Leviticus 14 Laws of purification and atonement

The Lord spoke to Moses and Aaron and said: If I *inflict a fungous infection upon a house* its owner shall report to the priest. The priest shall *order the house to be cleared* before he goes in to examine the infection, or everything in it will become unclean. If on inspection he finds the patch on the walls *consists of greenish or reddish depressions*, he shall put it in quarantine. On the seventh day ... if the patch has spread, he shall *order the infected stones to be pulled out and thrown away outside the city in an unclean place.* ...

If the infection reappears in the house and spreads after the stones have been pulled out and the house scraped and redaubed, the priest shall come and inspect it. If the infection has spread in the house, ... the house is unclean. The house shall be demolished, stones, timber, and daub, and it shall all be taken away outside the city to an unclean place. Anyone who has entered the house during the time it has been in quarantine shall be unclean. Anyone who has slept or eaten a meal in the house shall wash his clothes.

But if, when the priest goes into the house and inspects it, he finds that the infection has not spread after the redaubing, then he shall pronounce the house ritually clean.

Three Things you can do about mold to assure a healthier home!

Presented by: Scott Armour, M.S., Environmental and Occupational Health and Safety



Three Things you can do about mold to assure a healthier home!

WHO IS SCOTT ARMOUR ANYWAY?

He is a mold expert ... 28 years of unparalleled experience and knowledge! Industrial Hygiene, Research, Public Health, Volunteer to Standards, Author, Presenter & Trainer... more.

He is the guy who will help you figure out,"Is Mold a Problem?" and "How do I deal with this mold?"

Some people even think of him as a Guru. But not just any guru! A mold assessor in Orange County California who has relied on Scott for knowledge and advice for over 20 years calls him "Yoda of the Mold!".

Why Mold? Why Mycotoxins? Why Now?

- Because the awareness of "mold" has never been greater.
- Mycotoxins is something being asked about all over by more and more people every day.
- More people have heard about it, been afraid of it, and have done their own research on it. More myths, snake oils, and bad science are now part of the general knowledge.

Why Mold? Why Mycotoxins? Why Now?

- More companies are selling stuff you don't need.
- Marketing is everywhere on social media.
- Everyone has a blog, insta reels, youtube vids, and a "buy now" page.
- Everyone is claiming they are an expert and only they can save you – *after* they scare you and dazzle you. *Even COFFEE is being sold as "mold safe"!*

Why This Presentation? What Can I Teach in Only 45 minutes?

This presentation will touch on topics related to mold such as myths and misinformation about mold, the many health effects associated with mold, mold inspections, sampling, cleaning, mold remediation specifications, and contract writing.

I will discuss how the new standard of care and other guidelines for mold remediation professionals affect not just the mold remediation industry, but also how it assists individuals, like you, who may need mold remediation services. And because the problem of "Mold" is complex and complicated! It's not just, "find mold, spray bleach".

When you're done with this whirlwind presentation, you can be confident that whenever anyone tells you some special or scary or magical *thing* about mold, you will know what to ask them next.



The Three Things to do:

ASSESS

PREPARE

REMEDIATE



ASSESS

REMEDIATE

You will always be successful if you answer "YES" to the question, "DID I..."

Protect Occupants
Protect Workers
Protect Environment
Protect Property
Protect the Owner





Know what Questions to Ask! Before you Begin!

- Is a Mold Remediation Company NECESSARY?
- Mold Remediation Contractor? Worker?
- Do I need a Mold Assessment? Samples? Report?
- Do I use a Mold Consultant? Protocol? Spec? Estimate?
- Who designs the Work Plan?
- Do we need a Mold Management Plan?
- Did I DOCUMENT EVERYTHING?



ASSESS

REMEDIATE

What is Mold? Why Bother? It's All About Health





ASSESS

REMEDIATE

What is Fungi?

