

IAQ: Its Not Rocket Science

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Causes of IAQ Problems??

- **LOW BID !!!!!!!**
- **Remodels**
- **Normal Wear on Equipment**

Types of IAQ Problems

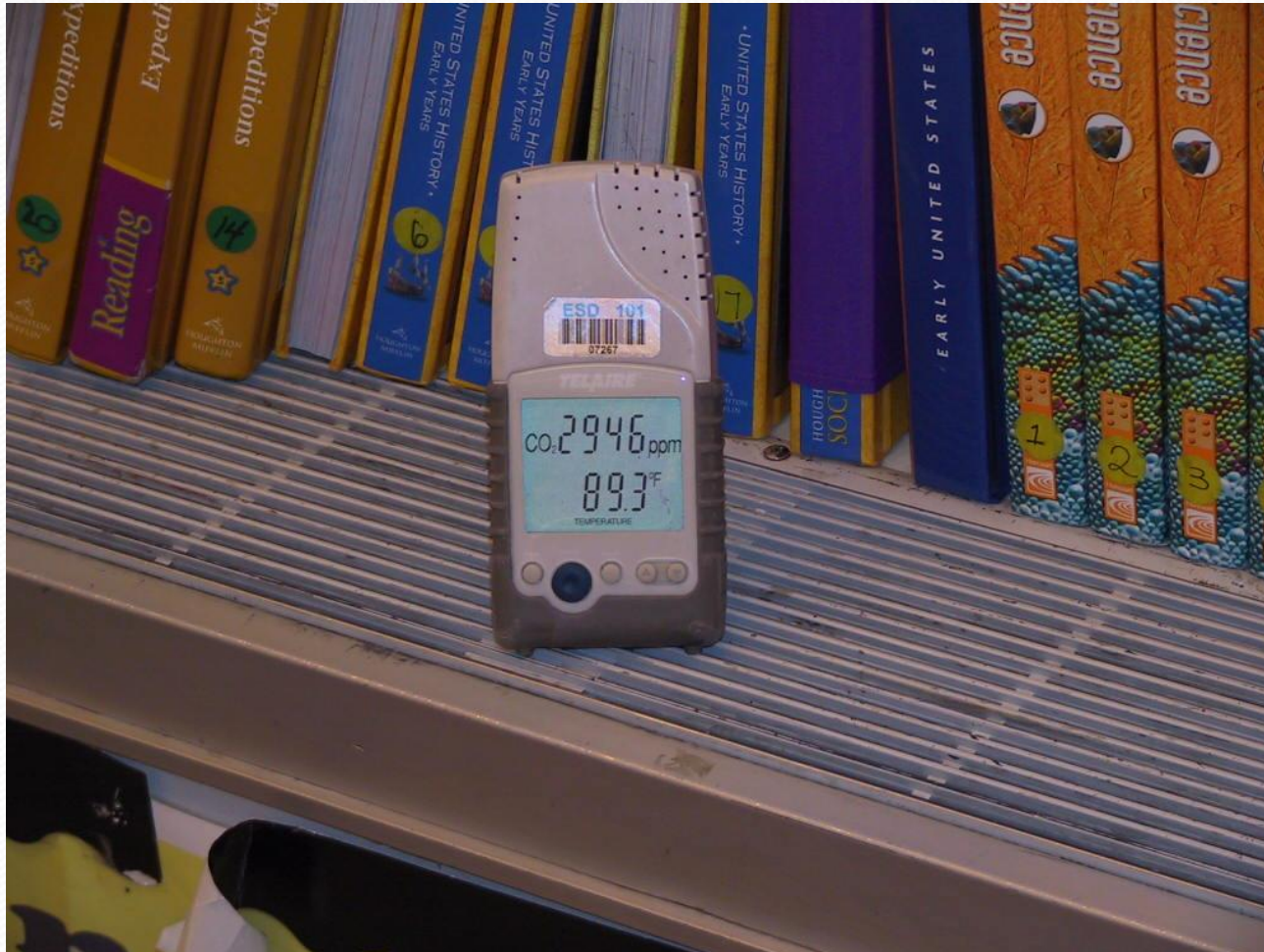
- HVAC system related issues
- Mold
- Odors
- Animals
- Self inflicted
- Airborne particulates
- Asthma/Allergy triggers

