



Water Mitigation & Mold Prevention

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COURSE OBJECTIVES



AT THE CONCLUSION OF THIS PRESENTATION YOU WILL BE ABLE TO:

- Identify the primary sources of water damage to property
- Determine the recommended mitigation based on the class and category of water
- Determine equipment that may be used to dry out a structure
- Calculate applicable equipment needs for water mitigation
- Understand IAQ role in water damage
- Importance of a disaster recovery plan and choosing partners

MOST COMMON WATER LOSSES

RAIN AND OTHER PRECIPITATION

- Chimney leak
- Roof leak
- Gutters
- Flashing not properly installed
- Patio leak



MOST COMMON WATER LOSSES

APPLIANCE OR PLUMBING SYSTEM FAILURE

- HVAC leak
- Bathroom sink supply line
- Slab leak
- Hot water heater leaking
- Dishwasher
- Refrigerator supply line
- Kitchen sink supply line



MOST COMMON WATER LOSSES

NEGLIGENCE OR MAINTENANCE

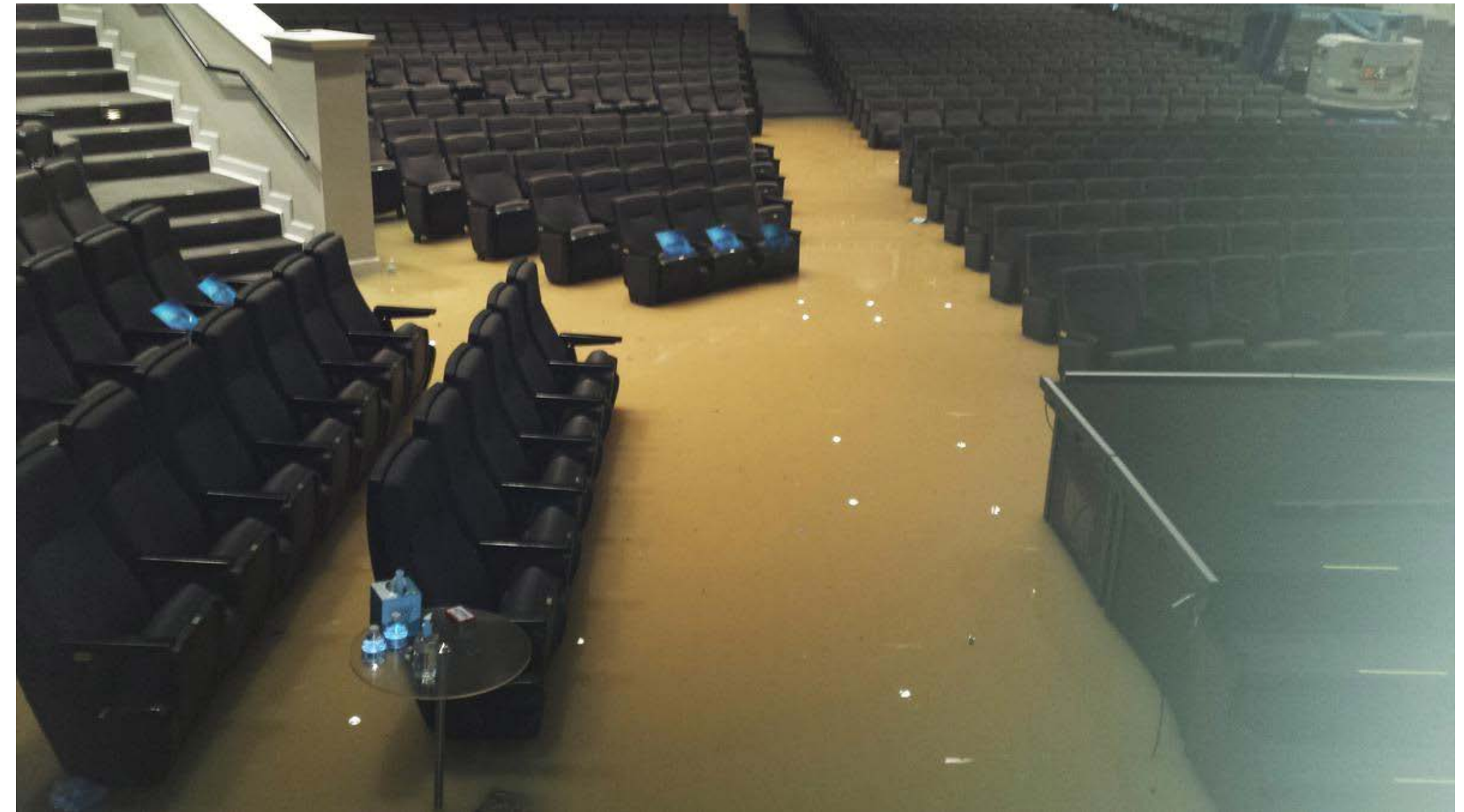
- Toilet overflow
- Sewage back up from toilet
- Sink overflow
- Improper sprinkler positioning



MOST COMMON WATER LOSSES

SURFACE OR SUBSURFACE WATER

- Flooding
- Water main break
- Seepage



TIMELINESS OF RESPONSE

- Mold can develop in 24-48 hours at 60 percent relative humidity
- Category 2 – gray water infiltration – can become a Category 3 – black water infiltration – if not responded to within 48 hours



LOCATE POTENTIAL WATER DAMAGE

ALL WATER DAMAGE MAY NOT BE VISIBLE:

