Mold, Lyme, fibromyalgia, chronic fatigue – when inflammation becomes chronic

On 15 September 2015 Dr. Ritchie Shoemaker M.D. gave a nearly three hour lecture and question and answer session at Hopkinton Drug, a pharmacy who Dr. Shoemaker has collaborated with for two decades and which has provided many of the compounded medications (pure colestyramine, BEG spray, VIP spray) necessary for his treatment protocol. In this lecture Dr. Shoemaker details the major players in chronic inflammatory response syndrome due to water damaged buildings (CIRS-WDB, aka. mould illness) and post Lyme syndrome, talks about his forthcoming genomics paper, NeuroQuant, Pfiesteria, ERMI, HERTSMI-2 and has an in-depth Q&A where he questions the diagnosis of several tick borne illness patients, discusses the problems with Realtime Labs urine mycotoxin testing and much more.

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Dr. Shoemaker Lecture (Slides denoted by square brackets)

- 0:00:42. Introduction (Dennis Katz and Terry from Hopkinton Drug)
  Relationship with Dr. Shoemaker started in 1993 with compounded CSM. 50 people behind the scenes of Hopkinton
- 0:03:50. **Ritchie Shoemaker, M.D.**
- 0:06:25. "If you think this illness is not real, I've only treated 7,000 [mold] patients. 2,000 Lyme patients and about 1,000 ciguatera/dinoflagellates. "
- 0:06:50. We have finished the last bits and pieces on our paper on genomics. Within a short period of time you will be able to read about the gene activation that is abnormal as a fingerprint in people who have been exposed to water damaged buildings.
- 0:07:30. Genomics and cancer. 25,000 protein coding genes, 25,000 genes were thought to be junk DNA, instead are regulatory genes.
- 0:08:15. When you see someone with post-Lyme syndrome being treated with antibiotics and nothing for the genomic basis of their illness, they won't get better. When someone moves out of a moldy building into a brand new building, that's not guaranteed to fix their illness. Now we know the gene abnormalities and even better

have treatment. Tonight I'll show you how to shut off the 2,000 protein and non-protein encoding genes that are a part of this.

- 0:11:22. "When I say mold I mean people who are ill from water damaged buildings. Is it just mold? Mycotoxins? Hardly. Mycotoxins are very small part of this illness. We're talking about bacteria and bacterial toxins. Actinomyces and actinomyces toxins. Talking about breakdown products of whole cells called fragments which aren't alive. They're dead. They're chemicals"
- 0:12:00. If someone tells you they've fixed your home or school by fogging with some magical liquid that kills things – say "I'm glad you can kill 0.01% of the problem. I'd like you to remove 99.9% of the actual problem."
- 0:12:30. Bacterial sepsis (Systemic Inflammatory Response Syndrome SIRS). Bacteria in bloodstream doesn't make people sick but overreaction of the immune system of the host response. SIRS was the origin of CIRS.
- 0:14:13. **[CIRS]**. Cytokines . C3a (up in Lyme), C4a (up in mold and Lyme)
- TGF-b1. Major player. Affects fibrosis, changes in lungs, affects cells types. Turns on differential cell activation. Five years ago there was 75,000 references in peer reviewed literature. Type 2 diabetes had 81,000.
- 0:16:28. Von Willebrand's. More people with acquired Von Willebrands syndrome in this room than we're likely to find in the rest of Boston put together. C4a causes it, VIP fixes it.
- Asked Dennis in 2005 about making VIP. Had it in 2008. Is it a miracle drug – yes. 2,000 people on it and four drop outs.
- 18:30. **[Goals for today]**
- NeuroQuant (NQ) – Is an FDA cleared program, since 2006, costs $89. It gives you 11 different areas of the brain and incredible detail of structure and size. Creates a fingerprint which I can look at and recognize in about in ten seconds that says mold. Atrophy, memory problems. Protocol fixes three of the main elements, VIP fixes the last – caudate atrophy. If you have loss of substance in the brain from Alzheimer's is there anyone ever that has shown regrowth of brain tissue once atrophied? NQ tells us that VIP does that.
- 0:20:10. **[But there is more…]**
- One person does make a difference.
- **[If you already know CIRS]**
- CIRS is typified by genetic susceptibility. Typified by lack of control of inflammation due to low MSH and VIP (usually deficient before other labs).
- We know more about the genome and CIRS than anybody know about the human genome and cancer or atherosclerosis. Why? Because we have a way to treat the illness.

