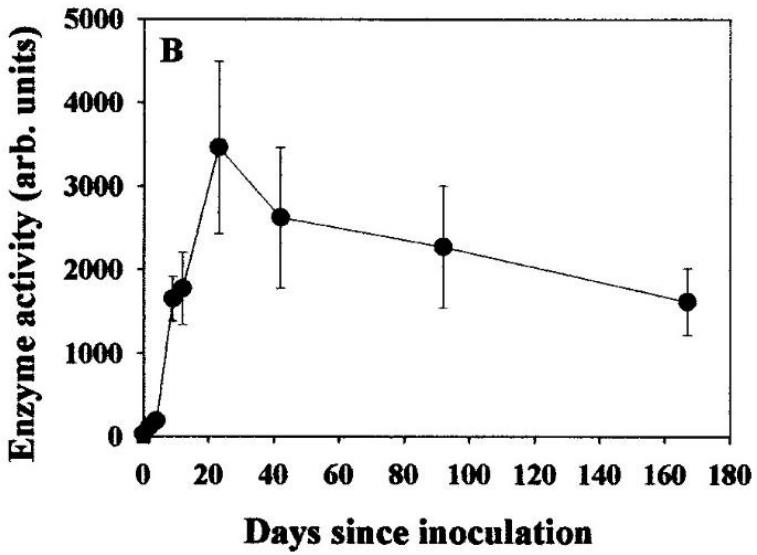
Received 4 October 2002/Accepted 17 April 2003

- In the Reeslev study, researchers found Stachybotrys mold growth on culture media 2-3 days after inoculation and it was detectable on drywall 7 days after inoculation.

Stachy Growth on Culture Media & Drywall



Growth on Culture

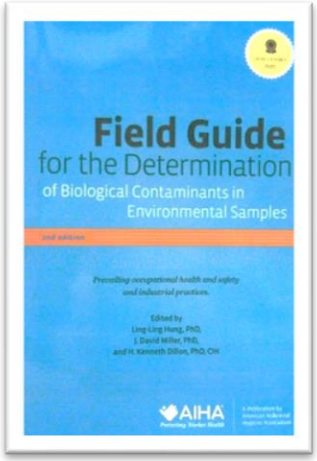


Growth on Drywall

In the Reeslev (peer-reviewed) study, researchers found Stachybotrys mold growth on drywall in approximately 7 days.

Extracts From AIHA "Field Guide" Page 33
Water Activity of Drywall Highest at Bottom of Drywall

- *"Distribution of moisture over a substrate is rarely uniform"*
- *"For vertical surfaces, water activity may be highest at the base even though moisture ingress is near the top, due to gravity."*
- **Expect water exposed drywall to have heavier growth of Dry Molds (need less water) near the top of the growth and Wet Molds (need a lot of water) such as Stachybotrys at the bottom.**



Since Stachybotrys is not normally found in the air but typically present in house dust, Stachybotrys will start to colonize drywall from the bottom which also happens to be the wettest and where there will be Stachy spores in the flood water.

Depending on the source of the water and cleanliness of the house the [flood] water may not have picked up many Stachy spores from house dust. As a result, there can be slow Stachy growth on the very wet drywall due to lack of spores, even though Stachy can start to germinate in less than 1 week when spores are present (under wet conditions.)

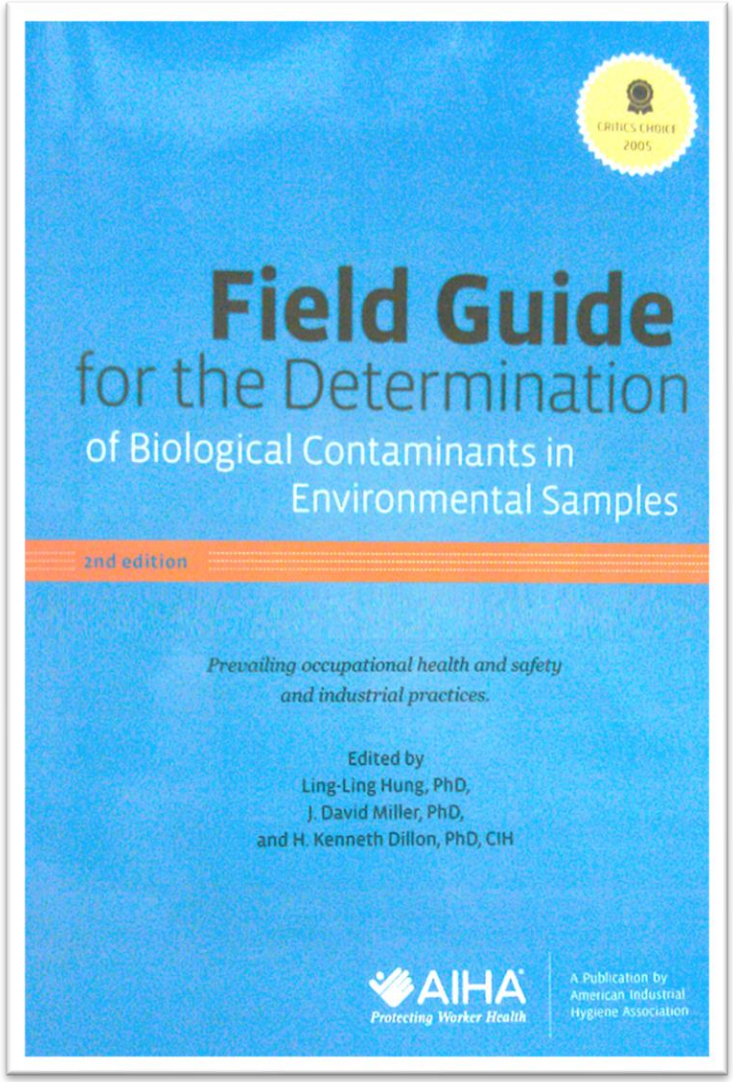
Extracts From AIHA "Field Guide" Page 33
Mold Grows Fast.

- *"As the doubling time for some of the fungi indoors can be as rapid as about 1 to 3 hours at optimal temperature, growth and germination of a spore, which is microscopic,* ***may form a visible colony on a building substrate within 24 to 48 hours."***

Mold growth can be rapid.

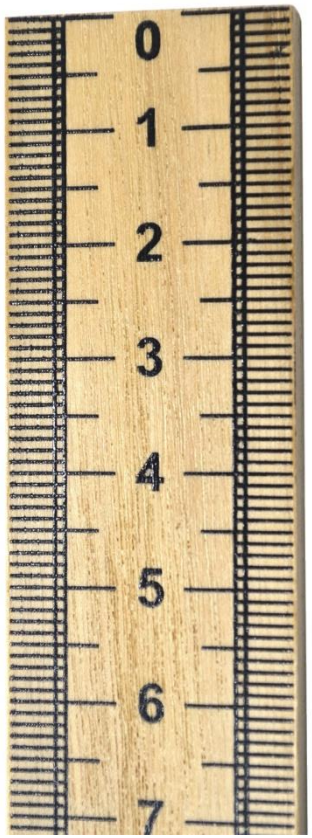
Visible growth may form in 24 – 48 hours.

Consistent with EPA/FEMA publications.

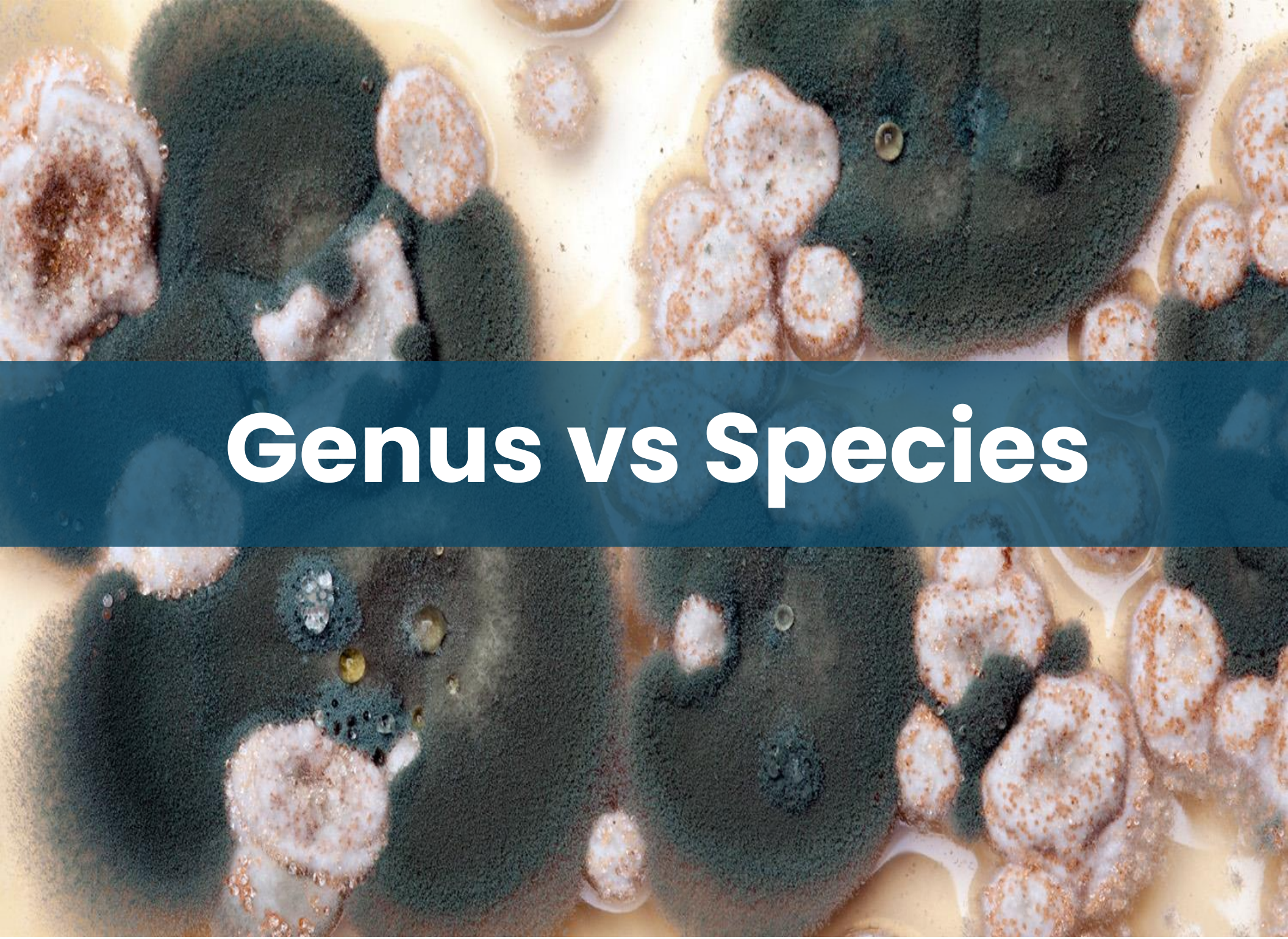


Mold Growth Profiles To Determine Duration

- We can look at the type of mold and get a sense of duration of mold growth.
- Over long periods of time, Stachybotrys (which has exceptionally strong mold toxins) will eventually replace other molds such as Pen/Asp if there is sufficient water.
- And we can look at the location of the mold in terms of distance from the floor (height). Stachy starts at the bottom of wet drywall not only because it is the wettest area of the drywall but also because Stachy spores come from the flood water and not from the air.
- To get an idea about duration, test the drywall for mold at multiple distances from the floor. Provide a map of the test locations.



But as we keep saying: Duration of growth has nothing to do with coverage. Only the timing of the mold growth (mold represents permanent damage) impacts coverage decisions. And mold grows fast.



Genus vs Species

Genus vs Species

- Mold spores germinate and grow at different rates depending on water activity and mold spore genus and species.
- What does genus and species level mean exactly?
- The best way to explain is with an example:
  - Take the mold aspergillus versicolor. Here aspergillus refers to the genus and versicolor to the species.

A genus is a taxonomic rank used in the biological classification of living and fossil organisms in biology. In the hierarchy of biological classification, genus comes above species and below family. In binomial nomenclature, the genus name forms the first part of the binomial species name for each species within the genus

Since most common water damage molds found in homes are species of aspergillus and penicillium, determining the genus (whether aspergillus or penicillium) and species of mold (aspergillus versicolor or other) can provide useful information as to the timing and/or duration of the water event.