HVAC

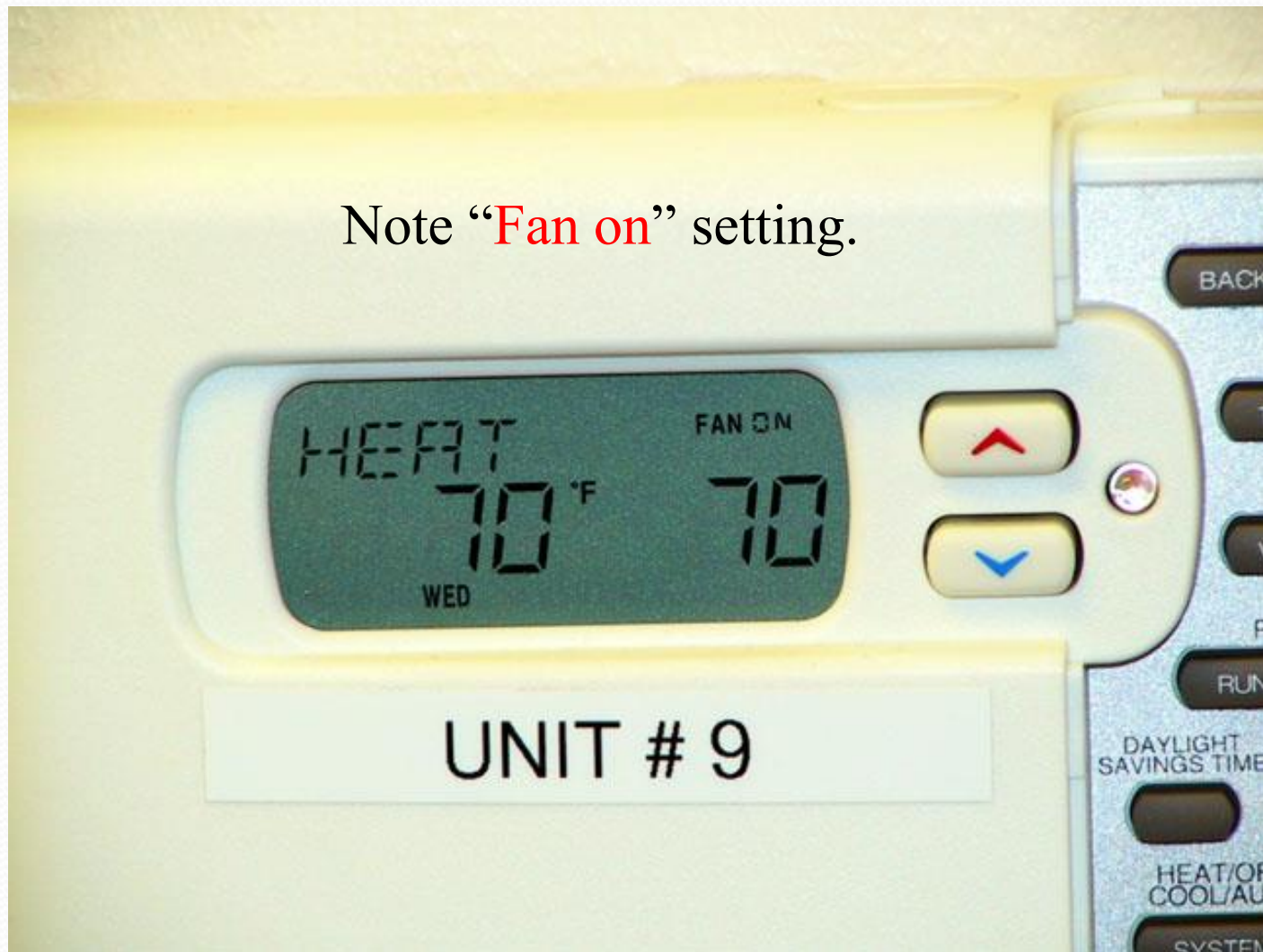
Most Common Source of IAQ problems!