Fungus Mold

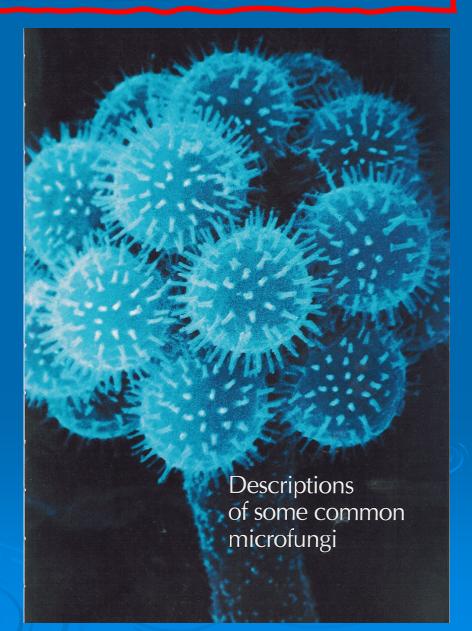
Mildew Rot

PREPARE

ASSESS

REMEDIATE

What is Fungi? Not plant, Not animal, Not insect, Not bacteria, Not virus... Has it's very own way of life!





Mold -Any living or dead filamentous fungi and the related fragments or parts, including spores, hyphae, mVOC's, and mycotoxins.



ASSESS

REMEDIATE

What does Fungi Look Like? Take a closer look.... Green, Black, White, Brown, Pink, Yellow...

FUZZY, Velvety, Flaing, Spots, Streaks...



ASSESS

Line

REMEDIATE





PREPARE

ASSESS REMEDIATE







REMEDIATE

What does Fungi need to Live? 1. Water:

ASSESS

Must be wet enough long enough!...

High Humidity, Condensation Chronic or Sudden leaks Flood or Backup



ASSESS REMEDIATE

What does Fungi need to Live? 2. Nutrition, Organic Material such as...

Wood, dirt, dust, paper, soap scum



ASSESS REMEDIATE

What does Fungi need to Live? **3. Temperature**70° - 90° F is ideal!
But not necessary.



REMEDIATE

What does Fungvi need to **4. Time:** *Live?*

ASSESS

Must be Wet enough long enough!

About 48-72 hours for some visible –

OR

About 3-4 WEEKS! It Depends!

Time is of the Essence: Must be Wet enough long enough! Should begin to clean immediately! MORE TIME = MORE MOLD MORE MOLD = MORE EXPOSURE!!! MORE EXPOSURE = MORE BAD HEALTH

Where Does Fungi Grow?





MAYBE IT IS BETTER TO ASK.... Where Does Fungi NOT Grow?

SIMPLE: Where surfaces and materials are clean and dry!

The 7 Health Effects of Mold

Pathogenic (infection) NOT from buildings Allergenic – seasonal, acute Glucans (cell wall molecules) - respiratory VOCs – gases in air, CNS effects Irritation – particulates/chemicals Carcinogenic - RARE! Not from buildings Mycotoxins – confusing, unclear, diet?



ASSESS

REMEDIATE

MOLD Health Concerns

<u>Illness</u>

* "The Dose makes the Poison!"
*Depends on the EXPOSURE
*TIME
*QUANTITY

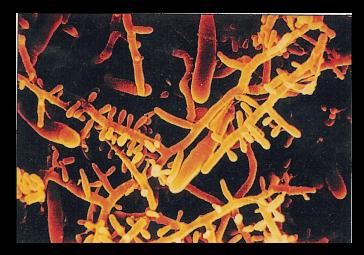
PREPARE

REMEDIATE

MOLD Health Concerns

ASSESS

Exposure Risk Mold gets in the air ♦ Mold "Dust" Spores, Hyphae, other parts, toxins May be "dead" or dry





PREPARE

ASSESS

REMEDIATE

HOW SMALL IS SMALL?

20 spores =

Width of one human hair!

REALLY SMALL!



Billions Of Spores!



MYCOTOXINS

Toxin is created by fungi
Acts as poison to cells or body functions

EFFECTS NOT UNDERSTOOD
NO CLEAR DOCUMENTATION!
SCIENCE HAS NOT PROVEN



MYCOTOXINS NOT a Volatile Organic Compound NOT an mVOC NOT act like a gas Do NOT go thru drywall ARE cleanable and removable.