- Under floors
- Behind walls

EFFECTIVE TOOLS TO LOCATE DAMP AREAS INCLUDE:

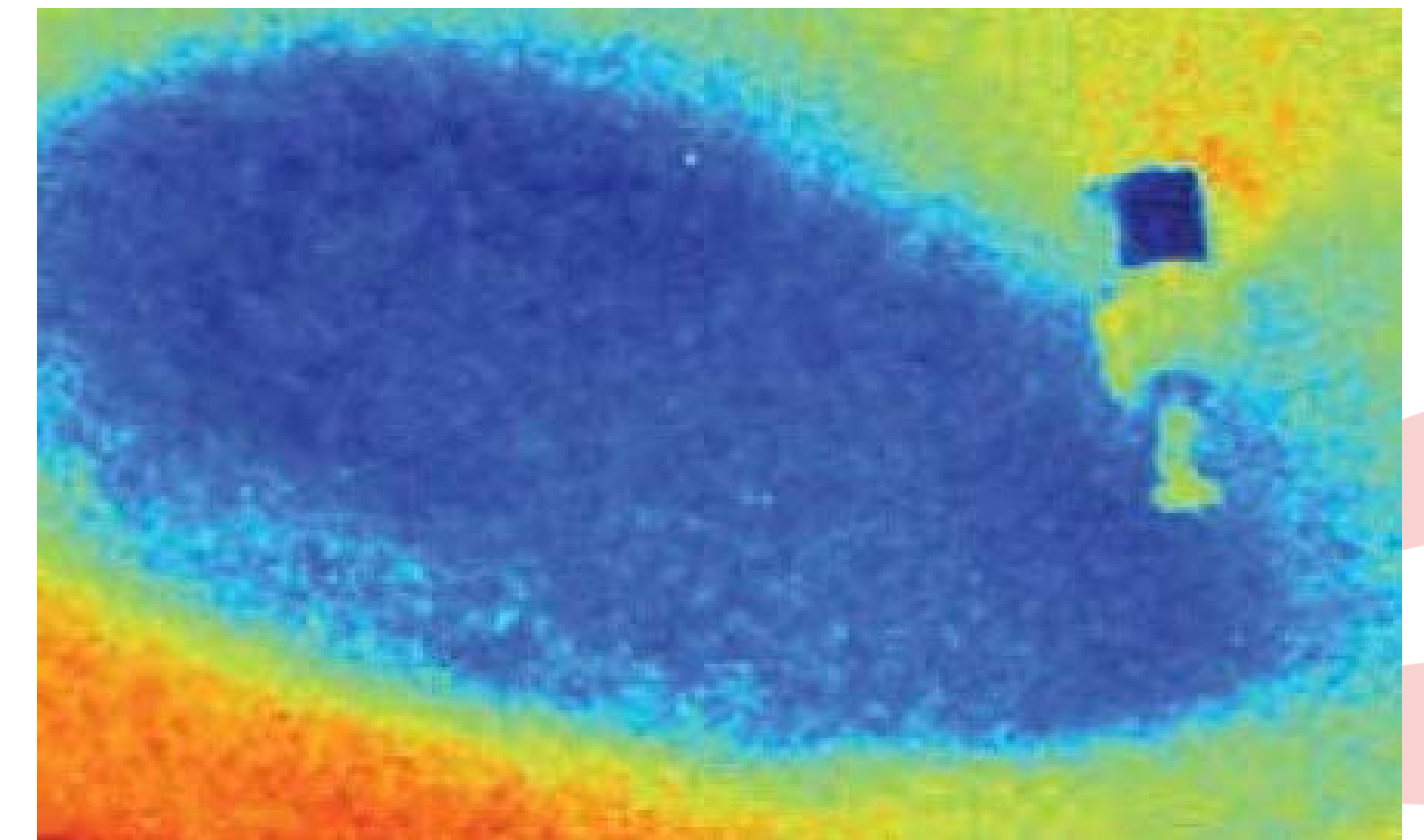
- Thermo-hygrometer
- Moisture meter (2 in 1)
- Thermal imaging camera



EVALUATE EFFECTIVE RESPONSE

EXAMPLE OF THERMOGRAPHY:

- Water leak around ceiling sprinkler
- Normal view shows small area of wet ceiling around sprinkler only
- Rest of ceiling appears dry
- Thermographic picture shows moisture trapped in larger area of ceiling that is otherwise not visible
- Repairs can now include all wet areas avoiding costly re-do's and possible mold development



