

## 1 **Are You Missing Mold Illness?**

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## 2 **And The Environment**

- Are You Missing Mold Illness In Your Patients?
- Dr. Jill Crista

## 3 **And The Environment**

- Canaries ~ Just Don't
- Inspectors & Remediators
- Building Assessment Basics
- Endotoxins
- Remediation Tips
- What To Do About "Stuff"
- Prevention

## 4 **Canaries ~ Just Don't**

## 5 **Who Should Keep Out**

- Ok, EVERYONE!

- But certainly, people who are ~  
Pregnant  
Breastfeeding  
Young children  
Respiratory conditions  
Liver disease  
Kidney disease  
Immune deficiency  
Cancer  
Genetically mold sensitive (canaries)

## 6 **Dorks Stay Healthy**

- Protective gear ~
- Disposable Tyvek suit with hood  
Toss after each exposure
- Safety glasses  
Clean with bleach after each use
- Silicone respirator w disposable filters  
Clean with bleach after each use
- P100 respirator filters  
Toss after each exposure
- Double gloves  
Toss after each exposure
- Shoe booties  
Toss after each exposure

## 7 **Inspectors & Remediators**

### 8 **Inspectors**


- Why need?  
More than mold  
Advocacy  
Select remediators  
Guide remediation plan  
Post inspection

- Inspector Qualifications ~  
Sensitive pts
- Certifying organizations ~  
BBEC (Building Biology Institute)  
ACAC certified  
IICRC certified

## 9 **Inspectors**

- Questions to vet inspectors ~
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- Patient handout courtesy of  
Corey Levy, CMI, CIE, WELL AP  
YesWeInspect.com

## 10 **Conflicts of Interest**

- Inspectors test
- Remediators remediate
-  - remediation co that says they'll do the post-test instead of inspector  
(illegal in some states)
- Post-rem testing by remediators is done ~  
For internal QC  
Usu only air sampling  
\*Not a thorough inspection

## 11 **Remediators**

- Chosen by inspector
- Know how & be willing  
to work w sensitive ppl
- Understand inspector will post-test

- Provide written plan in detail, costs itemized, meet, sign-off
- Is the norm to find more as they open up (water source, more mold)
- Make sure any alterations are in writing and cost estimate given, agreed upon before proceeding

## 12 **Building Assessment Basics**

## 13 **Know Your Lane**

- Are you a building expert?  
Plumbing, roofing, attics, crawl spaces, grading, partial pressures, etc
- Even experienced, certified inspectors miss mold on occasion
- Costly mistakes ~  
False sense of security  
Ruin the chances of getting ins coverage
- Chain of Custody  
By Certified Inspector  
Submit w any sampling  
Must have in place legally, ins  
Dr can submit \*but must be the sampler/defend in court\*

## 14 **Purpose Of This Section**

- Know enough to protect your pt from bad actors & guide them through the process
- NOT to take this part on
- You're their body Dr not bldg Dr
- Highly recommend doing the work to find your go-to inspectors in your area, then REFER
- But if you're itching for more ~  
Mold Masterclass by Brian Karr

## 15 **Inspections**

- Goals ~
- 1) Determine the sources of the contamination  
W/o eliminating the sources  
the problem will persist

- 2) Determine how the sources have impacted the occupied living spaces & HVAC system
- Allows inspector to provide a holistic & comprehensive remediation strategy

## 16 Inspections

- Thorough history ~  
Not only about areas that are currently wet  
Hx of water events very important!  
Water-impacted areas that are now dry have a significant impact on contamination  
Dried colonies easily break apart into ultra-fine fragments & particulate
- Time ~  
Should last >2hrs, typical is 4hrs  
Attic, crawlspaces, outdoor, roof

## 17 Sampling Limitations

- Just like testing bodies ~  
Each method has strengths & weaknesses
- Goal ~  
Maximize strengths  
Minimize weaknesses
- Solution ~  
Multiple testing strategies
- Looking for ~  
Moisture, staining, rusting, spores, fragments, DNA, mycotoxins