Mold Genus/Species for Insurance Claims

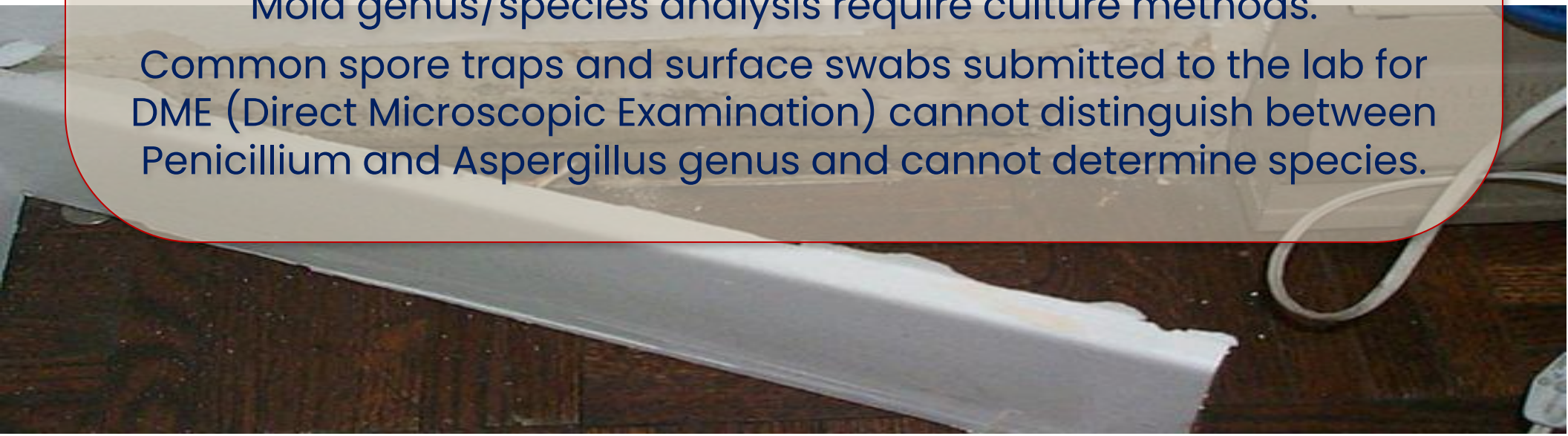
For property damage insurance coverage purposes, details about genus and species as well as the mold spore's viable / non-viable status can be helpful in determining timing as well as cause of loss after a water event.

Determining genus and species requires a timely intrusive inspection.

The assessment / inspection must be performed as soon as possible after the water event. If not, one can never reliably date the water damage based on analysis of mold genus/species.

Mold genus/species analysis require culture methods.

Common spore traps and surface swabs submitted to the lab for DME (Direct Microscopic Examination) cannot distinguish between Penicillium and Aspergillus genus and cannot determine species.



Prompt Inspection is Critical

Relatively often the Carrier inspects for water damage or reviews available earlier pictures months or even years after the water event, just before a scheduled trial.

But months or years later, there are no procedures available — intrusive or non-intrusive — to make any reliable conclusions about source / cause or timing of hidden permanent damage.

Therefore, when the homeowner has a proper and timely IICRC-compliant inspection with testing and high-quality pictures and when the Carrier's inspection is not performed timely or according to the Industry Standard of Care, **the homeowner has a significant advantage during any legal proceedings.**

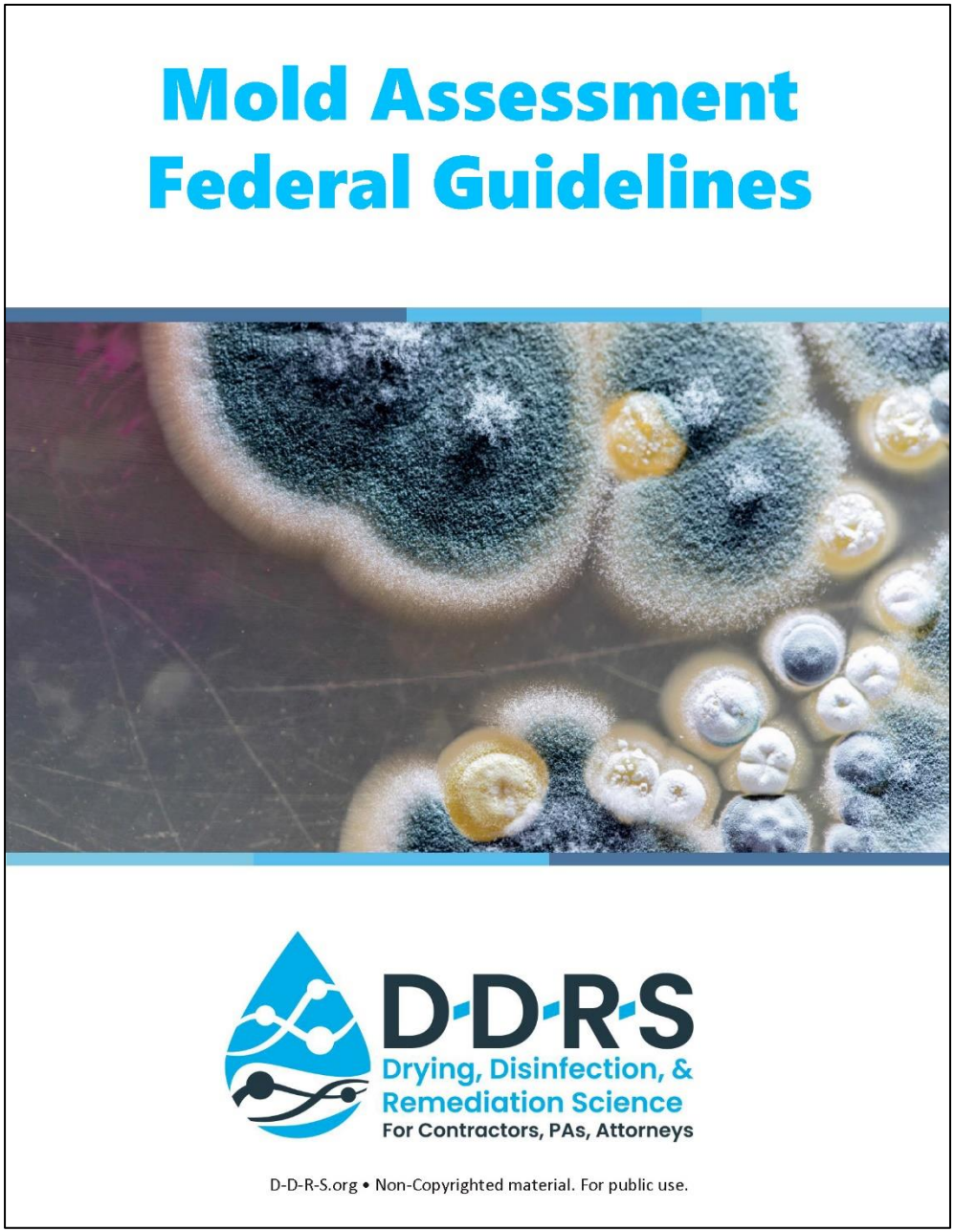
Mold Culture Analysis Useful for Insurance Claims

How Do We Perform This Specialized Culture-Based Testing?

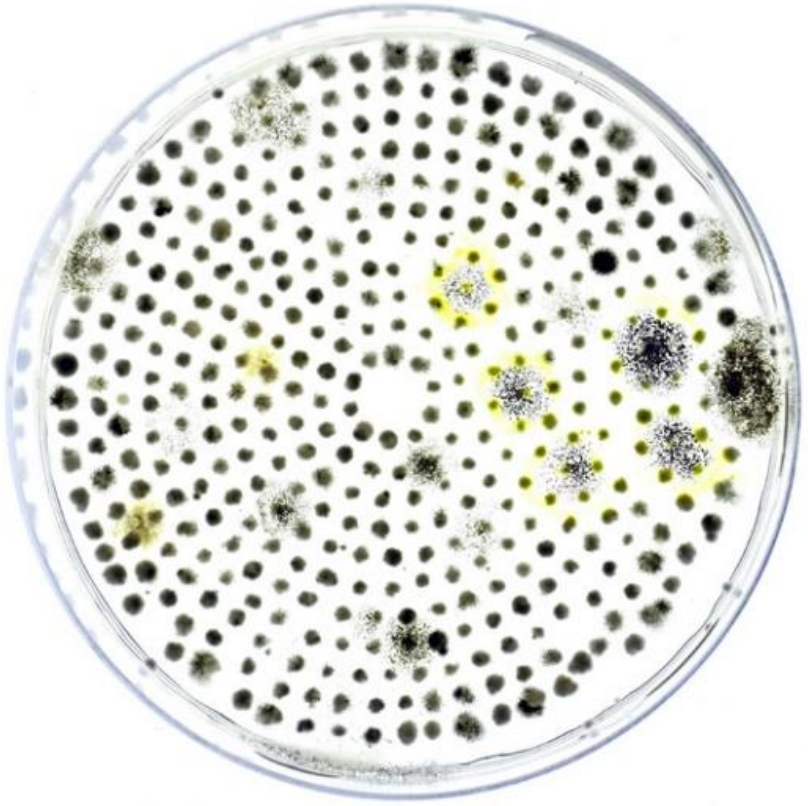
Please refer to *Mold Assessment Federal Guidelines* pages 7-10.

This is a free download from D-D-R-S.org written by Dr. Rosen.

D-D-R-S
Drying, Disinfection, & Remediation Science
For Contractors, PAs, Attorneys



A Very Simple Culture Study After 3 Days; Mold Grows FAST



Culture testing; visible results after 3 days.

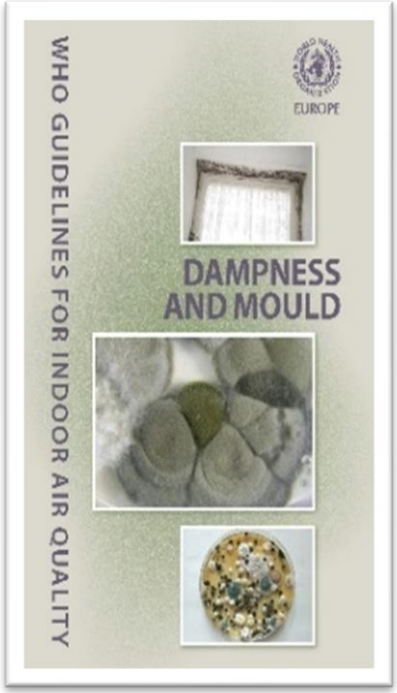
Seeing is believing.

On culture medium, air sample after 3 Days.

Mold grows fast

Benefits of Culture Studies

- Mold culture analysis provides a more detailed, in-depth analysis of the **type/species** of mold present compared to Direct Microscopic Examination (DME).
- Culture analysis also determines whether mold is **live/viable (new) or old/non-viable (dead).**
- Dead mold is older than live mold. The ratio of live to dead mold gives information on timing of growth.
- We need only to consider Dry and Wet Molds. Not: "Not Quite So Dry Molds".



WHO Guidelines for Indoor Air Quality provides a list of molds commonly found in water damage homes broken down into dry and wet molds based on **mold species.**

Dry Molds

Alternaria citri • Aspergillus (Eurotium) amstelodami • Aspergillus candidus • Aspergillus (Eurotium) glaucus • Aspergillus niger • Aspergillus penicillioides • Aspergillus (Eurotium) repens • Aspergillus restrictus • Aspergillus versicolor • Paecilomyces variotii • Penicillium aurantiogriseum • Penicillium brevicompactum • Penicillium chrysogenum • Penicillium commune • Penicillium expansum • Penicillium griseofulvum • Wallemia sebi

- Dry molds are typically first to appear after a water event appearing before things get too water saturated. Mostly are species of Penicillium or Aspergillus (Pen/Asp). These are extremely abundant in the outdoor as well as indoor air which affects germination rate of course.
- These need minimum water to germinate (low water activity.)
- Surface swabs analyzed by Direct Microscopic Examination (DME) cannot distinguish species and **cannot distinguish between the genus Penicillium or Aspergillus.**
- DME cannot distinguish dead from live mold.
- That's why we turn to mold culture analysis.

Wet Molds.

Alternaria alternata • Aspergillus fumigatus • Epicoccum spp. • Exophiala spp. • Fusarium moniliforme • Mucor plumbeus • Phoma herbarum • Phialophora spp. • Rhizopus spp. • Stachybotrys chartarum (S. atra) • Trichoderma spp. • Ulocladium consortiale • Rhodotorula spp. • Sporobolomyces spp. • Actinobacteria (or Actinomycetes)

- Wet molds come after Dry molds as the water/moisture level (water activity) increases. Common wet molds include: Alternaria, Aspergillus fumigatus, Chaetomium, Stachybotrys chartarum.
- Need **wet** conditions (high water activity) to germinate.
- Caution: The timing of mold growth is a function of water activity (how wet it is), temperature, humidity, **as well as how common the spores are.**
- **Stachybotrys is not typically found in the air but is present at least to some degree in floor dusts.**
- **Since no Stachy in the air, Stachy's appearance can be delayed after a water event even though it can start to grow within 5-6 days as shown earlier.**

Viable Air Sampling
Petri Dishes/ Growth Media

- Petri dishes contain growth media (agar).
- Malt Extract Agar (MEA), DG-18, Cellulose, Potato/Dextrose (PDA) are common media for mold growth.
- Spores (both live and dead) are collected by a surface swab or Andersen air sampler.
- Of course, only the live spores grow and are counted. Dead ones not.
- We have our own incubator.
- We incubate for 36 hours. Take a picture.
- Seeing is believing.