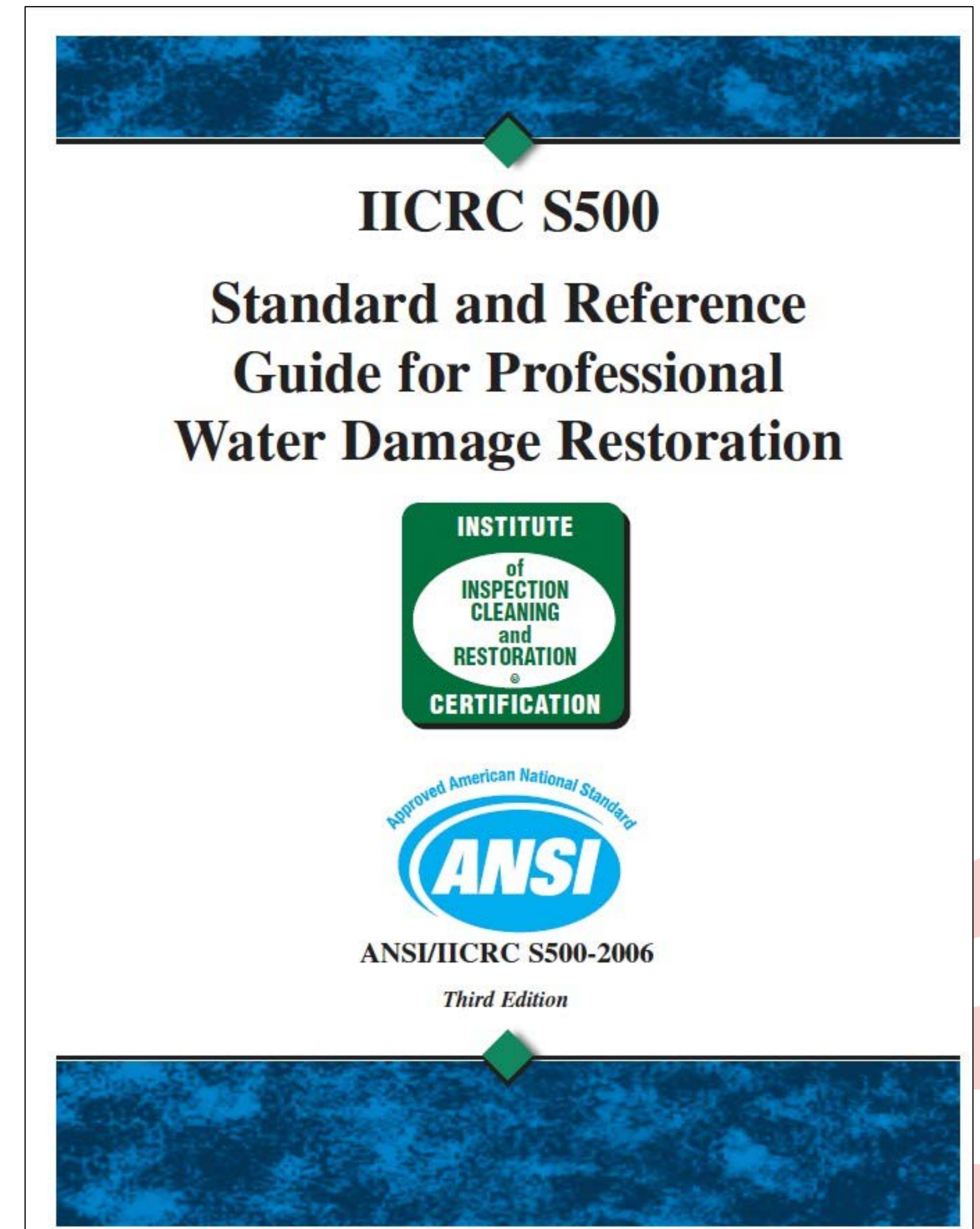
EVALUATE EFFECTIVE RESPONSE

IICRC S500

- Standard and Reference Guide for Water Damage Restoration
- Updated November 2015 with new Category and Class definitions and air mover calculations
- [2020 Update \(AFD's\)](#)
- <https://www.iicrc.org/page/SANSIIICRCS500>

IICRC S520

- Standard and Reference Guide for Mold Remediation
- 2020 Update by the end of 2020
- <https://www.iicrc.org/page/SANSIIICRCS520>



CATEGORIES OF WATER LOSS

Category 1

CLEAN WATER

Clean water originates from a source that does not pose substantial harm to humans. Examples of clean water sources may include, but are not limited to, broken water supply lines, melting ice or snow, falling rainwater, broken toilet tanks and toilet bowls that do not contain contaminants or additives.

Category 2

GRAY WATER

Gray water contains a significant level of contamination and has the potential to cause discomfort or sickness if consumed by or exposed to humans. Gray water carries microorganisms and nutrients for microorganisms. Examples of gray water sources may include, but are not necessarily limited to, discharge from dishwashers or washing machines, overflows from washing machines, overflows from toilet bowls with some urine (no feces), sump pump failures, seepage due to hydrostatic pressure, broken aquariums and punctured water beds. Gray water in flooded structures that remains untreated for longer than 48 hours may change to Category 3.

Category 3

BLACK WATER

Black water contains pathogenic agents and is grossly unsanitary. Black water includes sewage and other contaminated water sources entering or affecting the indoor environment. Toilet backflows that originate from beyond the toilet trap is considered black water contamination, regardless of visible content or color. Category 3 water includes all forms of flooding from seawater, ground surface water and rising water from rivers or streams. Such water sources carry silt and organic matter into structures that create black water conditions. The water is considered to be Category 3 water in situations where structural materials and/or contents have been contaminated with such contaminants as pesticides, heavy metals, or toxic substances.

WATER LOSS CATEGORY REPAIRS

CATEGORY 1 - CLEAN WATER

- Remove excess water
- Dry surfaces and interior air
- Flooring may be dried and cleaned in place
- Repair other damaged items if necessary (vanity etc.)
- Some items may need to be replaced due to severity of damage



WATER LOSS CATEGORY REPAIRS

CATEGORY 2 - GRAY WATER

- Remove excess water, being careful not to track possible contaminated water
- Dry surfaces and interior air
- Negative air chamber may be necessary
- Dispose of damaged carpet pad
- IAQ Testing for ACM may be required
- Carpet and other flooring may be repaired, including solid wood floors



WATER LOSS CATEGORY REPAIRS

CATEGORY 3 - BLACK WATER

- Treat as Category 2 Plus:
- Replace carpet
- IAQ Testing for ACM prior to demo
- Replace all contaminated wood floors
- Use negative pressure to avoid contaminating non-damaged areas
- Treat with appropriate biocide
- Consider air/surface testing



CLASSES OF WATER LOSS

Class 1

Least amount of water, absorption & evaporation

Minimal amount of water damage – less than 5% of potentially affected property. Little or no wet carpet and/or cushion is present.