Instruct all individuals complaining of any illness to visit a physician immediately! Fungi <u>Species</u> Related to Serious Health Concerns

Stachybotrys chartarum Aspergilus versicolor Aspergilus Fumigatus Fusarium moniliforme Penicillium brevicompactum Penicillium aurantiogriseum Chaetomium Memnoniela

NOT PREDICTABLE! many, *many* more... OVER 200,000 SPECIES AND COUNTING

How do you Prevent Illness?

- Avoid the mold!
- Do Not breath the spores.
- Do Not breath the dust.
- Do Not touch it with bare skin.

Any Symptom Caused by mold – Dead or Alive!

Will killing it with fungicide or bleach help prevent illness?

- Dead mold (mold dust) causes allergies too.
- People are allergic to any part of the mold.
- The toxin does not "die".

Will killing it with fungicide help prevent illness? NO!

Should physically REMOVE the mold!
Prevent EXPOSURE to all parts of the mold growth.





REMEDIATE

If you don't mind, a minute of self-promotion!

Training and Consulting for all Mold and Moisture Needs.

Please see me, or call, 216-225-5237.

Armour Applied Science 440-546-7068

1. ASSESS:

How do you know if there is mold in MY home? How do I even know this is a real problem? How do I know this is a serious problem? *a.What to expect from the local "Mold Guy" Vs What to expect from a proper assessment and inspection a.NO sampling needed!*

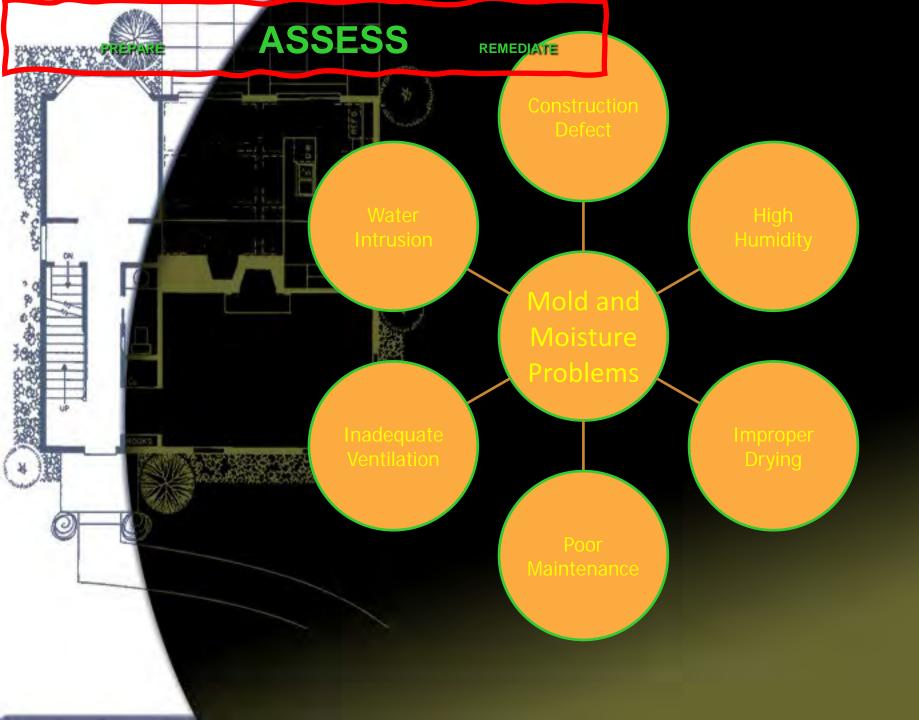
1. ASSESS:

Consider the credentials – do they matter? Professional Industrial Hygienist (e.g., CIH) v "hygienist", IEP vs Home Inspector, Contractor is the inspector (not 3rd party), etc a.Four Basic Steps to Mold Assessment No Sampling – not yet. **FOUR BASIS STEPS for ASSESSMENT:** 1. Physical inspection of every nook and cranny of the home;

2. Building history review of water intrusion, damage, odors, repairs, rehab, modernization, remodel;

3. Building function/operations assessment; and

4. Occupant health survey.



The THIRD THING:

REMEDIATION: Rules and Guidelines Scope, Specs, and Constracts Quality Control

REMEDIATE

ASSESS

PREPARE

RULE #1

Follow the Rules

REMEDIATE

PREPARE

A little History of mold rules and guidelines.