- Lack of Outside Air = High CO₂ Levels
 - Failed equipment, residential-style thermostats
- *Computer systems giving bad information!!!!
 - Physically look at dampers
- Reduced airflow
 - Dirty filters, blocked or diverted airflow
- Intakes near system or building exhausts
- Exhaust fans not operating

High CO₂ = low/no outside air



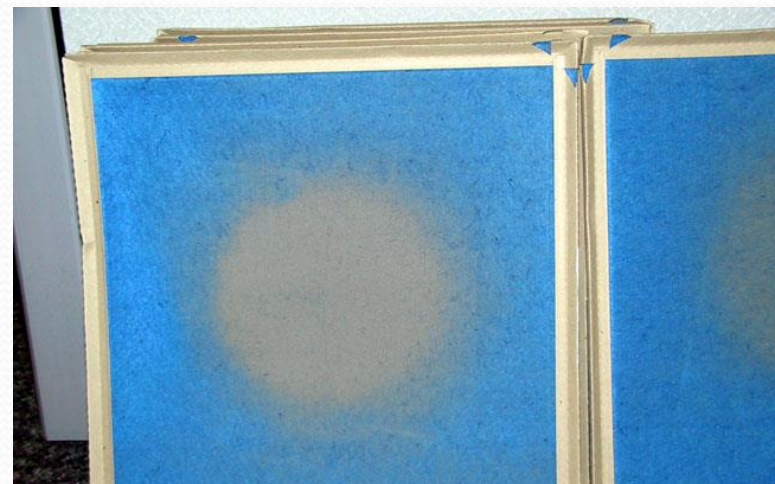
HVAC – Residential thermostats



HVAC – Diverted/blocked airflow



HVAC - dirty filters



HVAC – dirty ducts



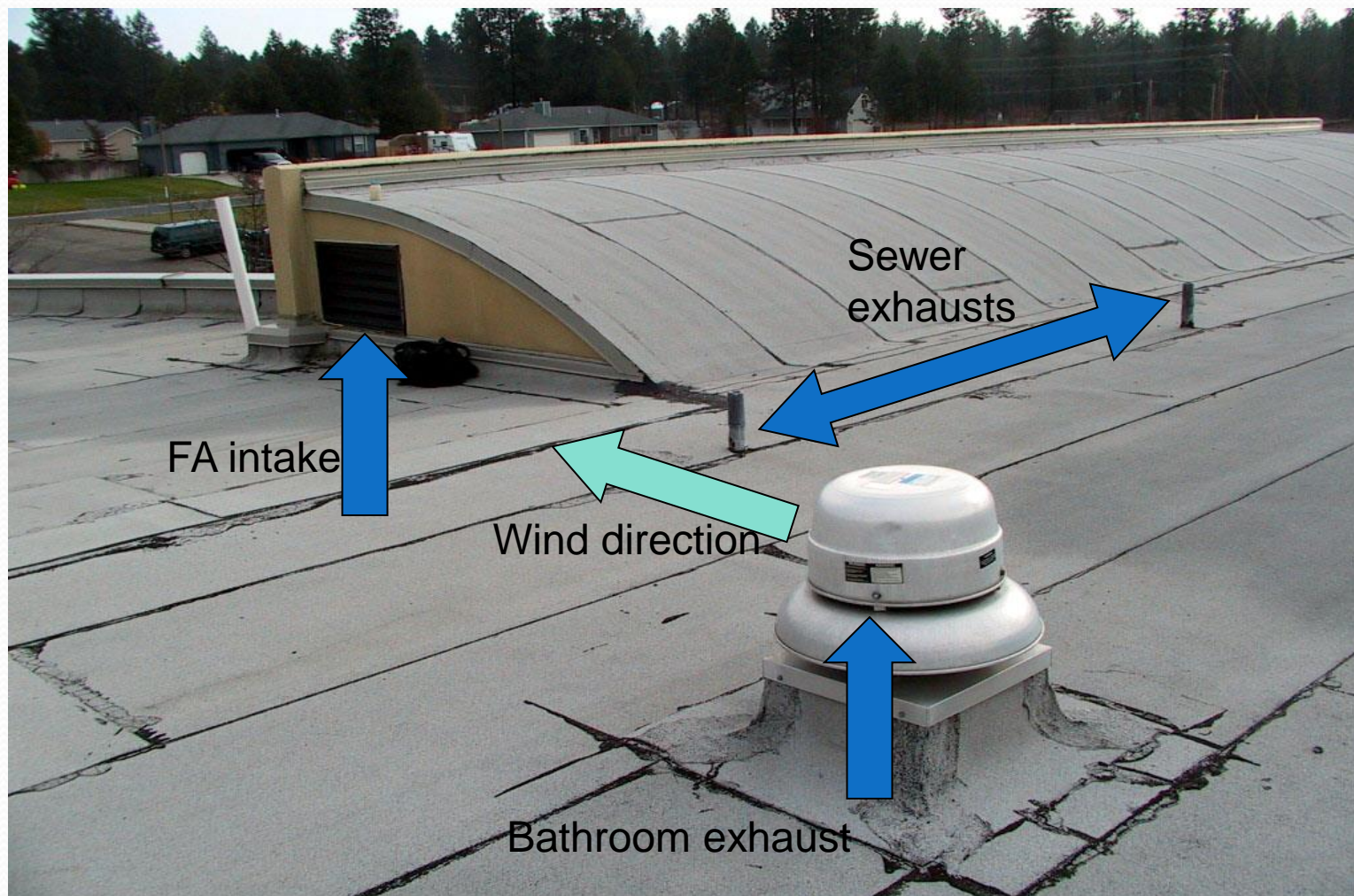
HVAC – dirty duct or room?