- 0:23:40. **[Biotoxin pathway]**
- “Innate immune system designed to detect invasion from foreign antigens and deal with antigens by setting off exponentially expanding cascade of inflammatory response. Why? Antigens need to be removed when they’re not us. Defect in this illness is antigen detection mechanism works, sets off the inflammatory response, shuts down MSH and VIP, but does not result in antibody formation that clears the antigen”.
- If you leave a moldy building does the antigen leave you? No, it stays. Worse it recruits new genes to be involved, new abnormalities to be involved.
- 0:25:55. So many effects of cytokines. MSH deficiency knocks out ACTH and cortisol regulation. Adrenal fatigue patients – did anyone measure MSH which controls ACTH and cortisol before you poisoned that pathway with cortisol replacement? Same with androgens (testosterone cream).
- 0:28:00. Antidiuretic Hormone (ADH), linked to MSH. Static shocks. Sweat chloride levels higher than cystic fibrosis patients. ADH will be low and osmolality sky high. Headaches that act like migraines. Common in younger women, especially tall and slender (11-3-52Bs). Stand up and blood pressure starts to fall, rapid heart rate, not POTS, instead pulmonary hypertension and dehydration from MSH deficiency.
- 2006 Senate talk and St. Bernard’s parish report and cover up. NIOSH didn’t sample any of the WDBs for mold despite visually seeing it.
- 0:33:10. **[Complement and coagulation cascades]**
- Any gene pathway that was abnormal before VIP (green) are corrected by VIP (green with star)
- 0:34:37. **[If you don’t know] [Am I talking about a small, obscure problem?]**
- NIOSH says 50% of buildings are WDB. Likely more.
- 0:36:00 – “If you have to leave your house, if you have to leave your workplace – because that’s the first thing we tell people to do, get out of exposure – where are you gonna go? Wintertime’s coming you can’t go in a tent in the backyard for very long and you won’t get any better moving to Arizona unless you’re in that tent because wherever there’s indoor water, wherever there’s plumbing, wherever there’s a roof, they’ll be water intrusion. If the water intrusion is there for two days you’ll have mold, bacteria, actinomyces and all the inflammagens.”
- 0:37:20. **[Tick bites]**
- Tick borne infections are: Under-diagnosed – show me a reliable test for Bartonella.
- And: Over diagnosed. Only one case of Babesia in Maryland (Gibson Island) yet everyone shows their positive Babesia labs. Yeah sure you do. Who did your smear? Who measured your haptoglobins? Who looked for intravascular hemolysis? Who showed hemoglobin urate?

- Dropped out of ILADS group in 2002, drove me nuts. I'll fight anybody if I think they're wrong.
- Post-Lyme is CIRS. Just collect the labs. Just Lyme protect you from mold? No. Do symptoms of Lyme and mold overlap about 100%? Yes. How do you separate? Do a C3a (Quest, not Labcorp), do a NeuroQuant, do genomics test (not available commercially yet).
- 0:40:00. **[Cyanobacteria]**
- Ipswich river
- 0:40:50. **[Each of these categories of illness can be acute and chronic]**
- Once you've been sick with these illness for a month or two, we have a final common pathway. All of these start to have same symptoms, VCS abnormalities and labs.
- 0:41:05. **[Fingerprints everywhere]**
- Fingerprints galore now. NQ: Swelling on a microscopic basis in at least three nuclei (forebrain, cortical gray, pallidum). Caudate atrophy – mold patient. Interstitial edema of the thalamus and putamen atrophy? That's a Lyme patient. How about PTSD? They've all got small hippocampi. Important to look at PTSD as an inflammatory disease, not psychiatric.
- 0:42:20. **[First day of med school]** Acute inflammation, finger analogy.
- What makes or sepsis survivor have cognitive issues a month after the ICU? Inflammatory response syndromes are not unusual, happen all the time. In molecular biology you don't always get warmth, redness, pain and swelling.
- 0:44:00. **[Response to injury? What?]**
- 0:44:15. **[Molecular biology]** Simple model of double helix doesn't apply anymore, what about microRNA and mRNA. Every microRNA will police 10-100 mRNAs. Regulation of gene activity post-hoc, after transcription. We have regulation (microRNA) of regulation (mRNA) of DNA transcription (DNA).
- 0:47:20. **[Substitute chocolate for inflammation]** Chocolate analogy
- 0:48:28. **[What if chocolate caused an illness?] [And even worse]**
- 0:50:45. [**So this guy walks into a cancer ward]** Talks about his time going to hematology office, located in oncology, and people labelling him with cancer.
- 0:51:34. **[When people don't look ill, can they be disabled and hurting?]**
- But what about a mold patient? Chronic fatigue, chronic pain, IBS, memory, numbness, tingling, Parkinson's.
- 0:54:30. **[Leprosy? I thought this talk was about mold and Lyme]**
- How many people in your quest asked you if it was a psychiatric illness? All of them.
- 0:55:48. **[What about an exposure history?]**
- 0:56:50. **[Lyme? Post-Lyme]** If you've got Lyme and are being treated with antibiotics you need to know if you're being exposed to mold or not. HERTSMI-2 from