ASSESS

Examples of Non-Binding Rules, Guidelines, Recommendations.

Canada Health – 1995 Stachy only EPA – 2001 schools & commercial New York City Health -1995 Stachy only New York City Health – 2000 all molds New York City Health – 2008 all molds OSHA - 1993 (proposal only, dropped in 2001), **OSHA** - 2003 Info "Bulletin" only

PLUS:

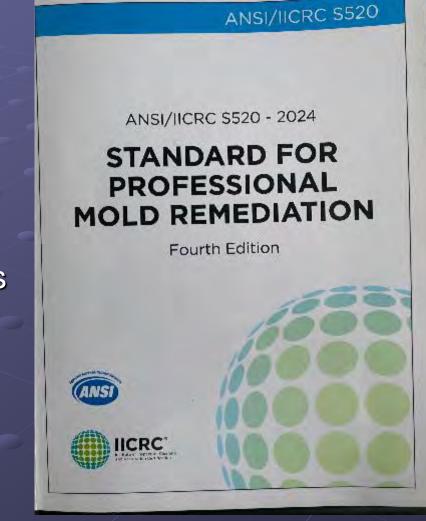
Contractual **Civil Liability** State Commissions/ **Governing Bodies Policy Language** Corporate **Ethical**

PREPARE

ASSESS

REMEDIATE

IICRC "S520 Standard and **Reference for Professional** Mold Remediation" Written to address CONTRACTOR concerns. NOW can reference to remove **MYCOTOXINS.** Reference for detailed procedures and specs Means and Methods spec...not performance.





Per: IICRC S520 Remediation Standard, 2024 Principles of Mold Remediation

- Safety and Health
- Project Documentation
- Contaminant Control
- Remove! Don't kill.
- Contamination Prevention



PREPARE ASSESS REMEDIATE

Scope of Work, Contracts, Specifications, and Warranty; Insurance

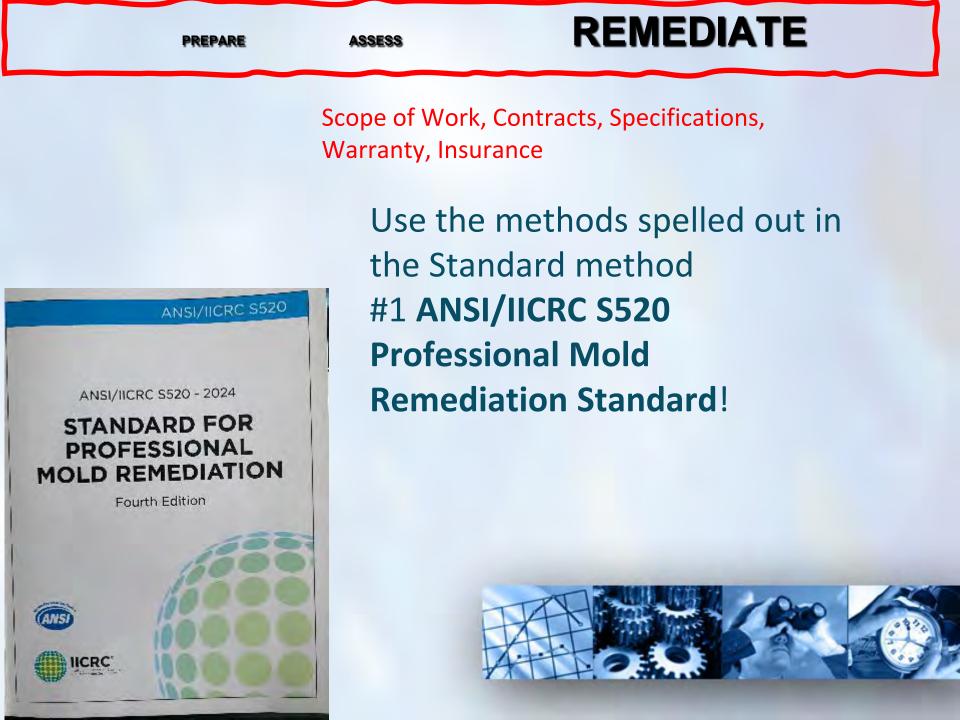
Know what you should ask for, pay for, and expect!



