NYCHA MOLD TRAINING

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Building Science for Inspectors – Day 1

Welcome NYCHA Staff

- Registration and sign-in/out
- Training materials
- Training agenda
- Training goals
  - Understand importance of controlling mold and moisture
  - Be able to utilize mold inspection tools
  - Be familiar with the mold standard procedure

Link to Training Resources

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Where Does Mold Grow in NYCHA Buildings?

- The paint on plaster, concrete, and sheetrock walls/ceilings
- The paper covering of sheetrock walls/ceilings (front/back and top/bottom sides)
- The covering of pipe-wrap insulation in wall cavities
- Bathroom tile grout and caulking
- Kitchen and bathroom cabinetry
- Wood framing materials in wall cavities

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Preventing Mold in NYCHA

Mold growth is always associated with excessive moisture problems.

- How do we **prevent** or **control** excessive moisture and what are the **Root-Causes** of excessive moisture?

- What are the **most common** Root Causes and how do they lead to excessive moisture?

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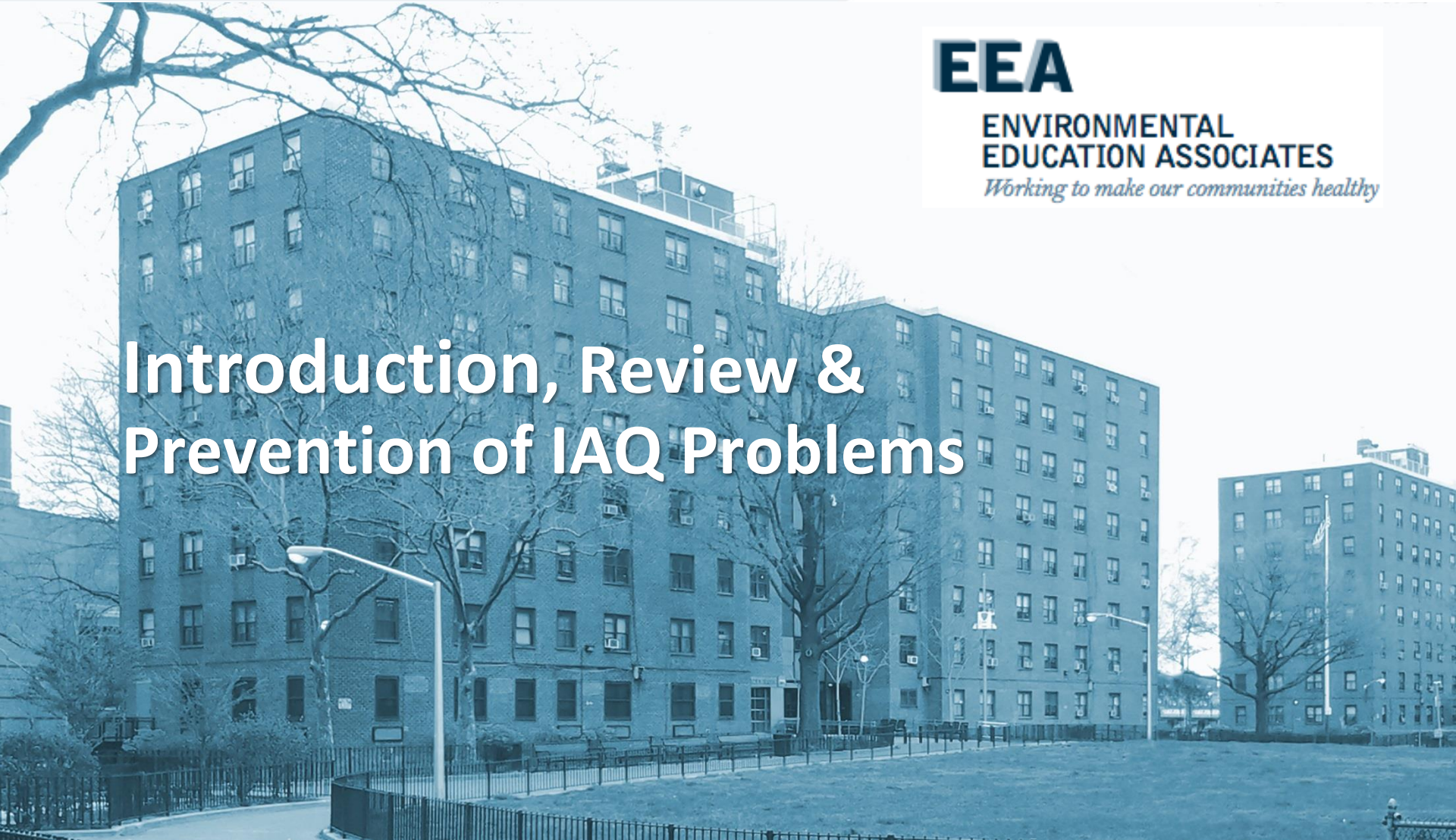

