



Roland "Mr. Stick" Vierra & Robert "Bavarian Bob" Blochinger

Here Come the Moisture Mob Enforcers: The Forensic Aspect of 3rd Party Evaluations, *leaves listeners asking for more!*

"Moisture Related Issues Affecting Wood and Concrete Substrates and Flooring!"

A good inspector must “turn over all the rocks” to see what is lurking in the dark to determine the causation of the problem to offer viable solutions. This week’s IAQ Radio broadcast in the ongoing Moisture Mob series was unique. Rather than follow our standard interview format, Roland Vierra and Bob Blochinger were asked to dive deep into the aspect of forensic methodology for 3rd party inspections. Roland and Bob searched their extensive project archives for lessons learned to identify and resolve problems flooring failure problems. Roland and Bob each selected six projects, we only had time for two projects each.

Nuggets mined from today’s show:

Global Watchdog acknowledges AEML as an important IAQ Radio Sponsor and site host for Bob Blochinger and him today. AEML was very accommodating, the facilities are First Class and their technically proficient staff was like the “Geek Squad.”

There more than one way to skin a cat or define the term forensics:

According to Roland Viera, Forensics is the application if scientific method to the study of floor covering performance and/or failure. Scientific method is used to evaluate, recognize, observe problems and effects develop a hypothesis and try to prove it through testing, including laboratory analysis when needed.

According to Bob Blochinger, Forensics is the backside view of looking into a negative problem and using reasoning, research, and when needed destructive investigation to answer the question “why is this happening to my floor?”. Bob starts at the current state and works backwards to reverse examine the situation and interviewing those needed to make a conclusion.

Bob's Case Study Number 1- Hospital Emergency Room

- Project is only 6 weeks old. Bubbles beginning to appear in the floor of hospital emergency room.
- Peel and stick rubber floor with welded seams, atop concrete on grade.
- Destructive investigation under bubbles reveals wet spots on concrete and self leveling patch.
- The self leveling materials shows 5.5% moisture content (this material skews the reading).
- 69°F Temperature, 72% RH, 75 GPP, Dewpoint 59.6°F
- Materials are 100% water resistant. Products working as designed.
- Water spots are caused by condensation due to HVAC system.

Brainstorming session with the audience:

- 5% MC in the concrete is very high for older concrete.
- What was the indoor humidity?
- Would it be dew point temperature issues at time of installation?
- What was the thermostat setting?
- What was the indoor dew point and the surface temperature?
- If the water is on the underside of the tile and not coming from the concrete floor, how is the water getting UNDER the tile?
- Our mechanical engineers would evaluate HVAC involvement by data logging ambient air under near-worst case weather conditions and evaluating design and installation for dehumidification and capability.
- When you say "resistant" I think you meant to fungal growth. I didn't see any mold, but did it stink (i.e., bacteria)?
- Very elevated moisture in first study. It's common for a manufacturer to specify 100%RH but that doesn't mean unlimited moisture.
- How did the water get under the tile, if it didn't come from the concrete slab?
- I'm thinking that at the time of installation, assuming the concrete was cured properly, the temperature of the slab was colder than the dew point temperature of the air—and there was condensation there that interfered with the mastic.

- How would your diagnostics with the meter compare to the old technique of weight gain in a desiccant sealed to the floor?
- How was the problem fixed to prevent further water infiltration?

Bob's Case Study Number 2: New school with 30,000 sq ft luxury plank

- Unsightly black substance oozing through the seams and cupping.
- Glue down installation
- Destructive investigation finds; concrete 6.9%MC, unknown black substance on concrete, blacklight reveals nothing.
- Moisture coming through slab, adhesive like mush. Floor installer claims to have taken moisture readings (awaiting confirmation).
- May be a maintenance issue, heavy moisture laden mops. School is vague on maintenance procedures.