Mycometrics costs $125. Collect dust, they look for mold DNA, in two areas of your home (master bedroom and living room). Swiffer cloth or vacuum attachment if you have carpets.

- 0:57:55. **[But the nagging doubt]** 2007 study from EPA, 21% of asthma caused by WDB. Truth is that most asthma is restrictive, not obstructive, lung disease. Called asthma incorrectly. But if you look at markers in restrictive lung disease, TGF-b1, C4a, MMP-9, VEGF, jump off page. Throw away the asthma diagnosis when you fix the patient.
- 0:58:50. **[CIRS, a brief history]**
- 0:59:40. MARCoNS, a commensal organism, causes no symptoms in low MSH patients. May be in the gut too, we don't know. They make compounds which are genomically active, changes gene activation.
- 1:00:40. **[CIRS is systemic, interacting]**
- 1:01:24. **[Innate immune effects are systemic. Everywhere blood goes…]** Treg cells C4+/CD25++, stop autoimmunity in tissues under direction of TGF-b1. If no ROR they get converted into more TGF-b1.
- Collaborated with two TV shows *CSI Cyber* season 1 episode 10 "Click Your Poison". Also *Monsters Inside Me*, season 6 episode 4 "There's a Fungus in My What!?!" (airs 4 November 2015).
- 1:04:45. **[CIRS. Some history begins an anomaly: the illness was real]** Talks about beginning when prescribing CSM to a pfiesteria patient to fix secretory diarrhea, which fixed her other symptoms (headache, memory, cough). CDCs attitude to CSM therapy "premature."
- Need to read *State of the art answers to 500 mold questions*. Stick with the science. Stick with what's peer reviewed.
- 1:11:25. **[Multisystem, multi-symptom illness all happened at once]** Couldn't figure out why some got sick and some didn't in initial Pfiesteria clusters.
- 1:12:10. **[Easy to look back and say "of course we see the problem"]**
- 1:12:18. **[More people become ill] [Picture of lesions]**
- 1:13:58. **[What did the kills tell us] [Porewater] [Blue mold starts in NC] [Curious coincidence] [The copper theory arises]**
- 1:15:22. **[Vegetation changes in estuaries map]**
- 1:15:40. **[The lessons of Pfiesteria repeat]**
- 1:15:40. Principles of ecology of WDB similar to Pfiesteria. Two days of water intrusion leads to microbial growth.
- 1:16:28. **[Labeled for reducing cholesterol]** CSM treatment. Pfiesteria was from breathing bio aerosols not eating the fish. Same analogy goes with WDB. "Any food will give you mycotoxins in the urine, big time. That's why doing testing the urine for

mycotoxins I don't think is a great idea. Some people like it, I don't. Why? You just told me what I had to eat last month."