We incubate for 36 hours, take pictures, then send to lab for analysis.

Swab Samples for Mold Culture Analysis

After we take pictures, the Petri dishes are then sent to the lab where they are incubated at elevated temperature for additional time. Usually, 7 -12 days for mold **species** analysis.

Viable mold spores impacted on the plate germinate and grow. The mold colonies are then counted and identified down to the **species** level.

We then check to determine if the mold reflects dry mold or wet **mold species.**

If only some or almost all are dry mold, then the water event (and mold growth) is newer (or at least provides support for new).

Section Summary

For insurance property damage coverage purposes after a water event, details about mold genus and species as well as mold's viable / non-viable status and location (height) on the sheet rock can be useful to help investigate the timing as well as cause of loss.

Viable spores are newer than non-viable / older spores. If you find mostly new/live and not mostly dead, viable testing as determined using culture methods can help support the determination of recent.

Dry molds typically start to grow sooner than wet molds. If there is mostly dry mold present (as determined by culture testing) that can help support the determination of recent.

<u>But always keeping in mind that there is always some species of mold before Day 14 that triggers coverage.</u>

WHAT ABOUT EXTENT OF MOLD GROWTH?

(Some of our experiments).

2nd Study; Day 5; 80 Degrees; Heavy Mold on Back of Drywall

Front of Drywall inserted into 1" of water for 5 days. No mold.

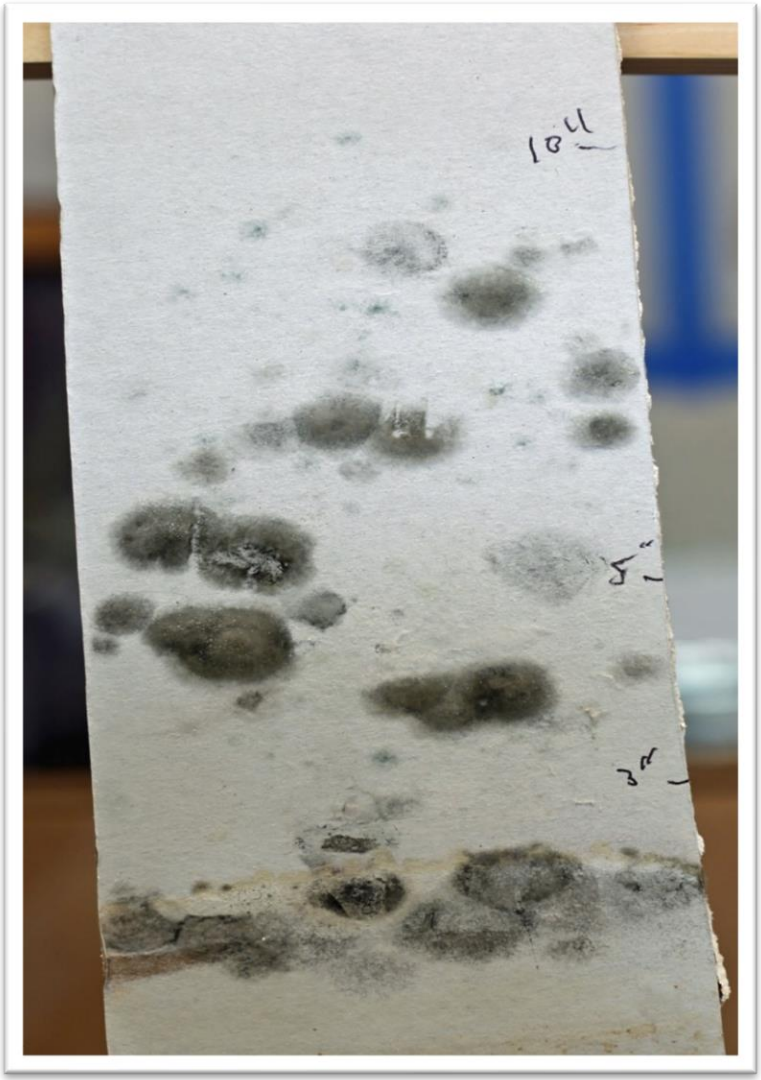
Back of same piece of drywall. Mold after 5 days.

Our Study; Day 7; 80 Degrees; Heavy Mold on Back of Drywall

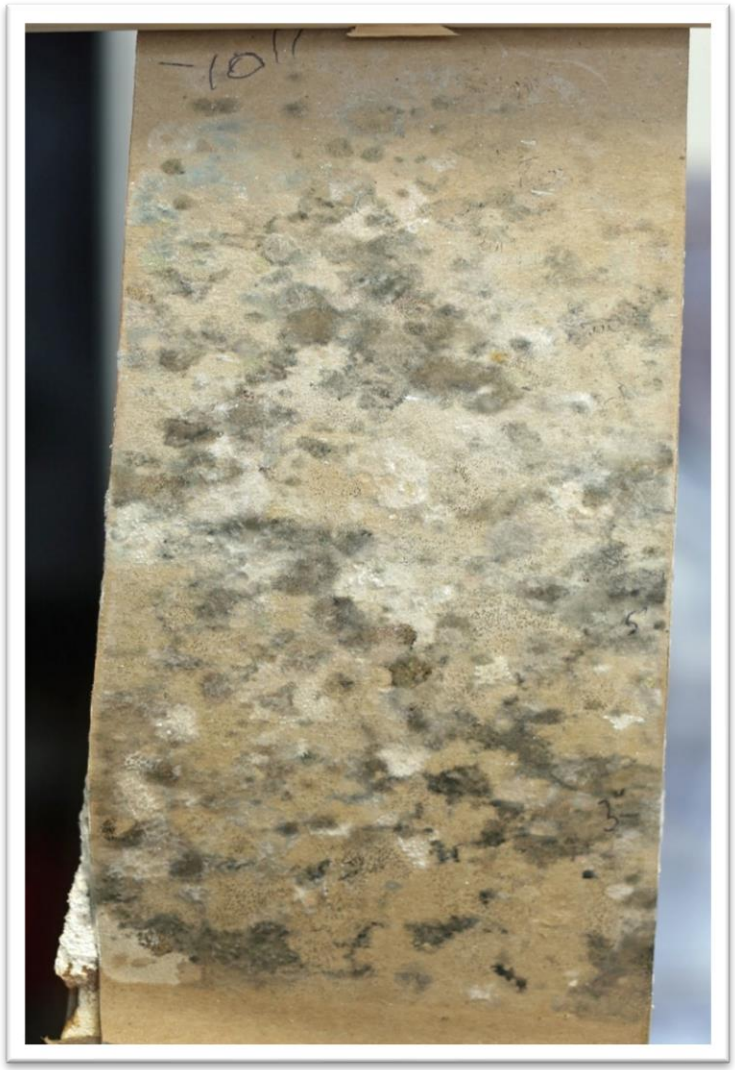
Front side of Drywall inserted into 1" of water for 7 days. No mold.

Back side of same piece of drywall. Lots of mold after 7 days.

Our Study; Day 13; 80 Degrees; Heavy Mold on Both Sides of Drywall



Front of Drywall inserted into 1" of water for 13 days. Plenty of mold.



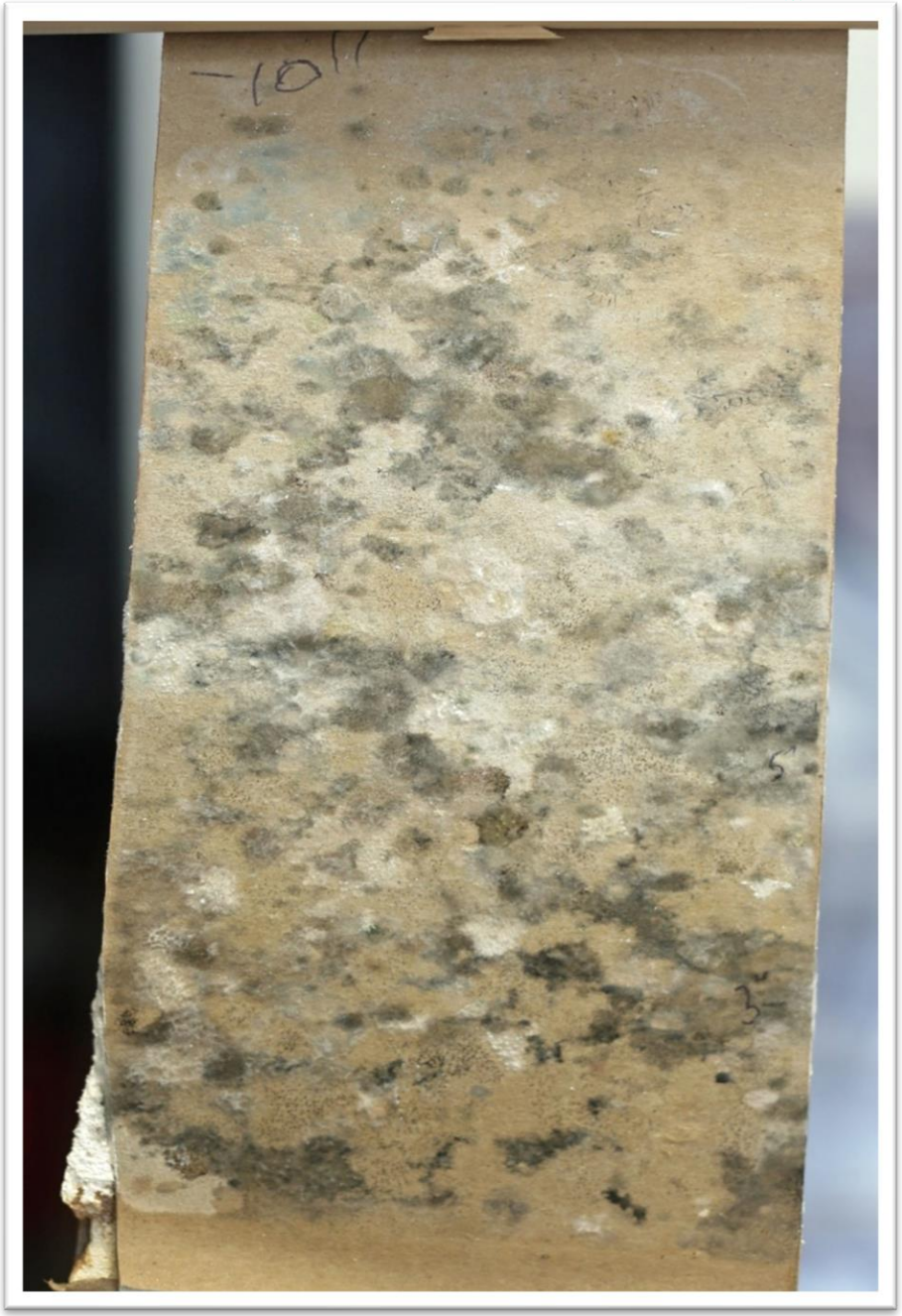
Back of same piece of drywall. Massive mold at 13 days.

Mold Growth on Back Side of Drywall

One can easily see from this simple experiment why one must perform an **intrusive inspection**.

Mold shown here grows faster on the back side of drywall than on the front side (the paper is different.)

That's why one always must (as required by S500) perform an IICRC-compliant inspection **inside of** walls / assemblies.



Clearly Will Always Be Plenty of Mold Before Day 14

- Mold grows fast in warm / humid air such as the inside of wall cavities that are connected to hot attics.
- Mold starts to grow faster in dirty homes (lots of spores in the dust and air), homes without a good AC filter, and hot / humid homes with no AC such as after a hurricane.
- Mold grows faster in the summer than winter.

If there is significant mold growth, the insurance Carrier is going to state that that this is long term damage — too much mold growth for only 14 days of water exposure. Coverage denied.

If they have not performed a timely S500 compliant intrusive inspection, there are no accepted methods for making such determinations months or years after the actual occurrence. Instead, they invent Exemplars.

Carriers Invent Methods To Determine Duration of Damage

RALPH MOON CRITIQUES - OneDrive (live.com)

The use of mold growth Exemplars (pictures of mold from earlier non-published / not peer reviewed "studies") to "determine" duration of the water damage, almost always months or years after the water event, is not a valid substitute for a timely S500 compliant Inspection.

We have written extensively on this subject.