1.Do NOT let the salesperson or contractor tell you what <u>they</u> will do!
2.Work with assessor to develop
3.Use the methods spelled out in the Standard method
4.MAKE the scope MEET the NEEDS of

the client/occupant/owner.





Use the methods spelled out in the Standard method ANSI/IICRC S520 Professional Mold Remediation Standard!

The methods developed with a <u>consensus</u> from around the world to assure safe, costeffective mold removal and remediation.

NEW edition addresses MYCOTOXINS!



Use the methods spelled out in the Standard method **ANSI/IICRC S520 Professional Mold Remediation Standard**

The only legally defensible Standard of Care

Not just for contractors! it assists individuals, like you, who need mold remediation services

NOTE: \$\$\$conformance/compliance to \$520 can be "billed" to the Ins policy on a line item!

OTHER <u>ACCEPTABLE</u> REFERENCES for contract requirements, specs, methods:

ACGIH, AIHA, EPA, NYC, OSHA, ASTM, NADCA,



DO NOT USE or permit a contractor to use: These are NOT consensus and much is incorrect or not science-based.

- <mark>NORMI</mark>
- Fine Particulate
- Medical Grade
- CIRS literate
 - <mark>ISEAI</mark>
- Fogging, Dry Fog
- <mark>Enzyme</mark>



STATE of OHIO – NO Rules.

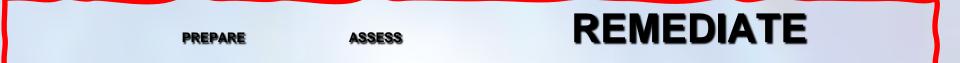
No licensing. No testing. No registration. No certification. No laws. No oversight. Nothing. Nada. Zip.



Make "conformance to the S520 Standard" a <u>requirement</u> in the contract - hold them to it!

Warranty – no "around the block". No "mold free". No self-verified.





#1 thing you MUST REQUIRE

BEFORE you approve a remediation contractor and BEFORE you get a proposal or bid:

- Pollution Liability Insurance
 - The policy MUST include a Mold Endorsement provision.
- Properly Insured IS Properly Qualified

This means the insurance company knows and requires proper Remediation Methods AND Qualifies the company as being competent to be insured.

This means YOU too are protected.





MINIMUM REQUIREMENTS:

- <mark>Remove don't kill</mark>.
- 1.Do not denature.
- 2.Do not deactivate.
- 3. Do not destroy. (see section 3.a. Specs!)

NO disinfectants! No fungicides, No biocides, no magic oils (see section 3.b. Standard methods!)

3. All Purpose Household Cleaners and Detergents. Aka "soap and hot water".





Consider the OCCUPANTS

exposures, limitations, sensitivities, risk factors, health issues.

Optional:

PRECAUTIONARY methods: one step beyond but many dollars more!





Costs and Estimating: Developing an affordable and applicable Scope of Work 1.develop three basic solutions, good/better/best 2.and their cost points: low/med/high, 3.Might want to include interim controls to reduce or prevent exposure! 4.benefits, pros/cons of each





Quality Control – Quality Assurance



prepare assess REMEDIATE

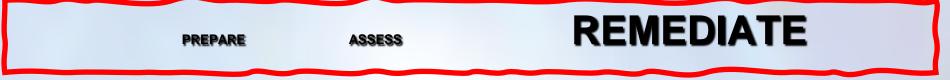
Scope of Work, Contracts, Specifications, and Warranty; Insurance

Quality Control Ongoing: is it documented, photographed? Are the meeting the contract terms, specs, methods, materials, timing?