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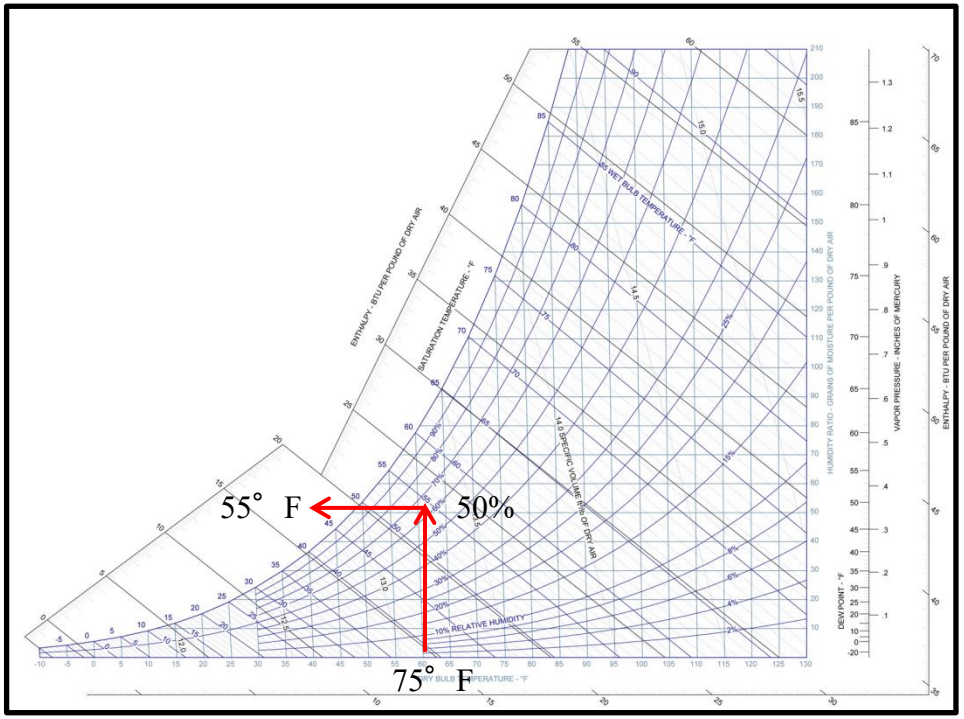
Introduction, Review & Prevention of IAQ Problems

What is Dew Point?



Psychometric Chart

Warm air holds more moisture than cold air. When air cools to its **dew point**, the temperature at which it becomes fully saturated (100% relative humidity), condensation occurs.

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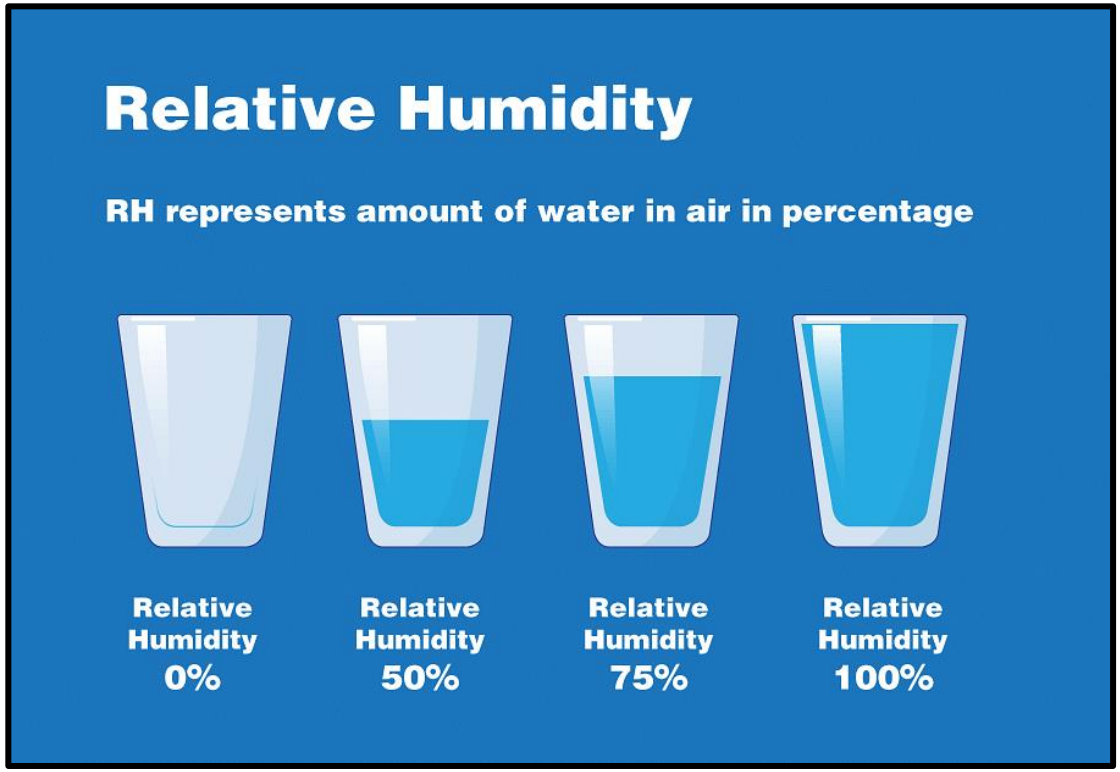
Relative Humidity