Red Herrings

- If there is significant mold growth (sq ft or density), the insurance Carrier is going to state that that this is long term damage — too much or mold growth too heavy for only 14 days. Coverage denied.
- However, there are no reliable methods to determine the duration of the leak based on pictures/Exemplars of mold growth.
- **Red herring #1. Timing of Water Damage:** It is only the timing of the damage that is important. < 14 days or not. Not the duration of the damage or duration of the leak.
  - And there will always be mold growth before day 14 that will trigger coverage because mold grows fast.
- **Red herring #2**. **Rate of Mold Growth:** Temperature is more important than time when it comes to the extent of mold growth.
  - Wet wall cavities are connected to hot attics and are not only very hot but also at 100% (or close to 100%) humidity that massively accelerates mold growth.
  - The heat associated with dry-out massively accelerates mold growth. Always mold after drying.

Red Herrings

- **Red herring #3. Timing of water damage versus duration of leak/event:** Insurance policies discuss duration of the leak/water event. A long term leak (> 13 days) is often said to be excluded. But even though policy language says otherwise, the duration of the leak is not an issue regarding coverage. Only the timing of permanent damage is involved in coverage. If permanent damage before Day 14 there is coverage.
  - However, if there is a leak inside of a wall even for only a few minutes (clearly short term) because water is trapped inside of the wall and will take weeks or months to dry even if "professional" dry-out contractors are brought in…
  - Mold will continue to grow; wood will continue to rot and stain; cabinet legs will continue to swell and delaminate; and metal will continue to rust having nothing to do with coverage.
  - An inspection of damage that is not timely cannot be used to reliably investigate the timing of the permanent water damage for the purposes of coverage considerations.

Other Reasons for Mold After Drying

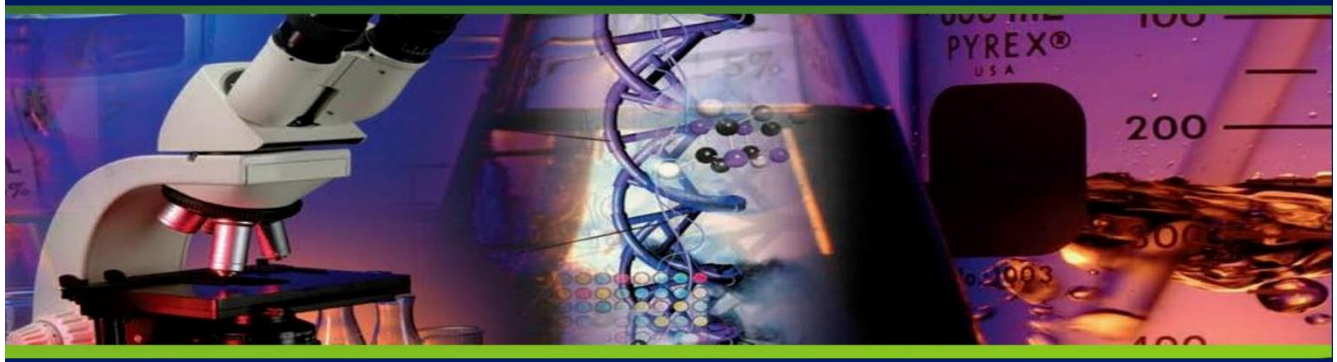
IICRC S500-2021: Brings Back In-Place Drying

Instructor / Course Developer:
Gary Rosen, PhD FLA Lic Building Contractor,
FLA Lic Mold Assessor and Mold Remediator,
FLA Independent Insurance Adjuster.
BS Chemistry UF; PHD Biochemistry UCLA
gary@mold-free.org

Other free resources. Changes to S500-2021 actually promote mold growth.

Other Reasons for Mold After Drying

S500-2021: Mold After Drying Because Most Assemblies Are Slow Dry



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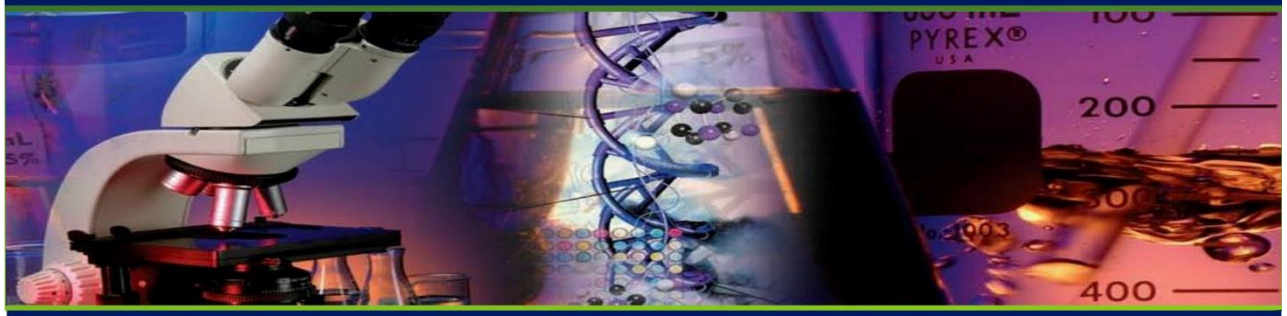
FLA Lic Mold Assessor and Mold Remediator,
FLA Independent Insurance Adjuster.
BS Chemistry UF; PHD Biochemistry UCLA
gary@mold-free.org

Other free resources. Mold after drying because drying of most assemblies in slow.

Other Reasons for Mold After Drying

S500-2021: Why Dry? Almost Always Unrestorable Materials Before Drying



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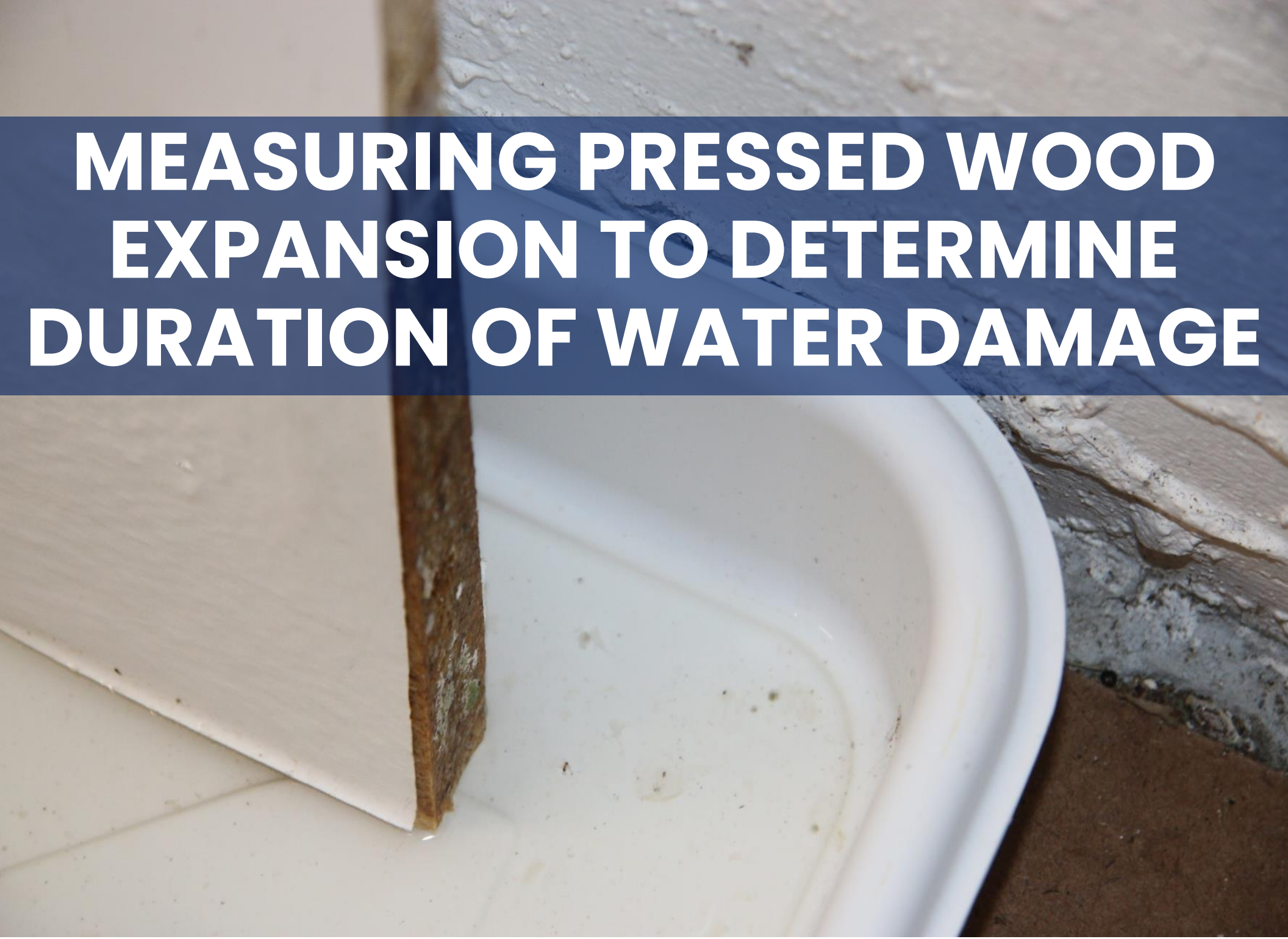
FLA Lic Mold Assessor and Mold Remediator,
FLA Independent Insurance Adjuster.
BS Chemistry UF; PHD Biochemistry UCLA
gary@mold-free.org

Other free resources. Mold after drying because almost always some wet components that are not restorable by drying. For example, particle board cabinets.

Table of Contents Part 3

NAERMC
National Association of Environmentally Responsible Mold Contractors



MEASURING PRESSED WOOD EXPANSION TO DETERMINE DURATION OF WATER DAMAGE

Pressed Wood & MDF

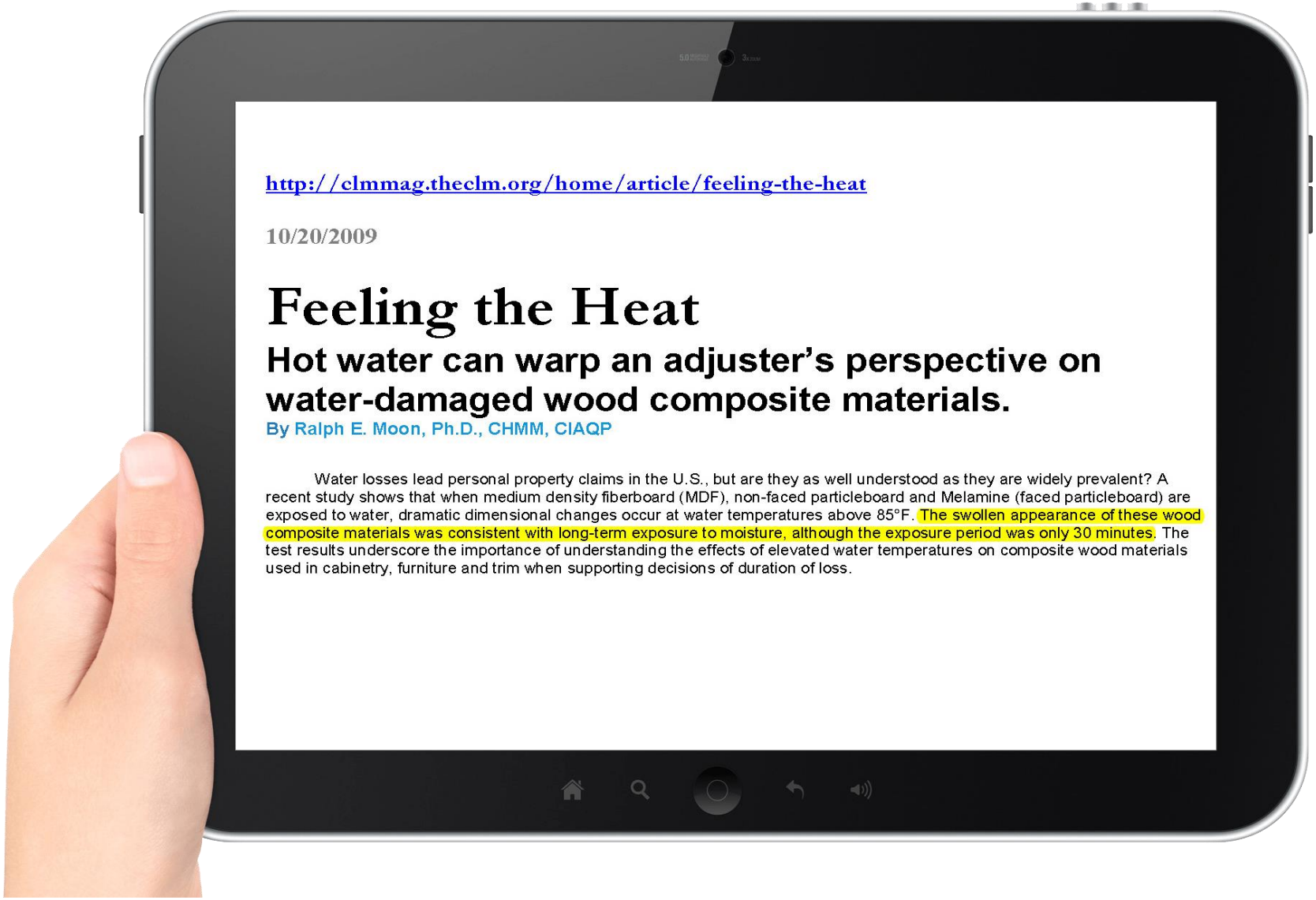
- Another name for pressed wood is particle board.
- MDF is medium density fiber board and is essentially cardboard.
- **Both are immediately and irreversibly damaged when exposed to water. Triggers coverage.**

Particle Board Expansion After 8 Hours (Our Experiment)

Particle Board expansion and discoloration is almost instantaneous when material is immersed in water (here after only 8 hours). Same with MDF (medium density fiberboard). Triggers coverage.