- 1:17:08. "CSM works by having its positive charge on a side chain and binds to these biotoxins which have negative charge in their linkages. And it prevents this negative charged tiny compound from being reabsorbed."
- 1:17:45. Dennis created MCS version of CSM in a couple of days. Invented BEG spray within a couple of weeks. Created VIP. Used by Shoemaker himself (thanksgiving 2008, building fences)
- 1:19:36. **[Figure 1: binding of ammonium cation]**
- 1:20:05. **[Ciguatoxin chemical structure] [Other toxins]**
- Look at all the double bonded oxygen molecules. CSM fits right in there and binds it.
- 1:20:48. **[Ochratoxin A] [Toxin table] [200 Pfiesteria people get better…] [Types of Toxic Cyanobacteria] [Current Study – St. John's River**]
- 1:21:30. **[Symptoms & Biomarkers of Effect] [1998 first mold patient] [WDB photo] [Defining mold illness]**
- 1:22:14 (Slides zoomed past)
  [Say it in a lot of words] [Genetics of inflammatory illness] [What is a "moldy" building?] [HERTSMI-2] [Case definition-1] [Case definition-2] [Who gets sick?] [HLA Disequilibrium] [1999 Lyme toxin patented] [Is the Lyme cytokine profile different from that of mold and others?] [Genomics-3]
- **[SLE pathway]** Abnormal genes in lupus treated successfully with VIP
- 1:23:10. **[Cytokine Receptor Interaction]**
  In 1985 there used to be just a few of them. First paper on TNF. **[Cell Cycle]**
- 1:23:44. Looking at mold illness/CIRS as markers as markers of a brand new era of treating inflammatory diseases of the 21st
- **[Summing up]** Follow the data. Don't make assumptions. **[Follow the data!]** **[Treatment steps]** Goes through pyramid.
- 1:27:24. "VIP is like a coat of paint. If a body with inflammation is burning you don't try to paint it. It won't work. But if you put out the fire and then you put the coat of paint on now it will work. VIP is your coat of paint. Fixes proteomics, fixes the brain, fixes genome."
- survivingmold.com

Questions and Answers (click to reveal answer)

1:28:20. Mold resistant drywall.

- Shoemaker: Heard claims, yet to see them substantiated. Would love to see cellulose products be treated in way that any type of fungi would not grow on it. Concern is

whether it would also be bacteria and actinomyces resistant.
- Pierre Belperron: Two types of drywall mold resistant one is a conventional, Sheetrock, treated. Another type doesn't have cellulose instead has plaster and a film of fiberglass that holds it together but is more expensive.

1:32:40. Multiple mold exposures. Asthma diagnosis. ADD, cognitive problems. Neuro pains in toes/feet. Cross contamination from parent's place. Remediating for two years. How do we wake up the NIH?

- Susan Belperron: Get out of your place. We got rid of everything. Then you have to become fanatical, even to the point you don't let people come in your home. It's a very isolating illness.
- Shoemaker: Look at this cry for help. Multi-system, multi-symptom illness. Inadequate documentation of what she's been exposed to. Probably inadequate remediation.

1:41:10. Holistic health coach. Worked in prison for 22 years. Water damage because of sprinklers coming on. Air vents never cleaned.

- The only buildings worse than prisons are universities and barracks for US servicemen off base. Rayburn building in Washington D.C. basement was off the chart on an ERMI. Noah building in Silver Springs. One after another.

1:43:45. Dr. Musto (MicrobiologyDX). CD57 in Lyme?

- Test was published in a small paper by a small group in SF. Lab in San Leandro was able to take whole blood within 12 hours of draw and did show reduction of CD57 in five patients. Became of interest in mold community, thinking it might be specific marker. No difference in CD57 between untreated mold and Lyme patients. The bigger difference, as soon as you have more than 12 hours go by the results are unreliable. CD57s that I see are done by Labcorp who run them on Monday afternoon. Last labs come in 2pm on Saturday so are at least 48 hours old before they're run. I would not use in diagnosis.

1:45:25. Patty from Shoemaker protocol facebook group. Family greatly improved with Shoemaker protocol and VIP. Question for friend who is through protocol and on VIP but keeps experiencing rising TGF-b1 has ERMI/HERTSMI'd everything. Is a previous Lyme patient. Can Lyme drive up TGF-b1?

- Lyme sure does. Is she long and slender? Look for long humorous and long fingers. Probably has Th17/Treg imbalance. Less likely to be acute exposure more likely to be failure to look at Treg cells. Treg cell assay through Quest, set up for me, everyone

else gets a hard time.
- Also with these people we're using an air device, not a HEPA, but Air Oasis which is knocking out VOCs and bacterial toxins. (Her friend has two of these)
- Probably not on enough VIP dose.
- Some people have many food intolerances. Use diluted VIP (1:10 or even 1:100) and titrate up, deals with food intolerances and people start eating.
- Once you establish a plateau (8-12 or so sprays) then you start titrating downwards. I was on 28 doses a day, which fixed my pulmonary hypertension, but now only use 3 sprays per week.