HVAC: Broken exhaust fan belt



Sewer odors vs. air intakes



Sewer vents vs. air intakes



Odors – Sewer (HVAC upgrade)



Sewer odors - remodels



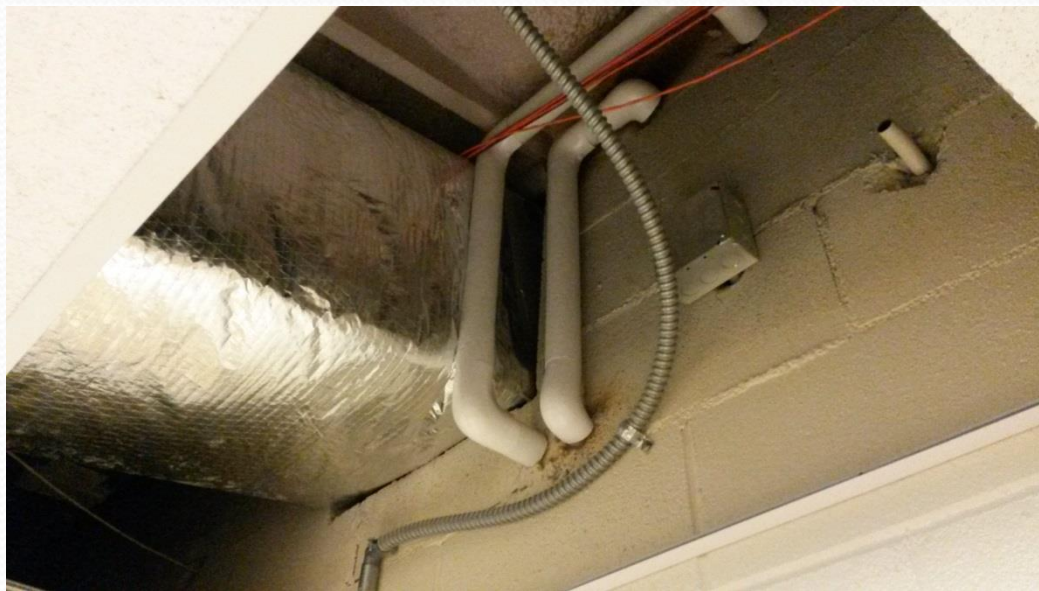
Sewer odors – crawlspaces



Sewer odors – room re-use???