Quality Assurance

Final approval. Job is complete AND Acceptable! aka Clearance aka Post Remediation Verification. How clean is clean enough?





Quality Assurance

First STEP:

The Contractor MUST perform a Post Remediation EVALUATION.

This is "in-house", they are telling you they are finished and have met the contract criteria for performance and completion.

Put it in the contract.

NOT the same as VERIFICATION.





Quality <u>Assurance</u>

<u>Second STEP:</u> Clearance, aka **Post Remediation Verification** (PRV).

ONLY a 3rd Party can conduct the PRV. (otherwise, it is called a contractor "evaluation")

CRITERIA to PASS: Agreed upon up front BEFORE job is contracted!





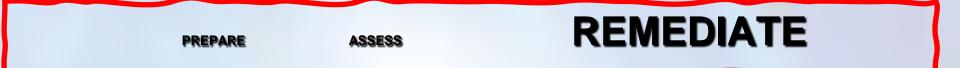
Quality Assurance, Clearance, Post Remediation Verification.

CRITERIA TO PASS:

WHITE GLOVE clean! "NO visible dirt, dust, debris, or mold growth, no malodors (including chems), materials are dry".

REFERENCES: ALL THREE MAJOR STDS/GUIDES plus others.





Quality Assurance, Clearance, Post Remediation Verification.

Sampling is UNNECESSARY in almost ALL SITUATIONS.

REFERENCE: ALL THREE MAJOR STDS/GUIDES plus a whole lot more!





QUALITY Failure!

MORAL of My STORY:

If you're not prepared, you might spend more \$\$\$ than you could have, or you might do LESS than needed, or you might do nothing at all!



Conclusion



Our Basic Recommendations:

1. DOCUMENT, DOCUMENT, DOCUMENT. EVERYTHING!

2. TRAINING, TRAINING, TRAINING.

SEE ME, WE HAVE A CLASS FOR YOUR ORGANIZATION and NEEDS!.



Armour Applied Science 440-546-

7068

Our Basic Recommendations:

3. DOCUMENT EVERYTHING. BECAUSE WE MEAN IT – SO DO THE LAWYERS.

4. CALL YOUR LAWYER.



TIME FOR QUESTIONS.

Thank You, HAVE A GREAT DAY!

Please call. I am here to help. Mold Logic

216-225-5237

lealthyhouse@aol.com

A A A A A A A

Apply the rules of Industrial Hygiene, Building Science, and Preventive Maintenance!

Mold and Moisture Maintenance Planning should include FOUR BASIC IH STEPS

ANTICIPATION of any health hazard or risk.
 SURVEILLANCE of conditions.
 ANALYSIS of the information.
 CONTROL measures developed.

Putting it all together! Mold and Moisture Maintenance Planning FOUR BASIC IH STEPS

ANTICIPATION of the health risk.
 Health info;
 Preventive Maintenance!

Mold and Moisture Maintenance Planning FOUR BASIC IH STEPS

SURVEILLANCE of conditions.
 Inspection & Sampling

 Moisture source.
 Quantity of mold contamination.



IAQ ASSESSMENTS SHOULD INCLUDE FOUR BASIC Industrial Hygiene STEPS

ANALYSIS of the results. PROFESSIONAL JUDGEMENT

IAQ ASSESSMENTS SHOULD INCLUDE FOUR BASIC Industrial Hygiene STEPS

 CONTROL measures based on the analysis.
 REMEDIATION Or, more MAINTENANCE!