Rate of Pressed Wood Expansion

Dr. Ralph Moon (prolific insurance defense expert) Study 2009



http://clmmag.theclm.org/home/article/feeling-the-heat

10/20/2009

Feeling the Heat

Hot water can warp an adjuster's perspective on water-damaged wood composite materials.

By Ralph E. Moon, Ph.D., CHMM, CIAQP

Water losses lead personal property claims in the U.S., but are they as well understood as they are widely prevalent? A recent study shows that when medium density fiberboard (MDF), non-faced particleboard and Melamine (faced particleboard) are exposed to water, dramatic dimensional changes occur at water temperatures above 85°F. The swollen appearance of these wood composite materials was consistent with long-term exposure to moisture, although the exposure period was only 30 minutes. The test results underscore the importance of understanding the effects of elevated water temperatures on composite wood materials used in cabinetry, furniture and trim when supporting decisions of duration of loss.

Pressed Wood Swelling FAST

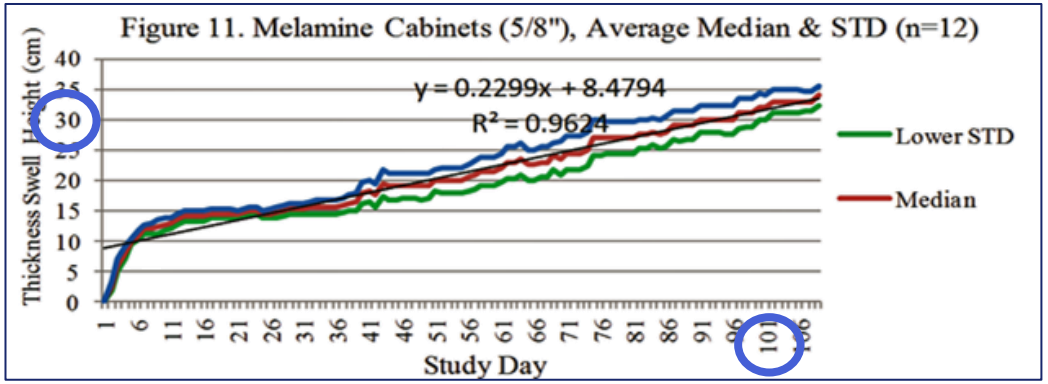
Dr. Ralph Moon (prolific insurance defense expert) Study 2009

After only 30 minutes of water exposure (according to Dr. Moon study) swollen appearance of pressed wood cabinets is consistent with long term water event.

Clearly pressed wood cabinet swelling is too fast to be useful in determining the duration of a water event. But that is not relevant. The only relevant issue is that pressed wood cabinet legs that get wet result in **immediate** permanent damage that triggers coverage.

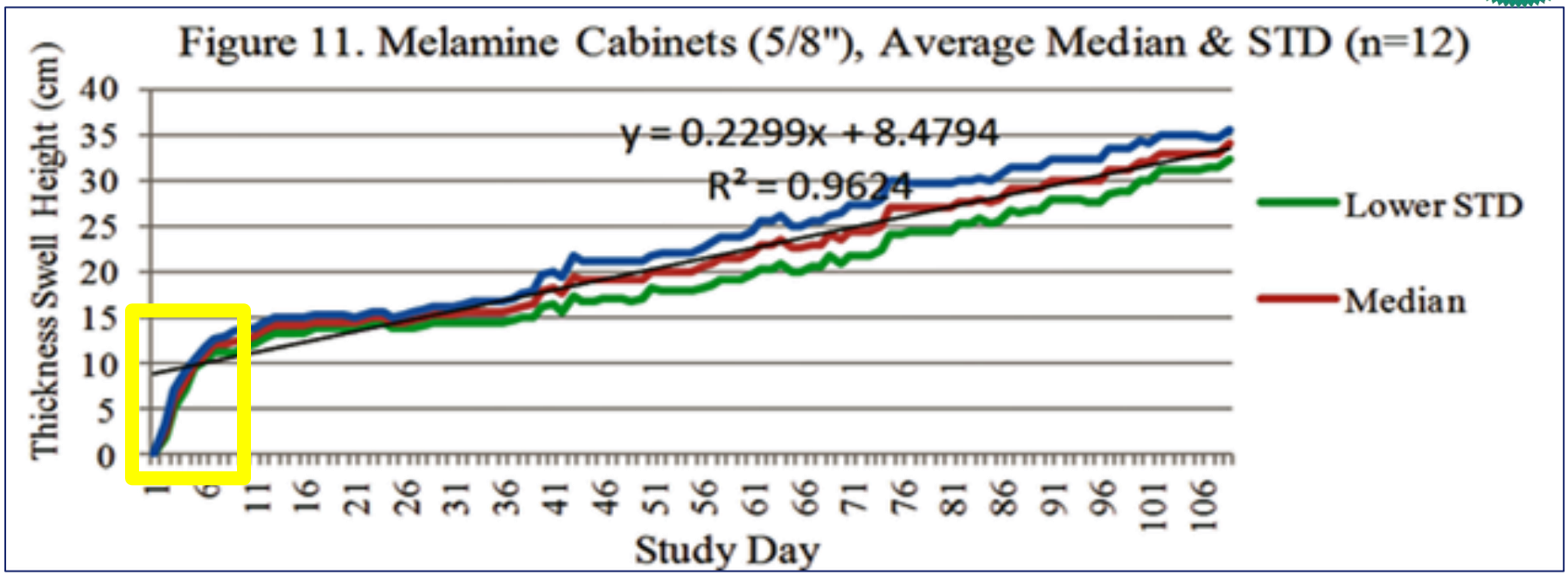
Permanent damage that triggers coverage is either immediate swelling or immediate delamination or both. The duration of the swelling or if continuous/ repeated is irrelevant. A red herring.

Pressed Wood Thickness Swell Height



- Moon in another study (Forensic Engineering 2015) has developed a set of graphs said to allow a Carrier "Forensic Engineer" to estimate the duration of the water event (here 101 days) by measuring the height of the thickness swell (30 cm) of pressed wood (melamine) cabinets.
- From this graph, the Carrier will conclude that the duration of the water event was approximately 101 days of long term, continuous damage.
- Therefore deny claim.

Pressed Wood Thickness Swell Height



- However, this study shows that the timing of catastrophic / permanent damage to pressed wood is always less than 14 days. (Yellow box.)
- Triggers coverage.
- **The fact that there is additional damage (swelling) after day 13 is not relevant to coverage. It is a red herring.**

Carriers Invent Methods To Determine Duration of Damage

RALPH MOON CRITIQUES - OneDrive (live.com)

The use of Exemplars for pressed wood cabinet swell, almost always months or years after the water event, is not a valid substitute for a timely S500 compliant Inspection.

We have written extensively on this subject.

MEASURING THE RATE OF RUST TO DETERMINE THE DURATION OF A WATER EVENT

Galvanized Steel Studs & Bottom Track

- Metal studs, bottom track, metal corner bead used in construction are made from galvanized steel and are somewhat resistant to rust.
- The rolls of metal used to make these products are imported from countries all over the world. Metal studs, bottom track, metal corner bead vary in terms of how well they are galvanized. Little quality control.

Bottom Track

Stud

Corner Bead

Rate of Steel Wall-Framing Rust

- While significant rust on framing elements (or metal corner bead) does mean long term water event (>13 days) …
- There is often no reliable way to know if the rust is the result of the new water event in question or pre-existing.
- The rust may be there from an earlier water event or even from the time of construction.

Construction Damage: Steel Wall-Framing Rust

During construction, steel framing often starts to rust because it is exposed to water when the framing is installed before the roof is properly dried in.

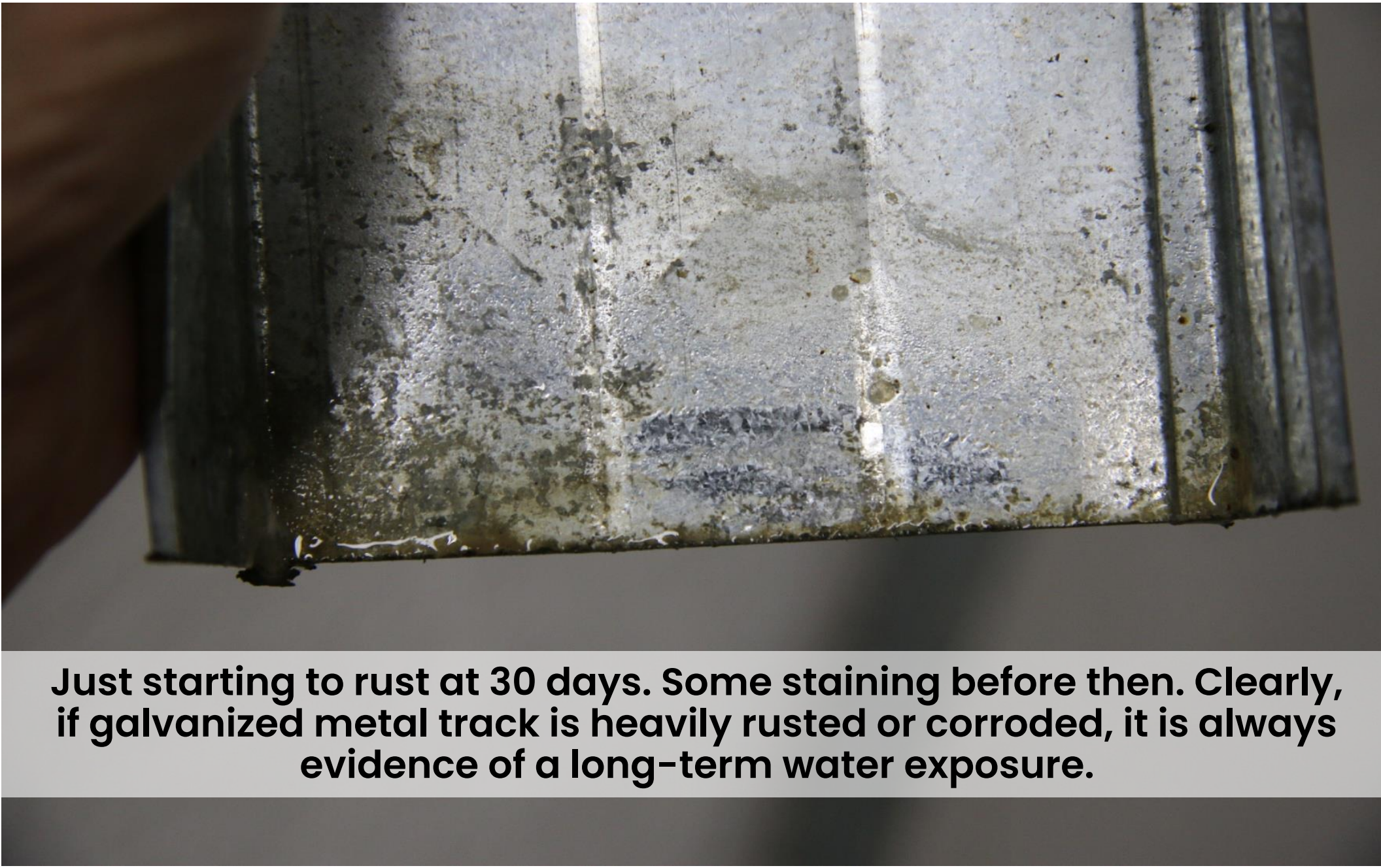
If, during construction, the drywall was water damaged and the framing rusted, the drywall would have been replaced, but **not** the rusted framing steel.

This is a common occurrence.