Sewer odors – vent pipe damage



Odors – intake locations

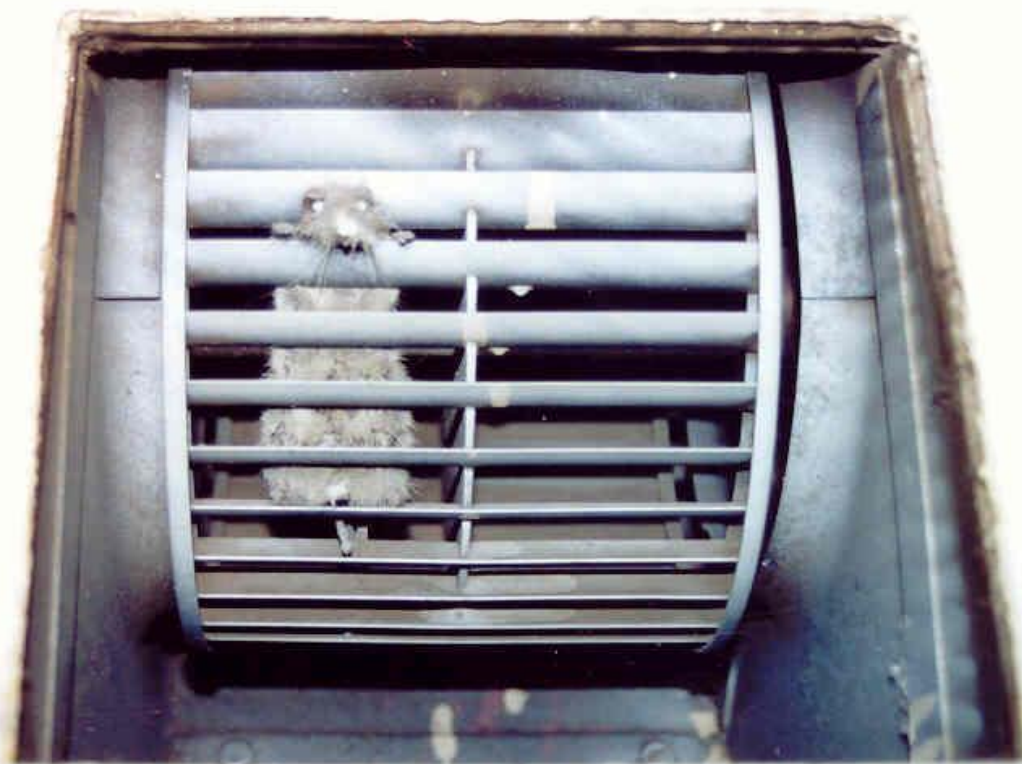


Odors – in mechanical room

- Spilled hydraulic fluid odor sucked into HVAC unit



Odors – dead animals



Water damage

- Stop the source if possible
- Dry carpet and walls ASAP
 - Cut/drill holes in walls to dry wall cavity!!!!!!!!!!
- Use fans to blow air onto wet materials
- May be safer to remove the bottom part of sheetrock wall to be sure remaining wall is dry.
 - Especially if wall is insulated.

Water from outside sprinklers



Water from outside sprinklers



Water from outside gets inside



Water from outside gets inside – twice!