## 18 Sampling Tools & Methods

- Tools ~
  - Eyes - visual inspection\* most important
  - Infrared camera (moisture)
  - Moisture meter, humidistat
  - Sterile swabs
  - Spore trap vacuum
  - On-location microscope
- Methods ~
  - Plates (controversial)
  - Air sampling (cavities/isolated spaces)
  - Spore trap (cavity)
  - Dust sampling
  - Tape lift
  - Bulk (textile, carved sill plate, filter, etc)
  - On-location microscopy

## 19 **ERMI/EMMA**

- Environmental Relative Mold Index
- EPA std: DNA-based MSqPCR method. ID & quantify spore/fragment DNA
- 26 mold species known to thrive in WDB + 10 species "found in all homes, with or without water damage"\*\*\*
- Dust sample using HEPA filter trap. Vacuum specific area of a carpet (or other material) in LR + main BR
- Compare to national database of US homes. Reported as percentiles, then scored via algorithm, with EPA's opinion that "every home in US has mold" (bc of improper selection criteria imho)
- Don't go by the "score" only!
- Per certified inspectors - flawed scoring system
- Look at species & quantitative findings. Can still be high mold burden with a "normal" ERMI score.
- Some species indicative of long-standing issue
- EMMA adds mycotoxins

## 20 **HERTSMI-2**

- Health Effects Roster of Type Specific Formers of Mycotoxins and Inflammagens - 2nd Version
- DNA-based MSqPCR method. Score based on qty detected.
- Swiffer or vacuum collection

- The big 5 - the bad actors
  - Aspergillus Penicilloides
  - Aspergillus Versicolor
  - Chaetomium Globosum
  - Stachybotrys Chartarum
  - Wallemia Sebi
- "Indicator" species correlated both w WDB & MARCoNS incidence
- Score <10
- Cost savings

## 21 Spore Trap

- Specific, focused air sample
- Cavities
- Disrupt then let dust settle
- Specialized HEPA vacuum
- Vacuum for 5 min, no less

## 22 Mycotoxin

- Current or forensic, no surety
- Furnace filter - 3" square after 3 mo continuous use
- Aggregated dust sample from tops of ~
  - picture frames
  - tall shelves
  - books
  - kitchen cabinets
  - trim around closets
- Avoid sampling near windows/doors to the outside

## 23 Bulk

- My clinical experience
- Kitchen ceiling ~
  - Spore trap: mild Aspergillus
  - Bulk: mod Chaetomium

- Bathroom subfloor ~  
Swab: mod Asp & Pen  
Bulk: mild Stachy
- Lessons ~  
There are no perfect tests  
Toxic species are gooey  
Test everything that is removed

## 24 **Other Sources**

- CPAPs
- Keurig
- Refrigerator: coils, water filter
- Bath toys
- Mattresses
- Dehumidifiers
- Saunas
- Car cabin filters
- Furnace coils!

## 25 **Endotoxins**

## 26 **Endotoxins**

- Usu where there's mold, there's bacteria
- Story of the vegetative framing member
- Humidifiers/CPAPs ~  
Tap water: bacterial count  
Causes aerated endotoxins  
Only use distilled water

## 27 **What To Do About "Stuff"**

## 28 **What To Take**



- Depends on extent
- First ~ GET YOURSELF OUT!
- “The best things in life are not things” Hawaiian Rules To Live By
- Take only the bare minimum
- The primary reason for chronicity
- 

## 29 Storage Solutions

- Buys time/space for better decision-making
- Plastic bins, sealed w tape
- Caution: many storage units are also toxic ~
  - Rat poison
  - Pesticides
  - Critters, feces
  - Neighboring units
  - Many are moldy (roof leaks)

## 30 Cross-Contamination Risk

- Caution ~ car contamination
- Wipe down everything 3x before it leaves sick envir w new cloths~
  - First at the front door/garage
  - Second midway to car
  - Third just before place in car
- My story ~ 2x not enough

## 31 What Might Be Remediated

- Metal & glass
- Maybe 100% real wood furniture, BUT many many asterisks\*\*\*\*
  - \*how hard is the wood?
  - \*how close to mold?
  - \*how long?
  - \*how old is the piece?
  - \*how well maintained?
  - \*how many crevices?