Class 2

Significant amount of water, absorption & evaporation

Water has affected 5-40% of potentially affected property. Water has wicked up walls less than 24 inches. There is moisture remaining in structural materials; e.g., plywood, structural wood, VCT, concrete and substructure soil.

Class 3

Greatest amount of water, absorption & evaporation

More than 40% of potentially affected property is affected. Water may have come from overhead. Often, ceilings, walls, insulation, carpet, cushion, and subfloor are saturated.

Class 4

Specialty drying situations

These consist of wet materials with very low permanence/porosity (e.g., hardwood, plaster, brick, concrete, light weight concrete and stone). Typically, there are deep pockets of saturation, which require very low specific humidity. These types of losses may require longer drying times and special methods.

WATER LOSS CLASS REPAIRS

CLASS 1

- Evaporation occurs at a modest rate
- Damage is to a relatively small area of a larger room, or
- Damage is very minor to a larger area
- Damage is typically confined to the floor area only
- If a Category 1 loss, carpet and pad will be dried in place
- If a Category 2 loss, the pad will be replaced after the carpet is dried in place



WATER LOSS CLASS REPAIRS

CLASS 2

- Evaporation occurs at a faster rate as more moisture is present
- Damage is to a larger area of flooring
- Damage may have wicked up to 24" from the floor area
- Damage to porous and low porosity materials may be present
- Some moisture may be present in wall or floor cavities



WATER LOSS CLASS REPAIRS

CLASS 3

- Evaporation occurs at the fastest rate as significant water is present
- Damage may be to ceilings and walls higher than 24" above the floor
- If floor damage only, damage is to entire rooms of finished flooring
- Damage to porous and low porosity materials is present
- Moisture is likely in wall and floor cavities
- IAQ Testing for ACM prior to demo



WATER LOSS CLASS REPAIRS

CLASS 4

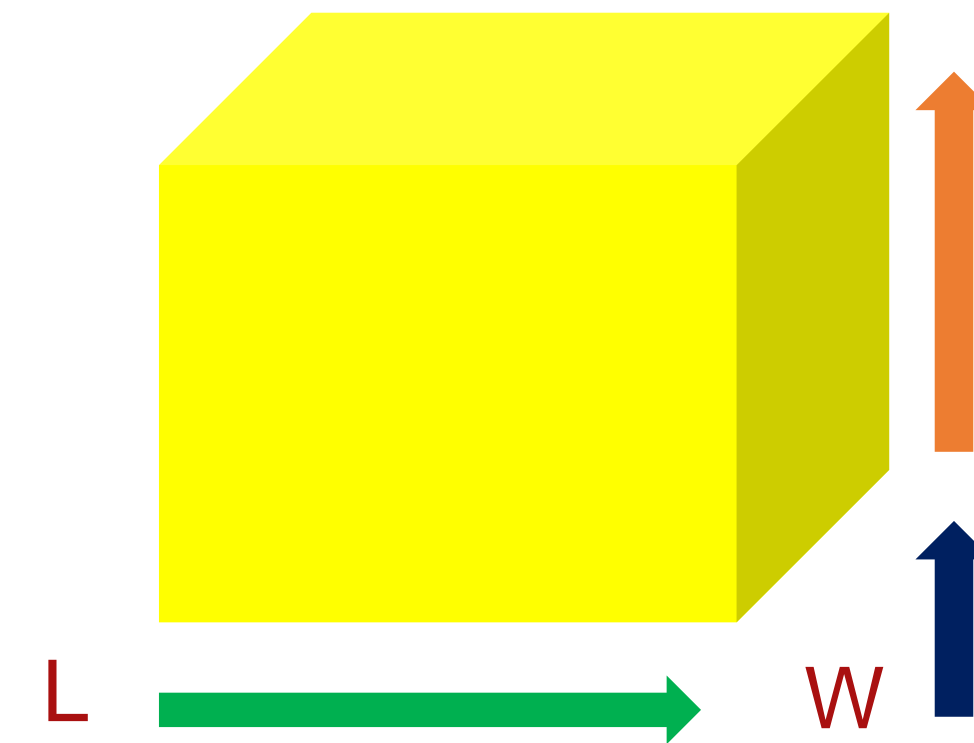
- Considered a specialty drying situation
- Evaporation may be difficult due to the materials and/or location of the loss
- Heavily saturated concrete or older structures are common Class 4 losses
- Typically takes longer to completely dry out
- IAQ Testing for ACM may be required



WATER LOSS CLASS REPAIRS – DEHUMIDIFICATION



1. Determine cubic feet of area to be dried (LxWxH)
2. Determine the Class of the Water Loss (1, 2, 3 or 4)
3. Decide the most effective dehumidification equipment to be used
4. Complete the mathematical formula:
 - Conventional and LGR: $CF \div \text{Class Factor} = \text{Pints}$
 - Desiccant: $CF \times \text{Class Factor} \div 60 = \text{CFM}$