Identify <u>Two Major Groups</u> of At-Risk Individuals (see ACGIH, EPA)

Workers

Occupants

At-Risk Individuals (see ACGIH, EPA)

Workers

- Health History before assignment
- Awareness of typical symptoms
- Reporting process

At-Risk Individuals (see ACGIH, EPA)

Occupants

- Babies
- Elderly
- Pregnant
- Immuno-compromised
- Upper Respiratory

At-Risk Individuals (see ACGIH, EPA)

Occupants

- Complaint history
- Simple questionnaire before work begins
- Reporting process

Preventive Maintenance

- Building History
 - Repairs
 - Violations
 - Damage
 - Tenant use patterns

Preventive Maintenance

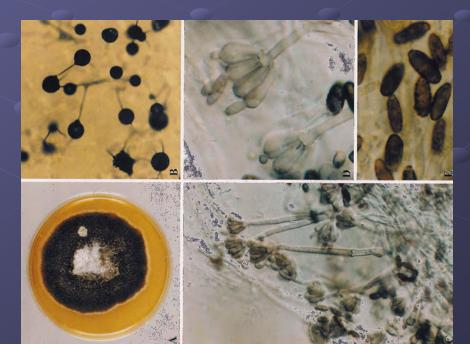
- Planning
 - Inspections
 - Schedules
 - Improvements
 - Tenant education

SURVEILLANCE of the suspected hazard. Perform A Visual Inspection Mold Growth Quantify the area(s) – HOW BIG? Note the color, odor, growth pattern Location(s) Water Intrusion Source **Complete Description** All possible sources **Component Damage**

SURVEILLANCE of the suspected hazard.

Sampling

Mold Contamination Quantity of mold- how much in Air or in Dust?
 Speciate the mold - what kind?

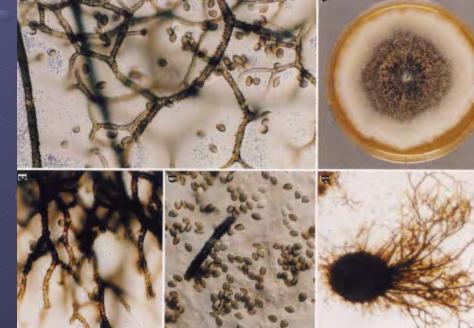


SURVEILLANCE of the suspected hazard.

Sampling Mold Contamination MAY BE OPTIONAL

NYC 1 & 2 do not require sampling! Others recommend sampling only with Professional Judgment!

> Know why and what you are sampling!



SURVEILLANCE of the suspected hazard. *Environmental & Structural Data*

Moisture in Components
 Use & Know your Equipment
 Moisture Map all suspect areas
 Match the Moisture to the Damage
 Find all possible sources of water

SURVEILLANCE of the suspected hazard. Environmental & Structural Data

Moisture in Air - <u>Psychrometrics</u> **Prepare for Drying** Know how to Dry! See IICRC **Have Proper Equipment** Humidity, Temp, Dew Point **Relative Humidity vs. Grains/Lb** 80% RH @ 70F = 63F dew point **E.**g., or 92 grains per pound

Control 10 ft² or less

Personal Protective Equipment (see NYC2000 and EPA2001 Guidelines) Respiratory Protection N95 disposable NOT respirator Protective Clothing Gloves, Eye protection Clean-up HEPA vacuum

Control 10 ft² or less

Occupant Protection

(based on EPA and NYC and Professional Judgment)

- Containment
 - Poly sheeting under work area
 - Control dirt/dust/debris with wet misting and HEPA vacuum
 - Poly bags/wrap for debris
- Occupant
 - Not in work area



Occupant Protection (see NYC Guidelines)

- Containment
 - OPTION:
 - Control with poly sheeting and duct tape over the contamination.
 - Remove the covered component.

Part 4

Mold Maintenance Activities!





NOT THIS !

Page D.

5 31 2001

Examples of Non-Binding Rules.