1:50:45. **Late stage Lyme. Co-infections. 8 strains of mold. Seizures. Dysautonomia.**

- What's your HLA, C4a, TGF-b1 and nasal culture? The tests you have done I challenge in a heartbeat. Where does your belief system lie? In the world I live in, I see providers – alternative practitioners for lack of a better word – who put confidence in laboratory testing that when challenged becomes shaky in my mind. The reason our group has chosen to publish everything we can is to subject it to peer review. If you're willing to accept IgE or IgG antibody mold diagnosis I have news for you, they're no good.

1:57:10. Fatigue, bladder cancer, prostate cancer, nose bleeds, got much better after consulting with Shoemaker and Dr. Bingham. Has symptoms after new water damage (due to snow). Does mold travel on the wings of dust mites?

- Particulates from a mold spore are most commonly between 0.3 to 0.45 microns in size. The next size is 0.45 to 0.6 microns. Many mold spores are 3.0 microns. But mold particulates (fragments) can be smaller than 0.3 and can stay aloft in the air, indeterminately, just go on and on, and go right through a HEPA filter. That's why things like the Air Oasis are starting to make a big difference in cases of people who supposedly have clean environments but remain sick.

2:01:15. Does time of recovery differ the longer you've been sick (e.g. lifelong exposure).

- No, it is dependent on HLA. The 4-3-53 or 11-3-52B haplotypes don't let you be exposed very long at all before you get to the final common pathway. When you get to the final common pathway with another haplotype whether it's 20 years or 30 years of exposure there's no real difference. The break points are < 1 year, 1-5 years and 5 years and beyond. The protocol doesn't change, but the genomic basis is likely to be worse after 5 years.

Old dry newspaper

- I would be worried about inks volatilizing. Stacks of papers can prevent airflow. Aw of 80-90% and Aspergillius pencilliodies is the organism most found with reduced ventilation.

Dr. Bingham

- Has worked with him in the past, seems like a very nice guy.

2:04:15. Multiple tick-borne illnesses, Rocky Mountain spotted fever. Ten months of IV antibiotics. 85% recovered. Static shocks. MCS to shampoo. Patch testing. DCIS.

- What's your HLA, TGF-b1, C4a? Tick borne illness are CIR Syndromes. If there is a MARCoNS in your nose, which are there about 95% of the time, if your MSH is low, you are in line to have dysregulation of ADH and osmolality. Read chapter 4 of Surviving Mold, what labs are abnormal. (Home is likely to be moldy). The key, like Aldous Huxley told us, is to cast out false knowledge. You're focusing on ticks while living in a moldy home.

2:09:28. Previous Shoemaker patient. What has been the biggest revelation? Can you expand on NeuroQuant. Difficult patients to heal.

- NeuroQuant is a continually evolving field. First there was a fingerprint for mold which could be treated with protocol and VIP. Then saw Lyme fingerprint which also responded to VIP. Then PTSD. Now looking at multinuclei atrophy which is next paper we'll be publishing at the CIRS 2 conference in November.
- It is a software program used as adjunct to an MRI of the brain. Takes 10 minutes, costs $89. Gives you 3D image of the brain, and does software calculations, takes it from a brain shape to a sphere to let you calculate accurately eleven different brain regions, showing injury to the blood brain barrier (TGF-b1, MMP-9 and VEGF are the big players that we know of so far). Caudate atrophy indicates mold, putamen atrophy indicates Lyme. If you need VIP length is going to be six months.
- In regards to challenging cases, the genomics has been opening the final door, the holy grail. Pathway analysis can show where the physiologic problems are, where the blocks are, and identify what to do.

2:13:08. Mold infested building at work. Seeing Dr. Berndston. Problems with cholestyramine (bloating).

- 10% of people drop out of CSM if it's not compounded. I usually switch them to Welchol.

- Long and slender person, usually has 11-3-52B.

2:18:40. Patient of Peg DiTullo. Contracted Lyme from Hudson Valley. Positive via IgeneX. Bioresonance analysis. C3a low. C4a is high (11,000ish). Bartonella, vision problems (blurred, floaters). Mycotoxins focus?