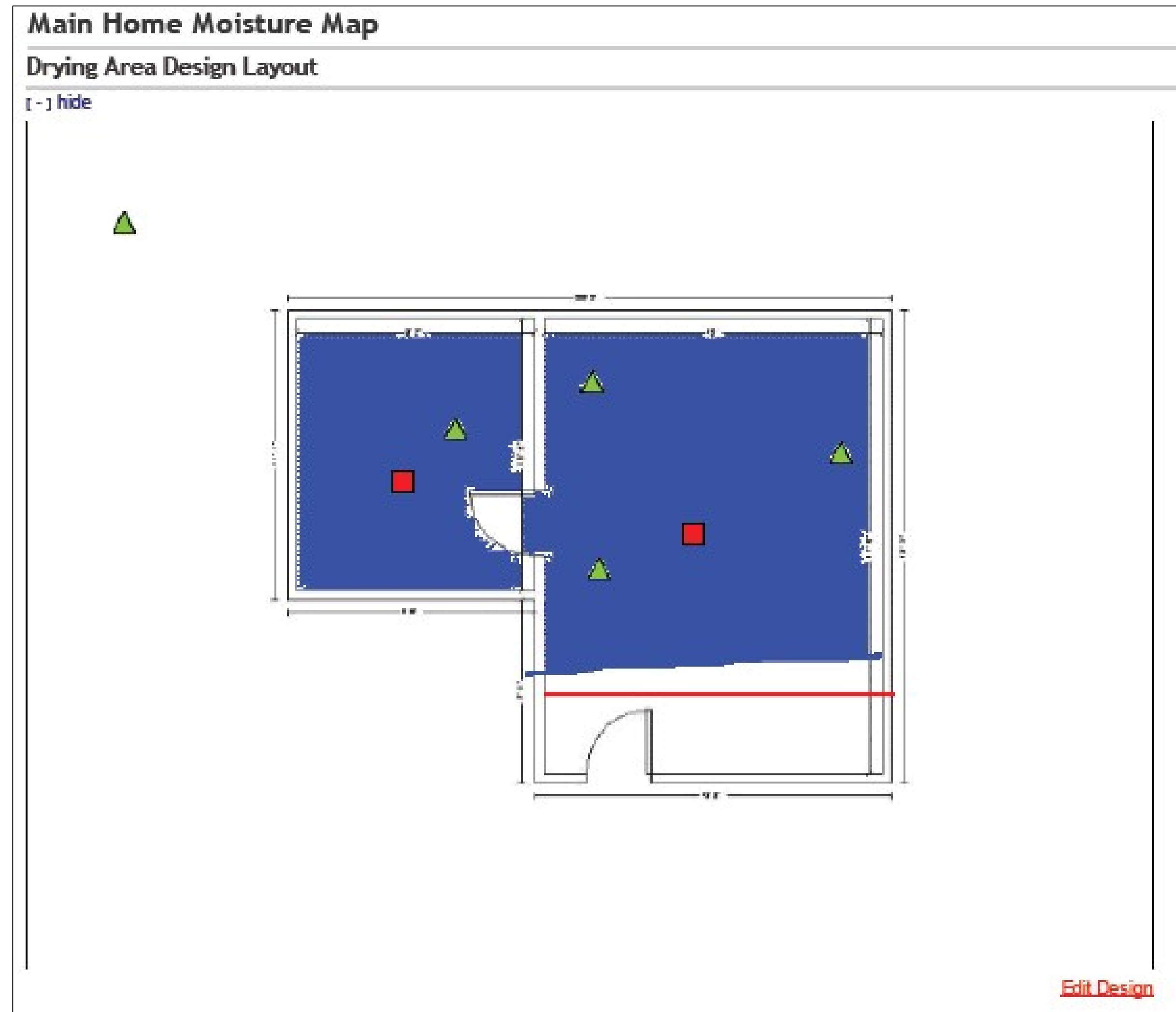


| | CLASS 1 | CLASS 2 | CLASS 3 | CLASS 4 |
|------|---------|---------|---------|---------|
| Conv | 100 | 40 | 30 | N/A |
| LGR | 100 | 50 | 40 | 50 |
| Des | 1 | 2 | 3 | 2 |

AIR MOVER CALCULATIONS

- 1 per room +
- 1 per 50-70 sf of floor area +
- 1 per 100-150 sf of upper walls (over 2 feet from floor) and/or ceiling area +
- 1 for each offset greater than 18" (1 and a half feet)
- Number may be reduced as relative humidity in drying area is reduced





MOISTURE MAPPER™



Step 1: Environment and Damage

*Loss Type:
Water Damage - Category 1 - Clear Water

Class:
1 - Drying area partially affected; no water in walls (slow)

* Value applies to the entire project, not just the drying area.

Step 2: Area Dimensions

[Add Room](#)

| Name | Length | Width | Height | Delete |
|-------------------|---------------------|--------------|-------------|--------|
| + Master Bedroom | 14 ft. 6 in. | 13 ft. 0 in. | 8 ft. 0 in. | |
| + Master Bathroom | Offset 10 ft. 6 in. | 9 ft. 0 in. | 8 ft. 0 in. | X |

Percentage Area Affected: 75%

Area Affected (ft.²): 212.3

Volume (ft.³): 2264.0

Step 3: Linear Wall Affected

*Required for Air Mover recommendations.

70 ft. 6 in. High-End Estimate Based On Dimensions: 70 ft. 6 in.

S-500 Recommendations and actual equipment used

Air Movers
Number Recommended: 4 units
Air Movers used:
4 in use

LGR Dehumidifiers
AHAM Pints Recommended: 23 AHAM pts.
AHAM Pints Used:
180 AHAM pt.

There's an APP for that!!!