Professional Organizations

ACGIH BIOAEROSOLS, 2024 – the "bible" of IAQ (American Conference of Governmental Industrial Hygienists) IICRC/ANSI S520 Professional Mold Remediation Standard, 2024 (Institute of Inspection, Restoration, and Cleaning) AIHA Assessment and Control, aka GREENBOOK, 2021(American Industrial Hygiene Association)

Case History #1 Improper Drying UNKNOWN CONSTRUCTION STYLE ALLOWS TRAPPED WATER TO REMAIN EVEN AFTER FLOOD REMEDIATION. PREPARE

REMEDIATE

ASSESS

UNKNOWN CONSTRUCTION STYLE ALLOWS TRAPPED WATER TO-REMAIN EVEN AFTER FLOOD REMEDIATION.

7

* #*

5.31.2001



ILLNESS: None. \$: High Profile: High UNKNOWN CONSTRUCTION STYLE ALLOWS TRAPPED WATER TO REMAIN EVEN AFTER FLOOD REMEDIATION.



INADEQUATE VENTILATION COMBINED WITH ADVICE FROM AN "EXPERT"!

PREPARE

ASSESS

INADEQUATE VENTILATION COMBINED WITH ADVICE FROM AN "EXPERT"!



ILLNESS: None.\$: Low correction.\$: High - prevented sale of home.







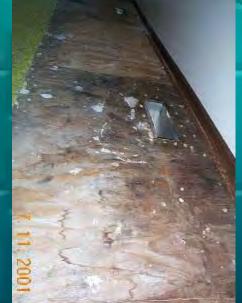
IMPROPER BUILDING MANAGEMENT AND "CHEAP" FIXES LEAVE BUILDING WITH MAJOR REPAIR NEEDS.

PREPARE

ASSESS

IMPROPER BUILDING MANAGEMENT AND "CHEAP" FIXES LEAVE BUILDING WITH MAJOR REPAIR NEEDS.







IMPROPER BUILDING MANAGEMENT AND "CHEAP" FIXES LEAVE BUILDING WITH MAJOR REPAIR NEEDS.

7 12 2001

7.12.2001

ILLNESS: NONE \$: Moderate. Profile: V. HIGH 7.17.2001

REMEDIATE

ASSESS

PREPARE

Case History #4 Poor Maintenance OWNER OVERSIGHT AND INATTENTION TO WATER LEAKS -NO COVERAGE!

OWNER OVERSIGHT AND INATTENTION TO WATER LEAKS – NO COVERAGE!

ILLNESS: Allergies, 5 children, mother, father \$: moderate, coverage denied. ASSESS REMEDIATE Case History #5 Construction SLAB HOUSE WITH HVAC DUCTS IN **SLAB PLUS HIGH** WATER TABLE

PREPARE

SLAB HOUSE WITH HVAC DUCTS IN SLAB PLUS HIGH WATER TABLE



ILLNESS:

Very Serious Asthma: Mother, one son \$: Unknown - High



PREPARE

REMEDIATE

Where's The Mold?







Where's the Mold?

7. 26. 2002

Where's the Mold?







QUIZ: Where's the Mold?











How much is Too Much?



QUIZ: What Kind?







QUIZ: Where?





But, down below...

Moud

more mold

09/16/2002

and more mold next to it!

09/16/20

182-

And finally, a total of Twelve 2-Bedroom units!!!

09/16/2





REACT! Do Something, Now. Colin Powell: "I react when I'm 40-60% sure. If I'm less than 40% I need more info. If I am more than 60%, I waited too long!

Conclusion



Our Basic Recommendations: 1. DOCUMENT, DOCUMENT, DOCUMENT. EVERYTHING!

2. TRAINING, TRAINING, TRAINING.

SEE ME, WE HAVE A CLASS FOR YOUR ORGANIZATION and NEEDS!.

Armour Applied Science 440-546-7068 Our Basic Recommendations:
3. DOCUMENT EVERYTHING. BECAUSE WE MEAN IT – SO DO THE LAWYERS.
4. CALL YOUR LAWYER.

Armour Applied Science 440-546-7068

TIME FOR QUESTIONS.

Thank You, HAVE A GREAT DAY!

> Please call. I am here to help.

Mold Logic 216-225-5237 Healthyhouse@aol.com