- Need to look at NeuroQuant.
- National obsession with mycotoxins is understandable, Stachybotrys has a fantastic publicity agent. But for every one molecule of mycotoxin how many beta-glucans are you exposed to? About a thousand. How many mannans? About a thousand.
- (Patient mentions being in a car accident) Can the inflammatory response from traumatic brain injury mimic CIRS from another cause? Absolutely.
- Diagnosing bartonella from pins and needles symptoms – don't assume. 92% of mold patients have pins and needles. Stick with science, stick with peer reviewed published papers. Doesn't mean everything peer reviewed is good, but if it's not published there's a reason.

2:24:53. Thoughts on Realtime Labs.

- I have never used them to diagnose mold exposure. If you're going to do a urine mycotoxin test, you should eliminate all foods which may contain mycotoxins for at least a month.
- Probably better off asking doctor for gas chromatography of the urine, make sure the urine has no protein in it, no cells, no mucous threads and no blood. Also better off using high performance liquid chromatography if you have two, what are called congeners, of ochratoxin. There are 19 ochratoxin congeners present in people from dietary sources. If someone says you have tricothenese you must be careful you don't have deoxynivalenol (DON) or vomitoxin which is present in huge quantities in just about every grain, every coffee bean, every glass of wine, every beer, every nut, every processed meat. If you can eliminate those confounders then you can start to see if there's mold. If you go back to February 2015 MMWR the CDC said no one should use Realtime because of the confounders of food exposure. It may be that Realtime really has something but they need to present a control group that does not have exposure to a moldy building confirmed by ERMI or HERTSMI-2s and clear diet. Their control group has never been published at all. If you're going to do case control work you have to present the controls.

2:27:20. Thoughts on using iodine and saline spray to eradicate MARCoNS

- There's no data to say either one is helpful. Saline alone will not make any difference.

Nasal steroids make no difference.
- I have not used iodine. Let's see a negative culture in 30 days. With BEG we're getting 98% eradication.

2:28:40. Speaking on behalf of son. 11 years sick. 15-6-51, 16-5-51. Low MSH has come up. Hormonal issues. What lab for MSH?

- Labcorp changed their normal range on 26 Sept 2006. It has always been 35-81 pg/mL but changed it to 0-40 without any reason.
- I would have predicted not much of rise in MSH.

NeuroQuant interpreting

- Send the general morphology from Cortechs report to me and I can help you.

2:31:35. Does the CIRS you're seeing have any cross over to tumor diseases?

- The VEGF compound is one with bimodal (trimodal) distribution – a third are low, third are high, third are normal. VEGF inhibitors are used for some late stage cancers. The question is does low VEGF protect against tumor development. What causes tumor development and can we attack one single pathway?
- There is lower incidence of breast and colon cancer. Prostate probably.
- How do we have less cancer when we're exposed to all these carcinogenic compounds? People have been assuming things about mycotoxins without reliable data

2:33:30. Friend's children has neurofibromatosis. Did mold change the DNA?

- Don't know – hasn't seen enough cases
- Gestation and birth into a water damaged building is associated with developmental delays

2:35:35. HLA neg. Endogenous producers of oxalates based on an OAT. Don't know oxalate genes.

- This is a genetic disorder (heterozygous and homozygous)
- If heterozygous not likely to have kidney and liver involvement, B6 helps

2:39:10. If HLA neg is there still a risk being in a WDB?

- Yes risk is much smaller, less than 5% of cases, and respond much better to treatment. They'll have low MSH.
- HLA is antigen presentation but not the whole illness.

2:39:40. Mold assessor. Wants to sharpen skills. Trained through NORMI.

- Looking for water saturation/availability of water (Aw).
- In mucous there's a lot of water but availability of water is essentially 0, so it's a low Aw. That's why when people want to use nasal cultures for fungi are screwy. What we're looking at is an organism that will only grow and make secondary metabolites with Aws of over 60 but the environment is Aw 20.
- Check downspouts, seals, cladding, penetrations through roof, eaves, caulking and flashing of chimney
- HERTSMI-2 is more accurate than ERMI, looks at 5 species which make people sick most commonly
- Wallemi, Aw 0f 60-80. Have to go through every aspect of HVAC system
- pencilliodies – more time looking in closets, underneath kitchen sinks, at end of hallway where there's not much ventilation as it hates ventilation
- Stachy and Chaetomium, you're looking for an active leak
- Our group of experts are coming up with an IAQ consensus to present at the CIRS conference in November
- Remediation has to be to our standards, the level of a computer room

- 2:45:20. Closing (Dennis Katz)
- 2:46:30. End.

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