Frozen sprinkler line



Frozen water lines



Water Damage – crawlspace



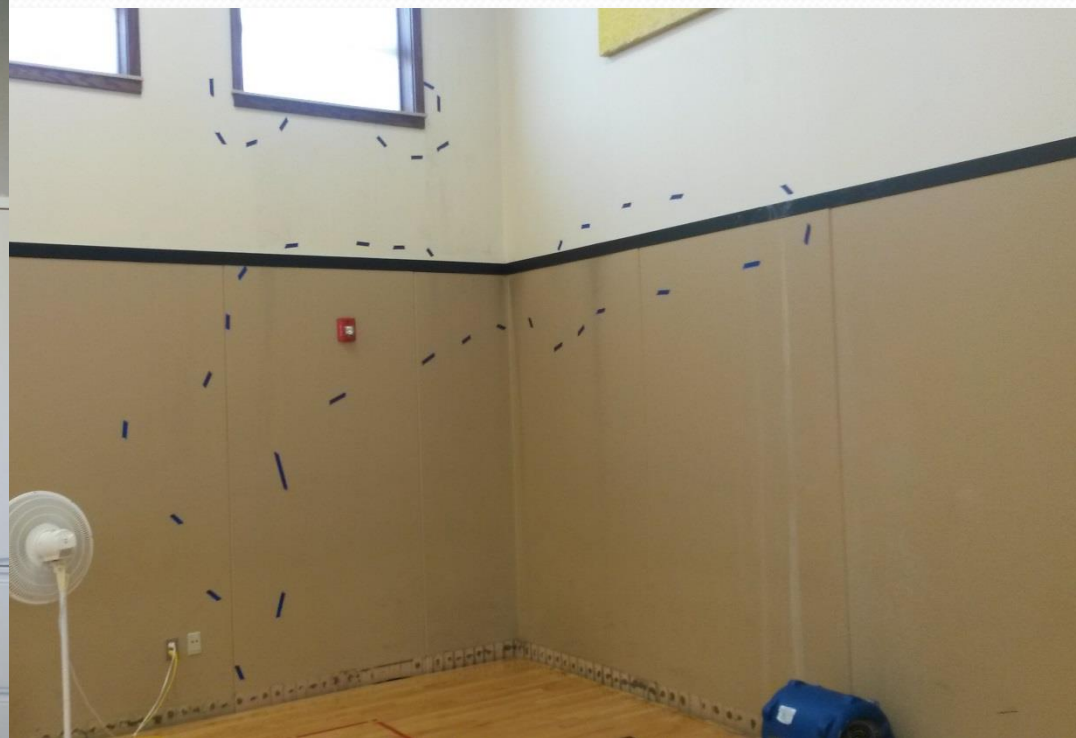
Water damage – roof??



Water damage – from roof??



Water mapping w painters tape



Water mapping - roofing



MOLD

- B.S. era (Before Sheetrock) mold was much less of a problem.



Mold: Nothing New

- Biblical Reference -
 - Leviticus 13:1-47 and 14:33-47
 - Priests would order the contaminated areas to be cleaned/removed or the house to be burned.
- The “mummy’s curse” from molds in the tombs

Mold – Outdoor Source

- Mushrooms, fungus, decaying plants
- Mold is everywhere!!!!!!



Mold

- Water + sheetrock = Mold
- Shutoff/remove/repair water source
- Dry out building materials within 48-72 hrs!
 - Extract carpets right away
 - Cut/drill holes behind base cove material.
 - May be able to prevent mold growth.
- Sheetrock is cheap!!
 - When in doubt, rip it out!

Mold: Behind cabinets



Mold: Inside wall cavity – window leak.



Mold:

- Look behind vinyl wallpaper



With and without wallpaper!!



Mold – odd sources



Mold – odd places



Mold Prevention

- Get airflow drying carpets and walls ASAP.



Mold Prevention

- Get airflow into wall cavity, under cabinets ASAP.



Mold Prevention

- Remove wet sheetrock



Animals

- Look for evidence of animal activity
 - Nesting
 - Fecal matter

Animals: birds



Animals – Rodents

- Remove access and food source!
 - Photos: Packrat and nest



Mouse nest in wall cavity



Animals: bats (guano happens!)



Holy Pissicles Batman!!!!



Self inflicted – cold rooms

- Fooling the thermostats!!
 - heat near thermostats
 - direct sunlight on thermostats



Self-inflicted - mold



Self Inflicted - houseplants

- Unkempt & moldy houseplants



Ozone from Printers/Copiers

- Self-contained printer ... not!



Asthma Triggers – Pet Dander



Allergens & irritants

- Fragrances (perfumes, air fresheners, candles, etc.), house dust, cleaning chemicals ...



Communicate throughout the event

- Give updates – what you've found and not found
- Be sure problem is resolved
 - Follow-up with those people/areas affected
 - Did odor return? Has the leak stopped?
- Don't assume "no news is good news".
 - Don't want to look like a whiner.
 - Why...you didn't fix it the first time.
- Have them contact you (or maintenance) as soon as issue recurs.
- Encourage communication – good and bad.

Questions??

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