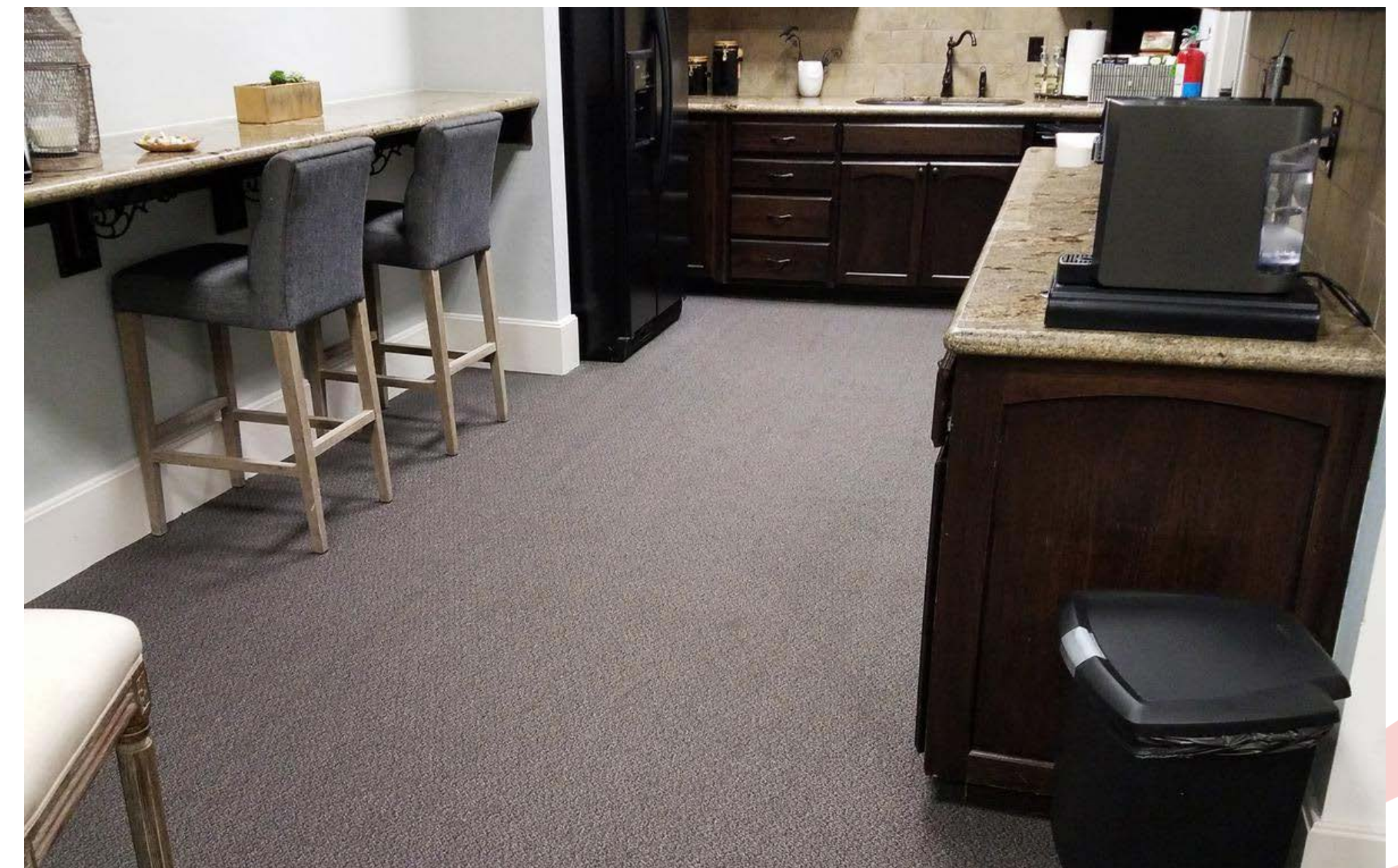


REMEDIATION EQUIPMENT

- Water loss remediation is as much a science as an art
- Goal is not only to remove excess water but also prevent further damage
- Sometimes opening the windows and using a mop and bucket will do the trick...in the Winter!