Steel Wall-Framing Rust In an Occupied Home

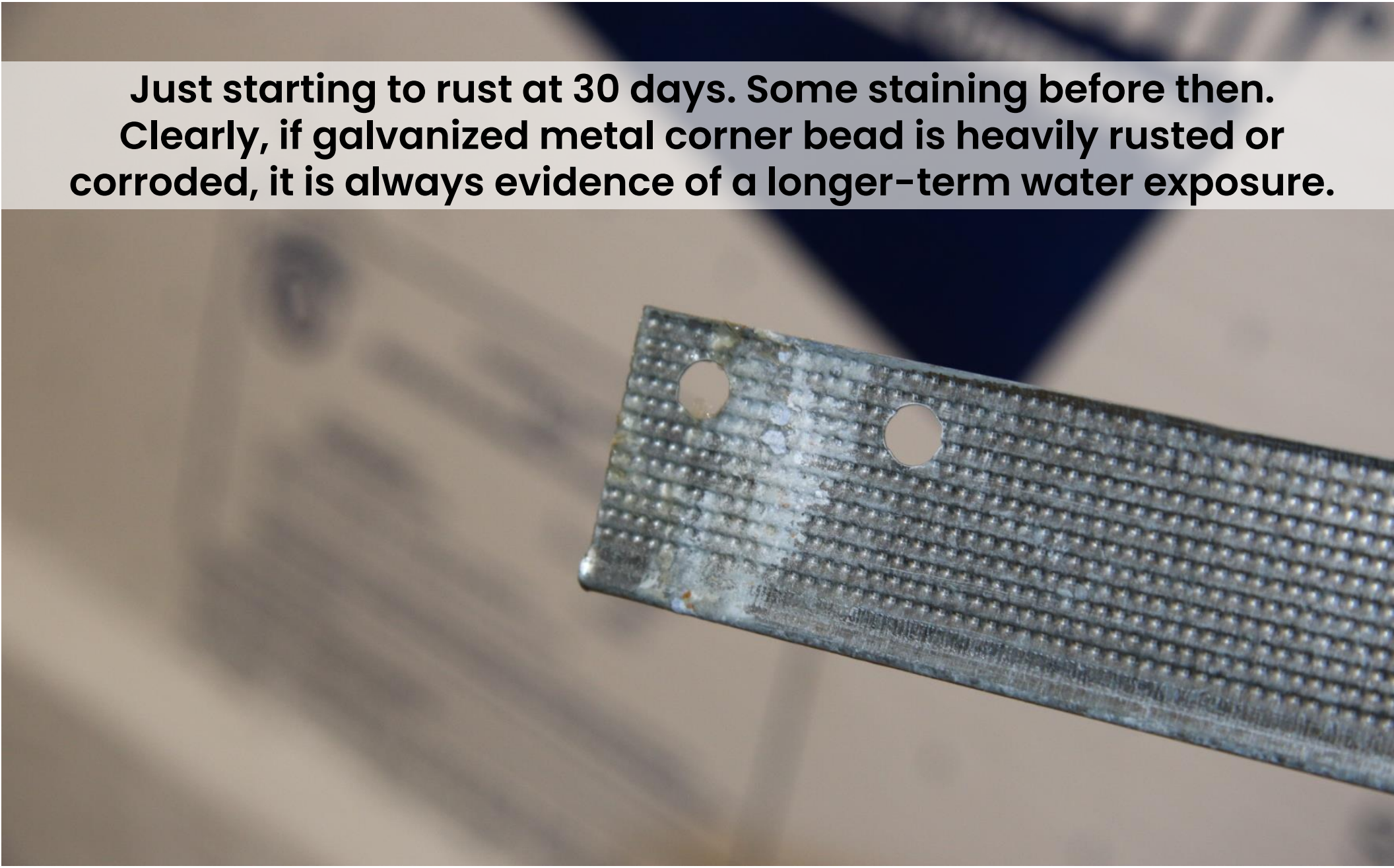
- Similarly, water damaged drywall from an earlier, long-term water event during owner occupation would have been replaced, but **not** the rusted steel.

Our Simple Experiment Metal Framing: 30 Days



Just starting to rust at 30 days. Some staining before then. Clearly, if galvanized metal track is heavily rusted or corroded, it is always evidence of a long-term water exposure.

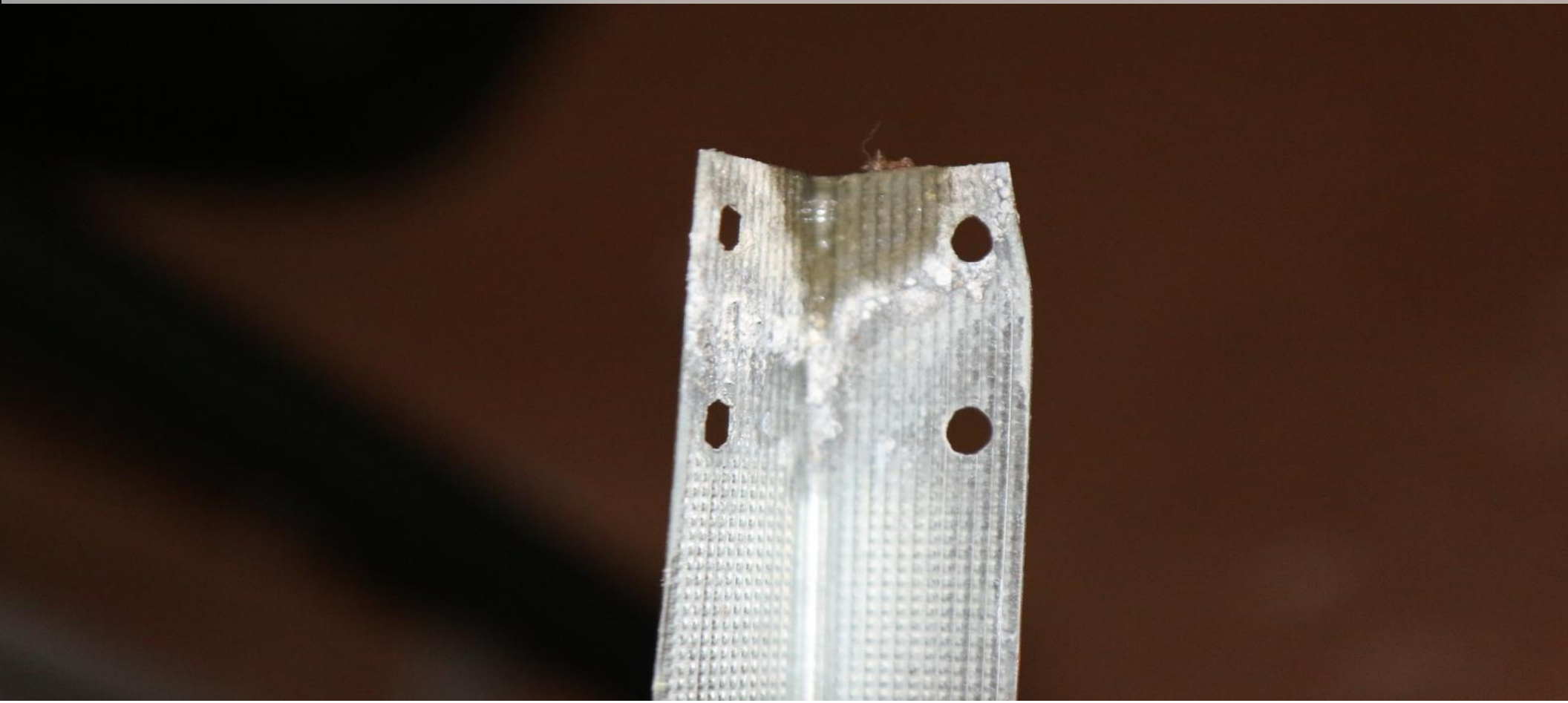
Metal Corner Bead: 30 Days



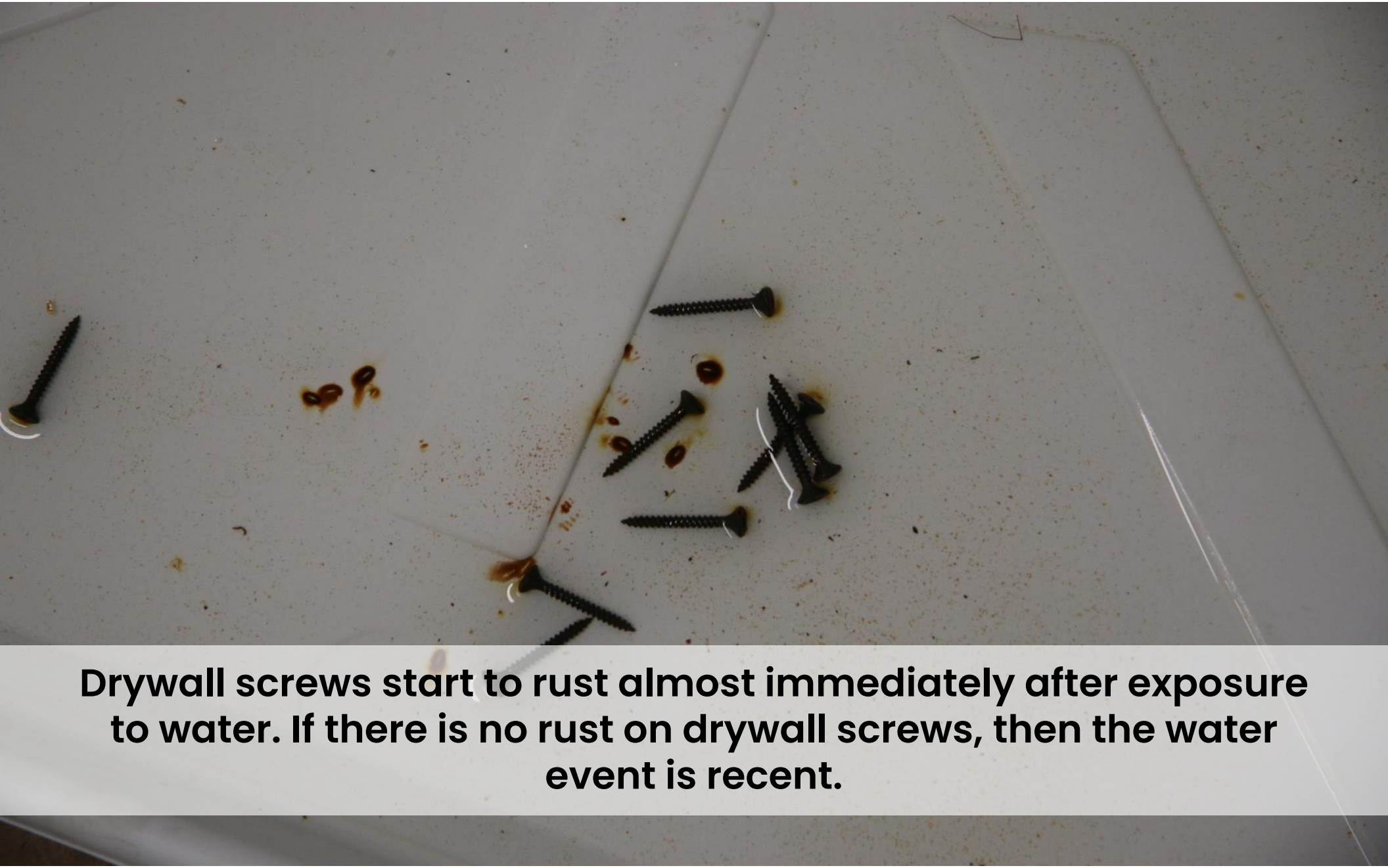
Just starting to rust at 30 days. Some staining before then. Clearly, if galvanized metal corner bead is heavily rusted or corroded, it is always evidence of a longer-term water exposure.

Metal Corner Bead: 60 Days

At 60 days: Clearly, if galvanized metal corner bead is heavily rusted or corroded, it is always evidence of a long-term water exposure.



Drywall Screw Rusting



Drywall screws start to rust almost immediately after exposure to water. If there is no rust on drywall screws, then the water event is recent.

Case Study on Pre-Existing Rust

We were hired to remediate a high-rise unit.

The unit had been occupied for 8 years (relatively new.)

The ice maker line in the unit above ruptured and the unit below (our job) flooded so we knew the exact date of the new water event.

When we removed the bottom drywall, we found pre-existing rust on galvanized steel. This did not occur in the two weeks since the leak from above.

Pre-Existing Rust in 3 Locations

Rust that was not related to the new water event was found in 3 locations.

Under the air handler (prior leak).

In the kitchen area (prior leak).

And in the master bedroom (prior leak.

Finding rust does not mean that the current water event is long term. May be pre-existing and not related.

Heavy Rust in Master BR Closet

Not related to recent leak 2 weeks prior.