## 32 What About Clothing?

- Reminder abt research re: pasta cooking - mycotoxins retained despite heat
- Posited solution (no data!) ~
  - High heat wash
  - 100 drops e.o. per load
  - High heat dry
  - Sunshine exposure daily x 1 wk every surface
  - Borax
- Cautions ~
  - False sense of security
  - Dermal absorption
  - Contaminated washer

## 33 Remediation Tips

## 34 Remediation Pressures

- Remediators ~
  - Least force options
- Building owner ~
  - Rush to rebuild
- Insurance company ~
  - Mitigate losses

## 35 Remediation Tips

- 1 No spray & pray
- 2 No seal & deal
- 3 When in doubt, cut it out
- 4 Take out more than you think

## 36 Remediation Formulas

- All-Purpose Cleaning Formula ~  
Non-porous - glass/metal  
Real wood - witch hazel > water  
\*Essential oils theoretical workhorse
- Peroxide 15% or Bleach ~  
Concrete
- Carpet cleaner ~  
\*Essential oils theoretical workhorse
- Ozone & Enzyme treatments ~  
What happens in pathogenic biofilm enviro?
- WE REALLY DON'T KNOW!  
Must post-test!  
Only keep what's worth testing

### 37 **Mycotoxins & Particulate**

- Foggers ~  
Not considered remediation, but rather cleanup  
May use as a final step to control ultra-fine particulate
- Air filters ~  
Also not remediation!  
-HyperHEPA (mycotoxins=0.1 $\mu$ m)  
-Sanitizing  
-Incinerating
- \*Change filters early to avoid pass-through effect

### 38 **Prevention**

### 39 **Mold's Weaknesses**

- Dryness
- Sunlight
- Air movement
- Dust-free spaces
- Lack of clutter
- Mold-killing essential oils

#### 40 Preventive Measures

- Don't water it  
Manage humidity ~  
Indoor humidity <50%  
Humidistat in each room  
Run fans before steam
- Don't feed it  
Manage dust ~  
Dust with gusto!  
Reduce clutter  
No cardboard box storage  
Central vacuum system
- Don't help it find a new home  
Change filters regularly ~  
Home at least 2x/year  
Car at least annually  
Air filters maintain as rec  
CPAP as rec

#### 41 Prevention Tips

- Dry every moist thing
- Quantify humidity in each room
- Dehumidify if needed, by location
- No water to refrigerator
- Drain/pan under washing machine
- Reduce carpeting
- No finished basements
- Cabinets with feet
- Air movement indoors
- Air out closets, e.o. cotton balls
- Showers/windows vinegar
- Manage cracked grout

- Paper towel test toilets routinely
- Check attic after big rain or snow melt

#### 42 **Before Buying/Renting**

- Always test in advance
- Offer must allow to buyer to completely w/d from offer
- No “right to cure” - seller/lessor will cover up the problem rather than remediate
- Unfortunately most sellers/lessors will demand notification of testing methods, some will adulterate
- Mycotoxin dust sampling often adequate - inside ductwork

#### 43 **Other Air Quality Considerations**

- VOCs and microbial VOCs
- Dander
- Allergens
- Gas leaks
- Formaldehyde (‘new’ smell)
- Fiberglass
- Fragrances
- PCBs (candles)
- EMFs - WiFi, smart meters
- Endotoxins
- Heavy metals (hobbyists-lead solder)

#### 44 **First 3 Rules of Toxic Exposure**

#### 45 **Review**

- Canaries ~ Just Don’t
- Inspectors & Remediators
- Building Assessment Basics
- Endotoxins
- Remediation Tips
- What To Do About “Stuff”

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- Prevention
- Survey
- DrCrista.com
  - Patient resources
  - Short video blogs
- Break The Mold
- Mentorship
- Stay in the light ✨