Brainstorming session with the audience:

- The "ooze" that you see coming up through the planks could be adhesive residue. As water moves upward through the planks, the adhesive solids can be carried with it. The water evaporates leaving the solids behind. It looks dark because of dirt/etc.
- No water loss in the area? We had the exact same thing after a water loss.
- How old was the school?
- Cleaning chemicals

Roland's Case Study #1: Endoscopy Area of Hospital

- Failure of sheet vinyl. Endoscopy unit threatened with forced shutdown due to problem with floor.
- Floor looks like cottage cheese.
- Make areas of observation stand out. [Used painters tape to form large numbers on the floor.]
- 23 experts from different fields involved with the investigation.
- Concrete coring revealed elevated moisture in slab.

- In California sand is often placed atop vapor barrier. [Roland and ACI don't recommend this but local architects do.] Oven dried sand showed measured 14% MC before drying.
- Excessive pH, clean concrete pH 11, liquid has a pH of 11-12.
- Slab MC is >5
- Residue under the flooring oozing out.
- Adhesive sticks to fingers when touched.
- Elevated moisture caused the adhesive to fail.
- Sloppy landscaping and rain runoff causing the problem. Corrected by properly sloping exterior landscaping and installation of drain panels and a 2-part epoxy moisture mitigation coating was applied to the surface of the concrete.

Roland's Case Study #2

- Odor problem, carpet tiles in library smell like sweat. [One of his most interesting projects.]
- Slab moisture content acceptable.
- Foam insulation applied to underside of overhead concrete slabs.
- Excess alkalinity. Manufacturer's spec for pH is 10. The materials measured pH10.5 which is much higher (5X).
- Moisture water movement caused hydrolysis of carpet backing and adhesive resulting in malodors.
- Problem traced to a faulty roof drain.
- The fix involved repairing the faulty drain and installing new carpet.

Brainstorming session with the audience:

- We were involved in a major odor problem of sub slab insulation in an office ceiling under a garage. Normal amine emissions from the insulation accumulating in the confined space air plenum was the problem was the root cause and we resolved by adjusting ventilation to dilute the nuisance odor below the odor threshold. BTW- this was a LEED Gold building that passed all their stupid airborne VOC tests!!

- Foam is typically spray applied on the ceiling of the underground parking to help insulate the subfloor above.
- How did trace back to the drains (very interesting!)
- Sticking foam inside the concrete seems unnecessary and asking for trouble- why did they do this?
- Sound and insulation for temperature - this was in an area of the country with lots of snow and ice
- Is the foam also a vibrational break?
- Maybe the concrete was abnormally heated?

Roundup:

Pete Consigli, Restoration Industry Global Watchdog:

IAQ Radio bit off more than they could chew. Acknowledged the hard work done by Roland and Bob to prepare for the show. Today we only got through 1/3 of their prepared information. Perhaps if the audience requests, we'll do additional shows to cover the remaining info in the future?

Coming attractions, IAQradio has begun posting upcoming shows!

- Ralph Moon on Use and Misuse of ATP in disaster restoration.
- John T. Hull and John Lapotaire, Roofing (wetting, drying & fixing)
- Stephen Richford, tech guy from UK

Roland "the stick" Viera

Flooring failure is not always moisture related. Product failure, poor installation can also cause failures. Moisture is the elephant in the room and is easy to point to.

Bob "Bavarian Bob" Blochinger

Agrees with Roland that moisture isn't always the cause and adds additional causes of failure: inadequate preparation, defective products and incorrectly specified products for the situation.

Cliff "Z-Man" Zlotnik

You never know if and when technical and or other difficulties will occur. That's why we have cohosts. Thanks for your patience and understanding.

Z-Man signing off

Today's: comments from the audience:

- All of these investigations are excellent examples of the scientific method performed by a multi-disciplinary team. Did CIH's play a constructive role in any of these?
- This session (like the other sessions with examples) should be spin-offs of IAQ Radio.
- More flooring forensics case studies would be great! I vote yes, Pete!
- Another valuable session. Kudos to all!
- Great Show!!!
- Beautiful show. Thanks

Trivia:

In the movie Godfather 1, name the man who stabs Don Corleone's enforcer's hand onto the wooden bar?

Answer:

Solozzo

Answered by: John Lapotaire