Heavy Rust Behind Kitchen Closet

Yellow circle: Bottom of cabinet sides not damaged, but long-term rust in the wall behind. Clearly, heavy rust is a prior condition before kitchen was installed.

Hidden Mold, Pressed Wood Damage and Rust

- If no rust, this supports but does not prove short term water event.
- Generally, no single indicator is ideal for dating a water event especially when hidden inside of walls.
- But if walls are opened, for example during remediation or an intrusive inspection, it is generally possible to reliably determine long-term or short-term by looking at **patterns of rust, of mold growth and of particle board damage.**
- What is meant by **"patterns"?**

Patterns of Hidden Mold, Pressed Wood Damage and Rust

By looking for patterns of water damage:

- One can generally determine if the damage was pre-existing or not by checking inside of walls and behind cabinets, both in the new water exposed areas and outside of the water exposed area for mold growth, cabinet let swelling / delamination and / or rust.

Key Take Away Regarding Rust

Carriers will point to rust and declare long term event. Deny coverage. That again is a red herring. Why?

- **Because the duration of any water event is not relevant to coverage. Only the timing of permanent damage.**
- **Yes. If there is no rust this is consistent with a short term water event.**
- **But if there is rust, it is true that there was no permanent damage to galvanized steel before day 14. However if there was also water exposure to drywall and/or cabinets, there will always be mold and permanent damage by day 14 triggering coverage.**

Carriers Invent Methods To Determine Duration of Damage

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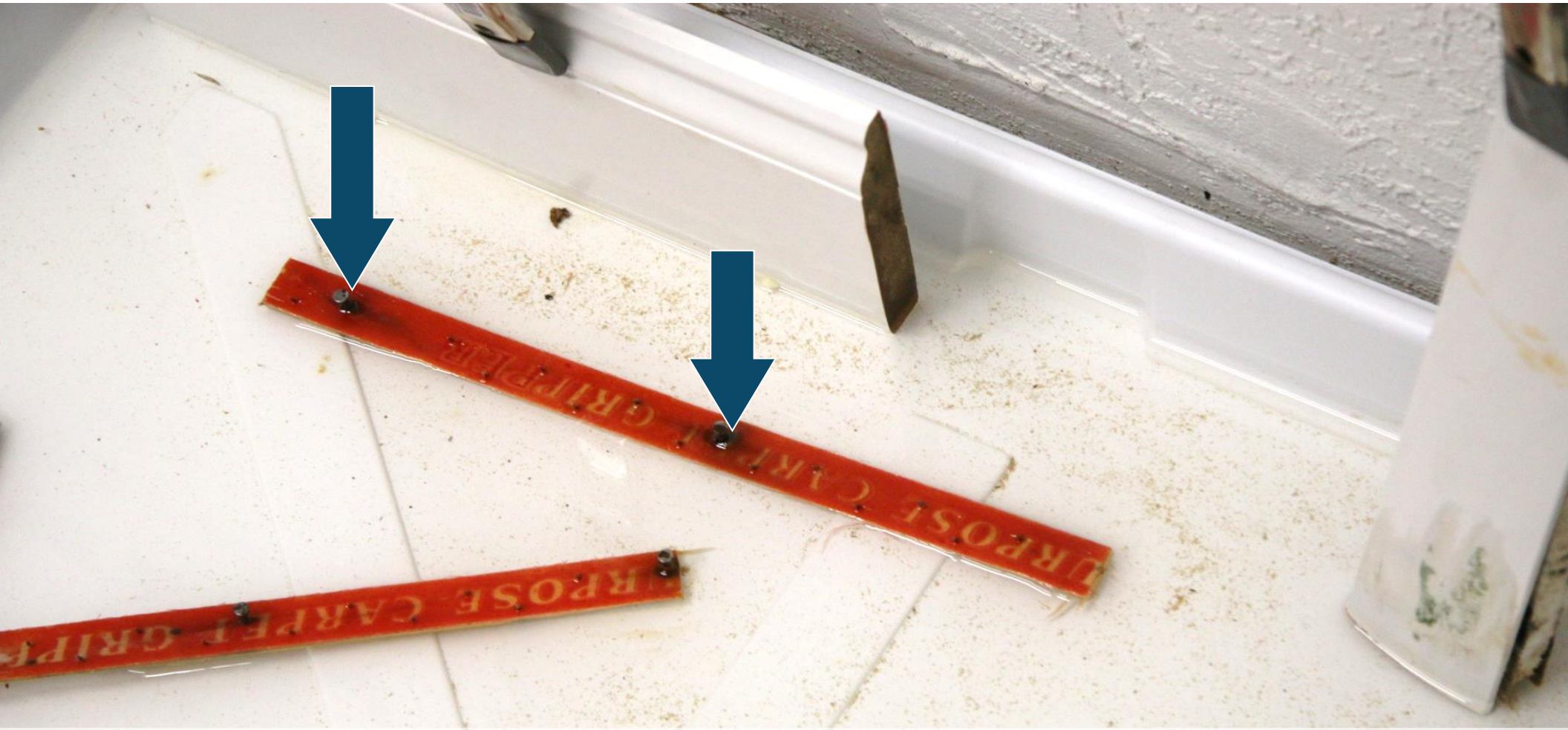
Carpet Tack: 12 Days



Over a few weeks, the rust stains around the larger carpet tack nails expand in size and can be used to help date the length of the water event.

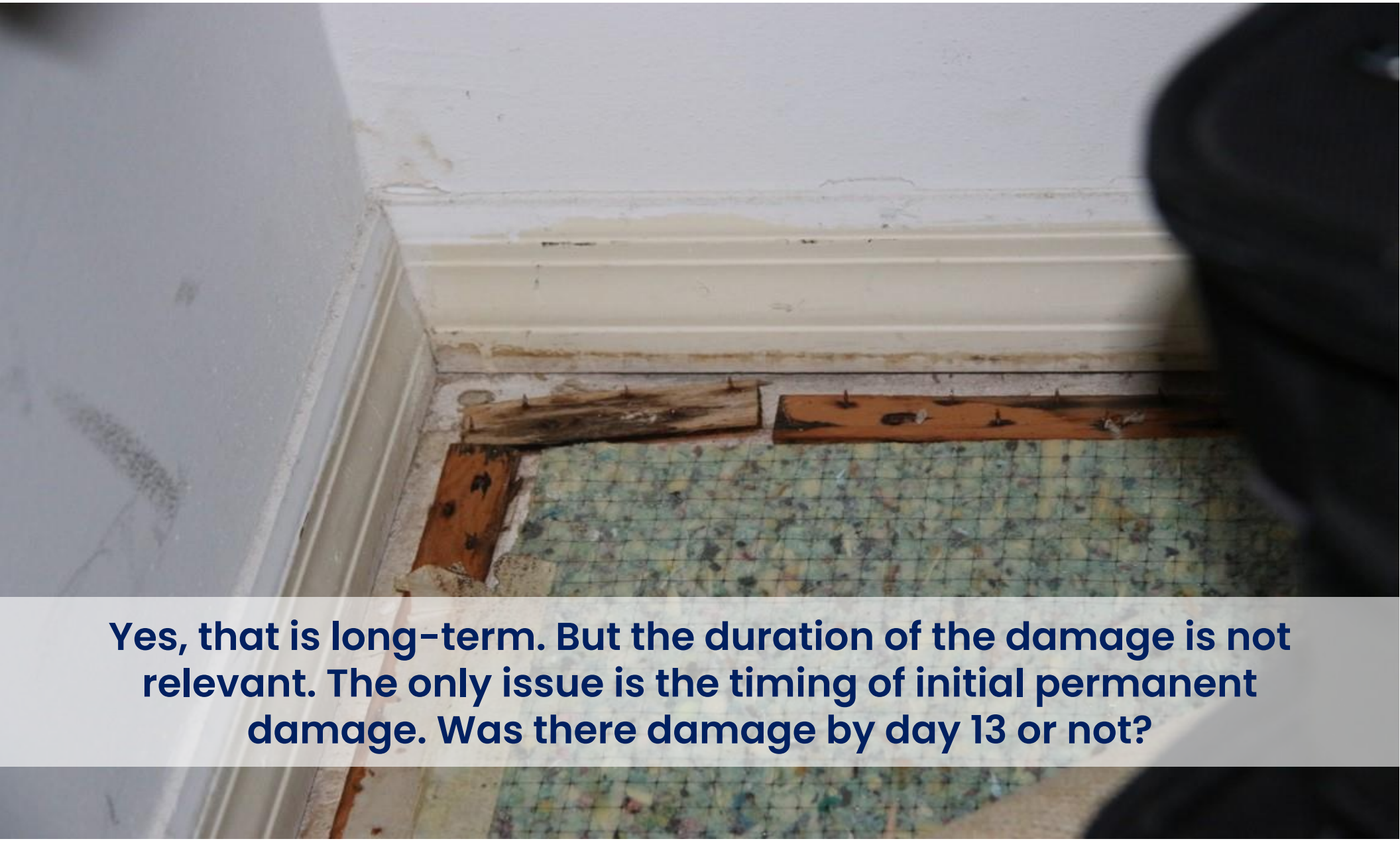
Carpet Tack: 30 Days

At 30 days there is significant discoloration / decay of the soft carpet tack wood.

Carpet tack decay can be a useful indicator of timing of damage.

If no or slight damage after a water event that floods carpet, that means recent.

Carpet Tack: Long-Term or Not?



Yes, that is long-term. But the duration of the damage is not relevant. The only issue is the timing of initial permanent damage. Was there damage by day 13 or not?

SUMMARY: Carpet Tack Can Be Useful In Dating Water Damage

Based on a simple experiment, where we put new carpet tack in a water bath, carpet tack stains and rust appeared rapidly.

Therefore, if there is no damage to the carpet tack, and the carpet tack was wet, the water event is recent.

WOOD ROT / STAINING

Wood Rot and Staining

Wood can start to stain almost immediately after a water event (within days). However, wood rot always takes more than 14 days; finding wood rot therefore means that there has been long-term exposure to water.

Carriers will use this to deny coverage, but again, this is not relevant. A red herring. The duration of the water event does not impact coverage. Only the timing of any permanent damage is relevant.

Baseboard Staining

Baseboard staining and / or damage are typically not hidden inside of walls or behind dishwashers. So, appearance of baseboard can be key for inspectors / assessors.

But if / when possible, take a look behind the baseboard.

Generally, one should adopt a multi-method approach to determine timing of loss.

Analyze mold, check for wood rot and staining, check for rust. Look for patterns in as well as around the water damage area.

SEWAGE

Porous or Semi-Porous Material Exposure to Sewage to Determine Timing of Water Damage

IICRC requires remove and replace Category 3 (Sewage Contaminated) Water. No drying allowed.

- If sewage — a type of Category 3 contamination — comes into contact with virtually any porous or semi-porous (uncleanable) household material, those materials must be discarded per ANSI/IICRC S500 Industry Standard of Care.
- **This triggers coverage. The permanent damage is immediate. And not restorable by drying.**
- Per ANSI/IICRC S500 2021 16.2.2.2, **sewage contaminated** materials that are to be **removed and replaced** (not dried) include, but are not limited to:
  - Gypsum wallboard (single-layer, multiple-layers, both standard and fire-rated);
  - Carpet and carpet cushion (pad, underlay);
  - Particleboard or Medium Density Fiberboard (MDF);

Porous or Semi-Porous Material Exposure to Sewage to Determine Timing of Water Damage

What is sewage according to ANSI/IICRC S500?

> **Category 3:** Category 3 water is grossly contaminated and can contain pathogenic, toxigenic, or other harmful agents and can cause significant adverse reactions to humans if contacted or consumed. Examples of Category 3 water can include, but are not limited to: sewage; wasteline backflows that originate from beyond the trap regardless of visible content or color; all other forms of contaminated water resulting from flooding from seawater; rising water from rivers or streams; and other contaminated water entering or affecting the indoor environment, such as wind-driven rain from hurricanes, tropical storms, or other weather-related events if they carry trace levels of contaminants (e.g., pesticides or toxic organic substances).

Sewage is a backflow or any drain line leakage **beyond the trap regardless of color. But if black colored, that makes it easier to determine contamination.**

To prove that any of the items on the previous page have been touched by sewage water, the preferred approach is to take pictures of black / dark discoloration. This usually requires destructive inspection.

You may also take a surface sample with a wet swab and submit to the lab for a **fecal coliform bacteria analysis**. If it comes back positive, it confirms a Cat 3 sewage loss. But this method is not as reliable as the visual ID.

What is fecal coliform bacteria? Fecal coliform bacteria is a subset of the total coliform group; with a Dry example being Escherichia coli (E. coli).

DRYWALL SOFTENING

Measuring Loss of Drywall Hardness

Testing post water event for drywall hardness

Drywall loses its strength (hardness) if it remains wet for extended periods of time. Measuring hardness of drywall that was exposed to water can help determine the timing of water event.