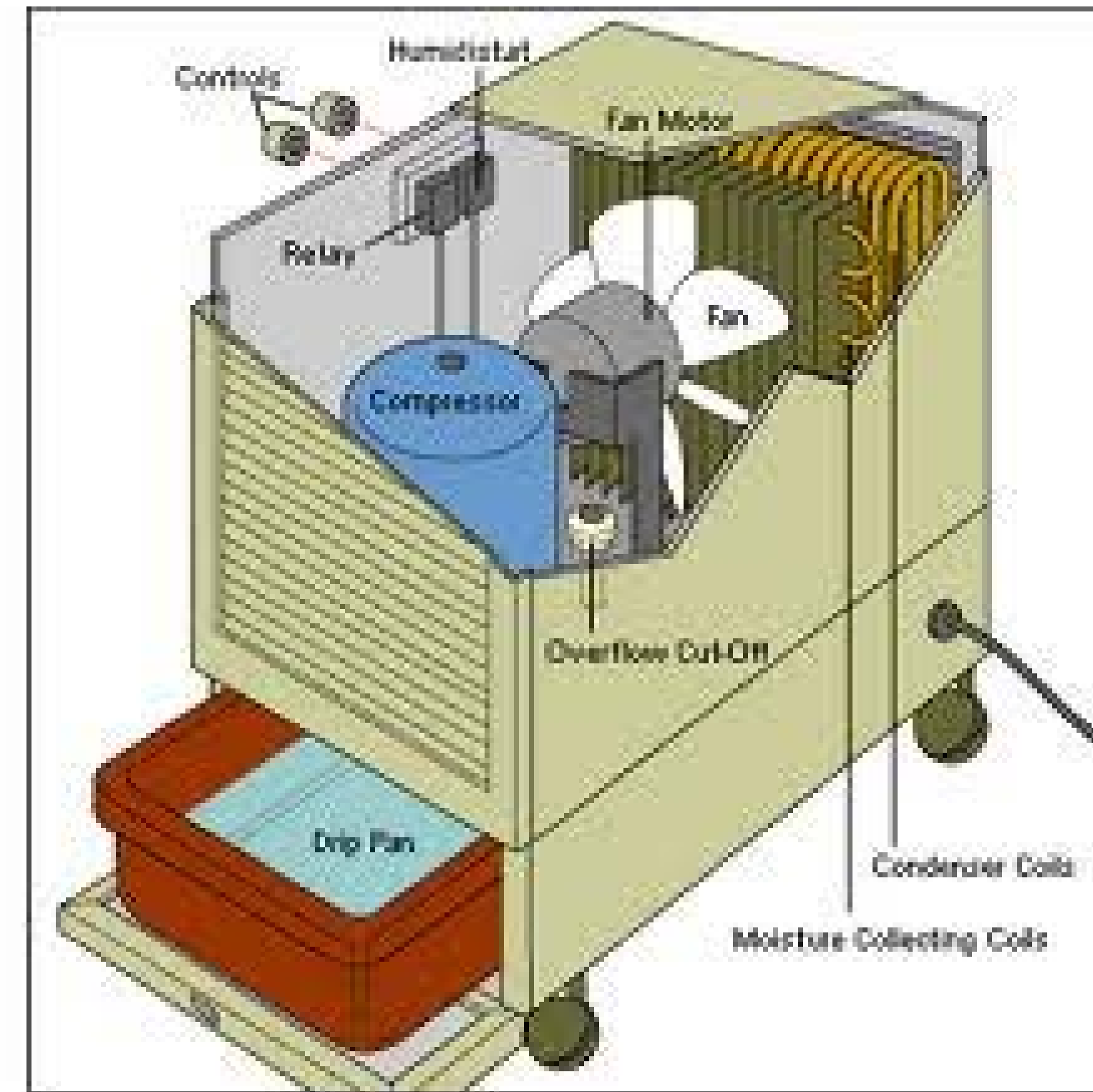
WATER EXTRACTION - BEFORE AND AFTER



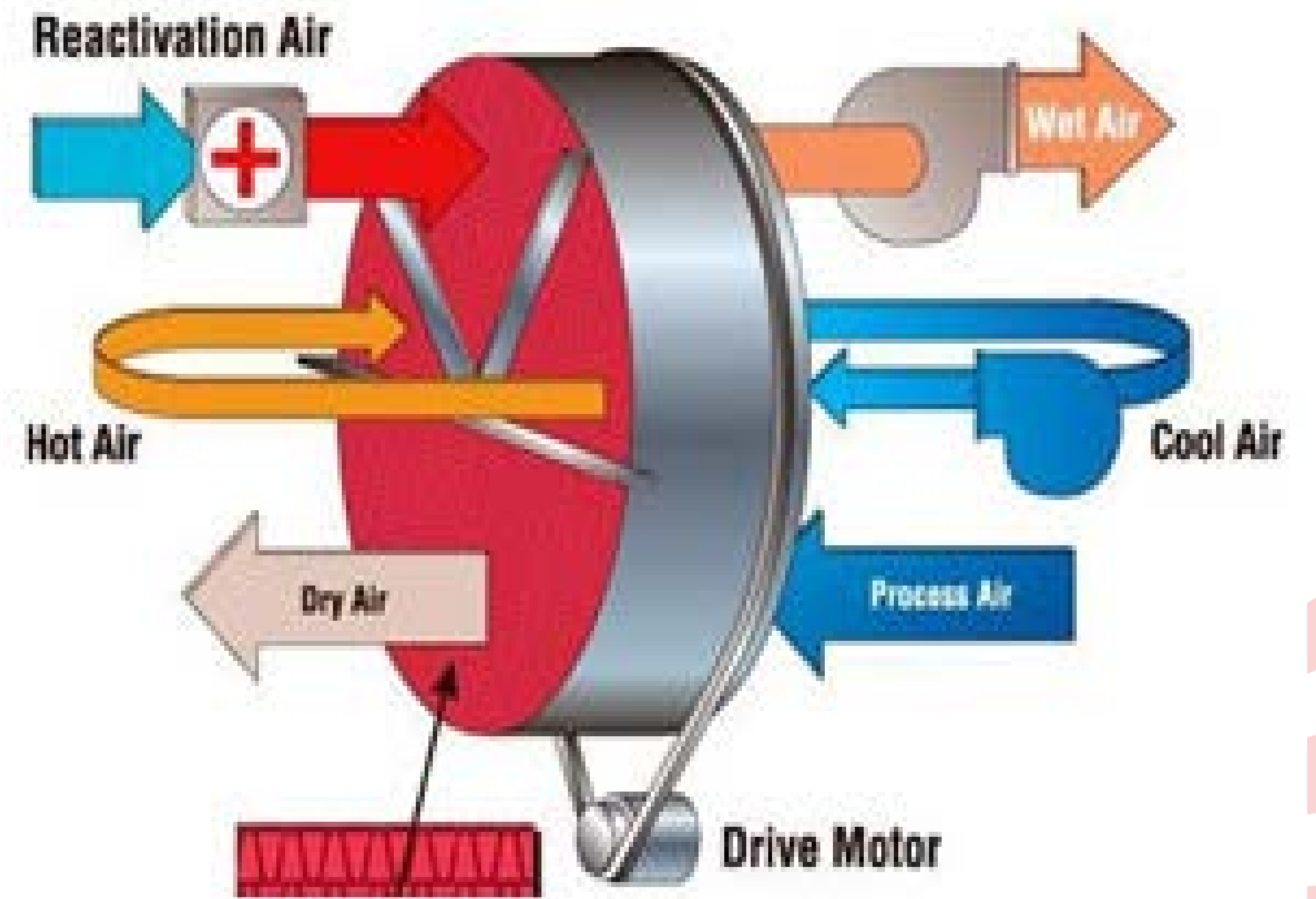
AIR MOVERS



REFRIGERANT DEHUMIDIFIER



DESICCANT DEHUMIDIFIER



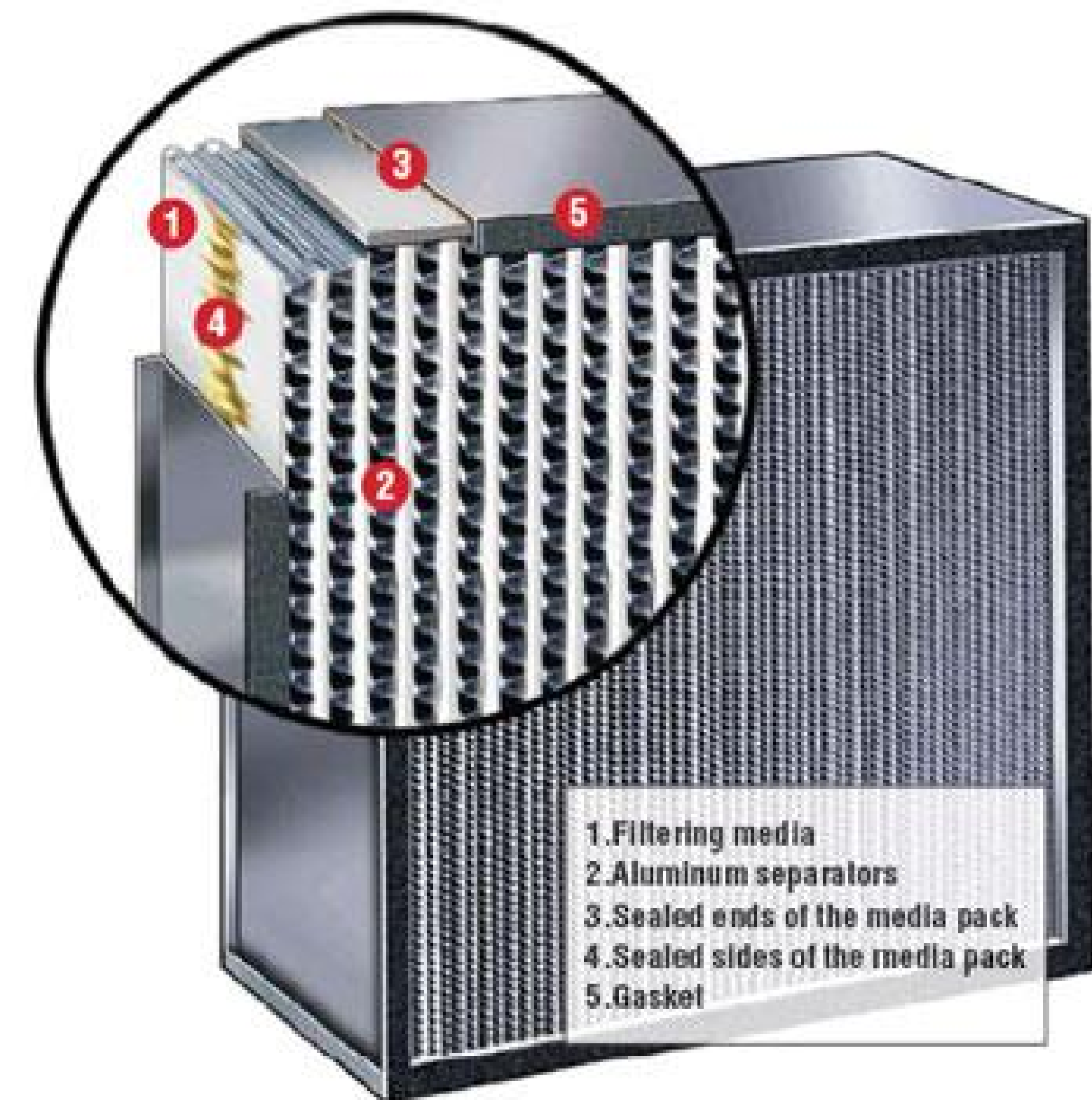
CONTAINMENTS



AIR SCRUBBERS AND HEPA FILTERS



A closer look at a HEPA filter



Indoor Air Quality & Testing

- Why test drywall before demo?
- Who does the testing?
- Does testing delay the mitigation process?
- Final Reports & Lab results
- Documentation helps close the file



WHAT'S THE PLAN? WHO DO I CALL?

ACTIONABLE RESPONSE PLAN



Executive



Risk Manager



Property Manager



Security



Maintenance



Team Lead