According to ANSI/IICRC S500 -2006:

12.4.1.5 Gypsum Board or Drywall

In North America, drywall is the most common interior wall and ceiling finish material. Normally, it is composed of paper on both exterior surfaces, which is laminated to a gypsum core. Drywall is easily damaged while wet, since it loses much of its strength and stiffness. If not wet for extended periods (i.e., 48-72 hours), drywall normally regains its original strength upon drying.

If the drywall has not lost any of its strength (hardness) as a result of water exposure, this would indicate a short-term (not a long term, continuous, repeated) water event.

Drywall hardness is measured with a device called a Durometer. The PTC brand Drywall Hardness Gauge Model 414USG is the make and model used in developing the ASTM standard for measuring drywall hardness. (http://www.astm.org/).

Drywall Properties: Hardness

ASTM C1396 / C1396M–17 Standard Specification for Gypsum Board. Drywall produced or sold in the U.S. must comply with ASTM standards for: Drywall flexibility, porosity, nail pull, fire resistance, strength, other factors and for "hardness".

The Durometer-based drywall hardness testing requires the use of a test stand in order to have reproducible and reliable results. Testing requires removing a piece of drywall 3" x 3" or larger. Can / should be removed from behind baseboard without resulting in noticeable physical damage to the wall once the baseboard is reset.

Drywall hardness testing that finds no loss of hardness is a reliable and repeatable method for ruling out long-term water event when used in conjunction with the other testing methods such as culture-based mold testing.

Test Stand

CHECK LIST FOR A PROPER (IICRC COMPLIANT) WATER DAMAGE INSPECTION

Inspection Check List

What inspection procedures are best for finding coverage triggers after a water event?

Initial (Pre-Drying) Inspection should be performed as soon as possible after the water event is detected. There is no possibility of reliably determining the timing of water damage (short-term or long-term / pre-existing) many months or years after the event.

- ✓ Mold Testing: Listed as the first inspection procedure since this is the most powerful. We test mold growth using culture methods to estimate the timing of the water event. One will find in a recent water event:
  - The absence or relative absence of wet mold species.
  - The presence of viable (new) mold / spores. And not only dead (old) mold /spores.
- ✓ Rust: Finding rust does not necessarily mean that the identified water event is long term. May be a pre-existing, non-related condition. But if no rust, certainly not long term damage. However even if the water event is long term as proven by rust, it is only the timing of permanent damage that matters. Rust is a red herring.

Inspection Check List

- ✓ High quality photographs with quality lighting: Due to litigation delays, Carriers will send their inspector out perhaps months or years later, when too much time will have passed to accurately study mold growth. The court will have only the homeowner's S500 compliant inspection results. This is where high quality photographs (under proper lighting) of the damage, in addition to test results, come in handy.
- ✓ Pressed Wood Cabinet Side Panel Leg Swell: Cabinet side panel (leg) swelling and /or delamination are immediate if cabinet sides are pressed wood or plywood. Plywood cabinet side panel feet swell less than pressed wood but delaminate quickly.

  Even if clearly new permanent damage, the Carrier will likely wrongfully "determine" that the swelling / delamination was long time damage. Red herring. Or swelling / delamination are pre-existing. Deny coverage.
- ✓ If There Is Carpet: Check for carpet tack wood discoloration or carpet nail rust. If no damage, the water event was not long-term.

Inspection Check List

- ✓ Mold on Pressed Wood or MDF: IICRC states that pressed wood or Medium Density Fiberboard (MDF) with mold growth needs replacement. Cabinets are typically pressed wood. Baseboard and crown molding are often but not always MDF. Once wet, MDF materials cannot be restored to original strength by restorative drying. Must be replaced. This triggers coverage.
- ✓ Sewage Testing: Proving that porous or semi-porous content has come into contact with sewage water is a sure way to trigger coverage. Sewage exposure to porous or semi-porous material is an immediate / instantaneous change of Category. It requires material removal.
- ✓ Drywall Hardness Testing: Measuring hardness of drywall that was exposed to water can help determine the duration and timing of water event.

  If drywall is at its original hardness, this is an indicator that the leak was not long term.

Inspection Check List

Make sure to perform a timely ANSI/IICRC S500-compliant (intrusive) inspection.

- ✓ Inspect immediately after a water event is detected.
- ✓ Inspect as defined in ANSI/IICRC S500-2015/2021 1.2.2.1 Initial (Pre-Drying) Inspection .
- ✓ Determine Water Category.
- ✓ Check under baseboards and carpet edges for mold, rust, carpet tack, wood damage.
- ✓ Remove dishwasher to inspect behind. Remove cabinet toe kicks as needed.
- ✓ Document with high quality pictures or videos.
- ✓ Take test samples. Culture sample analysis is recommended.

When the homeowner's inspector performs a timely industry compliant ANSI/IICRC S500 compliant inspection, **the homeowner's inspector will have the advantage—even if the results are not 100% clear.**

COURSE CONCLUSIONS

Perform a Fully ANSI/IICRC S500 Compliant Forensic Inspection

A detailed forensic water damage and mold inspection after a water event is IICRC / Industry compliant if it is:

1. **Compliant** with ANSI-approved IICRC S500-2015/2021.

a) **Intrusive:** Compliance requires an intrusive inspection into and under water impacted materials, not only surface inspection / measurements. Why needed? To find hidden moisture and hidden mold and other damage that are used to help determine timing of the water event and subsequent recent permanent damage that triggers coverage.

b) **Category:** Compliance requires the determination of IICRC Water Contamination Category. Why? Because once a porous or semi-porous material (such as drywall) is Category 3 (microbial contaminated), it cannot be cleaned or dried to restore to pre-water event condition. It must be replaced, triggering coverage for remediation and rebuild.

Perform a Fully IICRC-Compliant S500 Forensic Inspection ASAP

2 **Immediate:** The ANSI/IICRC S500 compliant inspection should be performed immediately after finding a water event (when possible.)

- Focus on finding / photographing hidden mold growth (permanent Category 3 damage that cannot be restored by drying or cleaning) to trigger coverage for remediation and rebuild.
- If the ANSI/IICRC S500 compliant Initial (Pre-Drying) Inspection is not performed immediately after the water event it is still important and useful to perform. And still important to be compliant. But it can rarely be conclusive.

An IICRC-Compliant Forensic Inspection Is Based on Science

3 **Scientific.** The ANSI/IICRC S500 compliant forensic inspection should use scientific procedures to attempt to prove that the timing of the permanent damage is recent / short-term (and therefore covered).

- This will require that the mold assessor be trained in taking (intrusive) mold surface samples in the water damage areas and submitting samples for not only Direct Microscopic Examination (DME), but better yet culture analysis.
- And then interpret the lab reports to confirm (or contradict) the hypothesis that the mold is recent (not pre-existing / long term).

An IICRC-Compliant Forensic Inspection Is Multi-Faceted.

4 Multi-faceted. Diversified in its methods, so that the inspector / mold assessor employs approaches beyond only finding and analyzing mold growth to confirm the short-term timing of damage.

- This will require that the inspector / mold assessor seek to also examine and carefully photograph cabinet side panel bottom swell / delamination; rust; carpet tack; wood decay; sewage; and any loss of drywall hardness.

An IICRC-Compliant Forensic Inspection Is SB 1598 Compliant

5 **SB 1598 Compliant.** This new law requires:

The written estimate must include an itemized, per-unit estimate of the repairs, including itemized information on equipment, materials, labor, and supplies, in accordance with **accepted industry standards.**

That means per ANSI/IICRC S500 .

That means following all the required procedures defined in an ANSI/IICRC S500 inspection to determine scope of Restoration work that must also be ANSI/IICRC S500 compliant.

An IICRC-Compliant Forensic Inspection to Fight BAD MRP Work

6 **Carriers** propose laws such as SB 1598 that require independents to follow industry standards.

- Carriers claim to follow industry standards, but never do. Costs too much.
- Document Carrier MRP/PV failures that result from cutting costs and never complying with (costly) industry standards by performing follow up IICRC compliant inspections after MRP/PV dry-out to identify:

Resultant sick homes and sick occupants left by failed Carrier MRP/PV work.

Find the hidden mold and residual water damage.

Open a new claim. Cause of Loss = Negligent dry-out.

Timing of Loss = Timing of dry-out.

How We Expose Negligent / Illegal Managed Repair Dry-Out Work

Instructor / Course Developer:
Gary Rosen, PhD FLA Lic Building Contractor. FLA Lic Mold Assessor and Mold Remediator.
FLA Independent Insurance Adjuster.
PHD Biochemistry UCLA
gary@mold-free.org 954-614-7100

For more information on *How We Fight Negligent / Failed / Sub-Standard Managed Repair / Preferred Vendors* go **here**.

There are other very useful (FREE) training materials at this link to help Fight BAD Managed Repair work.

A Fully IICRC-Compliant Forensic Inspection Is Expensive.

7 **Expensive.** The forensic inspection / investigation is costly because one must do the intrusive inspection under appropriate environmental controls to make sure the inspection does not contaminate the living space.

This often also requires putting back baseboard, patching drywall inspection holes, etc.

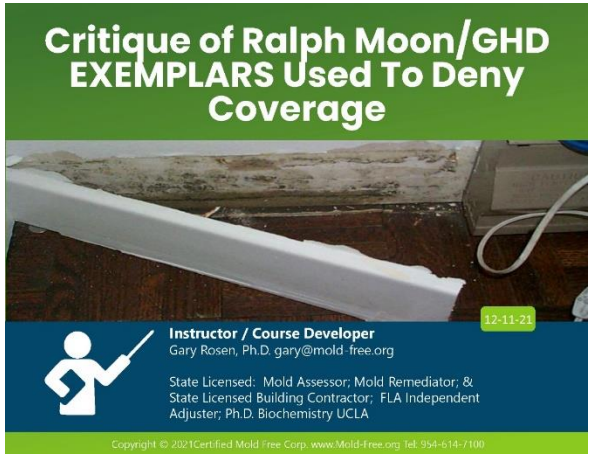
Fight Carrier wrongful denial schemes by performing an industry standard initial forensic [intrusive] inspection promptly after a water event. Even if the timing of the damage cannot be accurately pinpointed, the homeowner's inspector / mold assessor that performs a science-based, IICRC-compliant Initial (Pre-Drying) Inspection will have the upper hand over the Carrier's non-IICRC compliant, superficial, inspection.

And the inspector will make money doing so.

CARRIER RELIANCE ON OLD PICTURES (Exemplars)

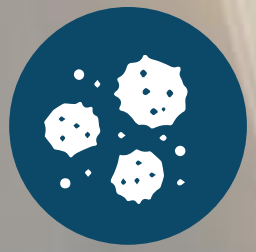
9 **Carrier Use Of Exemplars.** Because Carriers never perform timely S500 compliant (intrusive) Inspections, they rely on/ have invented "Exemplars" to be used to "prove" whatever they need to prove to deny the claim.

Download our PowerPoint on Exemplars that proves that the proprietary Exemplars (old pictures), produced for Insurance Carriers have no basis — are complete nonsense. They are fiction. Junk.



The use of Exemplars (old pictures) almost always months or years after the water event, is not a valid substitute for a timely S500 compliant Inspection.

Key Take Away



ANSI/IICRC S500 **requires** checking for pre-existing mold (Cat 3 damage) within walls and behind cabinets **before** drying. If Cat 3, do not dry. Remediate.

Therefore when/ if there is mold after an MRP/PV dry-out, the timing of permanent water damage is determined to be **never pre-existing**. The damage is always determined to be the result of failed dry-out.

This is worth repeating.

When mold is found after MRP/PV drying, the **cause/origin** of the Cat 3 damage [mold growth] is always failed drying because ANSI/IICRC S500 requires an initial intrusive inspection before drying to rule out pre-existing mold damage. When pre-existing mold. Remediate. Do not dry.

Similarly, the **timing** of the Cat 3 mold growth damage is then always determined to be the date of failed dry-out.

Who Has the Burden to Prove the Cause of Property Damage?

MERLIN LAW GROUP

Click here to see what Merlin has to say about who must prove what.

But even though it is the Carrier's duty to determine Cause and Timing of Loss; and the homeowner is only responsible for notifying the Carrier promptly of the event. In practice it is not that cut and dried.

From the perspective of an Inspector/ Assessor please assume that it is your burden to prove the cause and timing of property damage as well as rule out that the damage was not pre-existing.

What does "prove" mean. A legal issue. Do the best you can.

Start out with an ANSI/IICRC S500 compliant [intrusive] inspection.

General Caution

- Inspectors should not make a written conclusion as to the timing of the damage or water event.
- Simply present your findings: pictures and test results.
- Let others interpret your findings.

NAERMC Certified Water Damage Mitigation Assessor Course Completion