Relative humidity measures how much moisture is in the air compared to how much it can hold at that temperature before becoming fully saturated.



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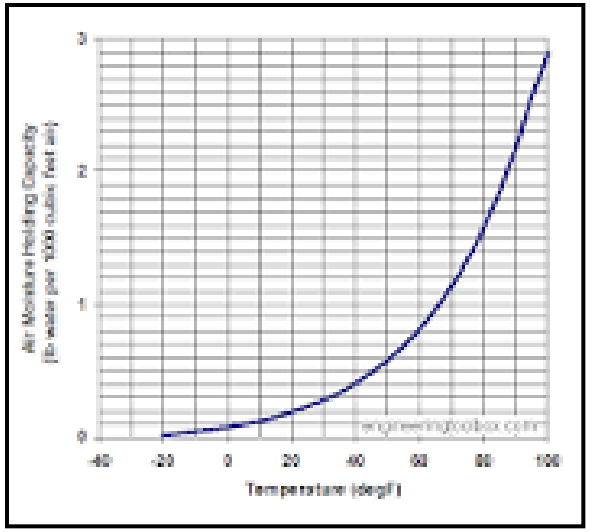
Temperature

- As temperature changes, so does the amount of evaporation and moisture, or **humidity**, in the air.
- **Relative humidity** increases as temperatures cool and approach the **dew point.**
- The **dew point** is the temperature at which the atmosphere becomes **saturated**. Knowing this is critical to being able to measure humidity.



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Humidity

- Ideal **relative humidity (RH)** should be between **40% - 60%**
- Avoid extremes of RH (< 20% and > 80%)
- Extremely **low** RH can cause:
  - Eyes, nose & throat to dry
  - Irritations & soreness
  - Increased susceptibility to infection
  - Increased problems associated with static electricity
- **High** RH can cause:
  - High moisture
  - Promotes growth of fungi and mold

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How Do We Control Condensation?

Assure that bathrooms are equipped with adequate exhaust ventilation:

- Clean/uncover bathroom exhaust grills and horizontals
- Repair rooftop exhaust fans: belts, motors, seating, timers
- Clean and assure proper function of backflow dampers

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How Do We Control Condensation?

How residents help control condensation (see **Controlling Mold in Your Apartment** document):

- **Monitor exhaust ventilation** function (tissue trick) and condition of exhaust grill. Notify building maintenance staff when repairs and/or cleaning is needed.
- Do not use drying racks/clothes lines above bathtubs.
- Try to limit the length of shower time. **Open bathroom windows and doors after showering.**
- In the summertime, lower humidity levels in your apartment by using an **air-conditioner.**
- **Keep windows always slightly open** to improve general ventilation.

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Cold Weather Condensation

- Can occur when warm moist interior air contacts cooler surfaces such as windows.
- Condensation forms when the **surface temperature** is below the **dew point temperature** for the interior air.

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Warm Weather Condensation

- Can occur when warm moist interior air contacts cooler surfaces such as cold-water pipes.
- Toilet tanks containing cold water often cause condensation.
- Hot showers can cause condensation on “warm” surfaces.

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Shower Vapor Condensation

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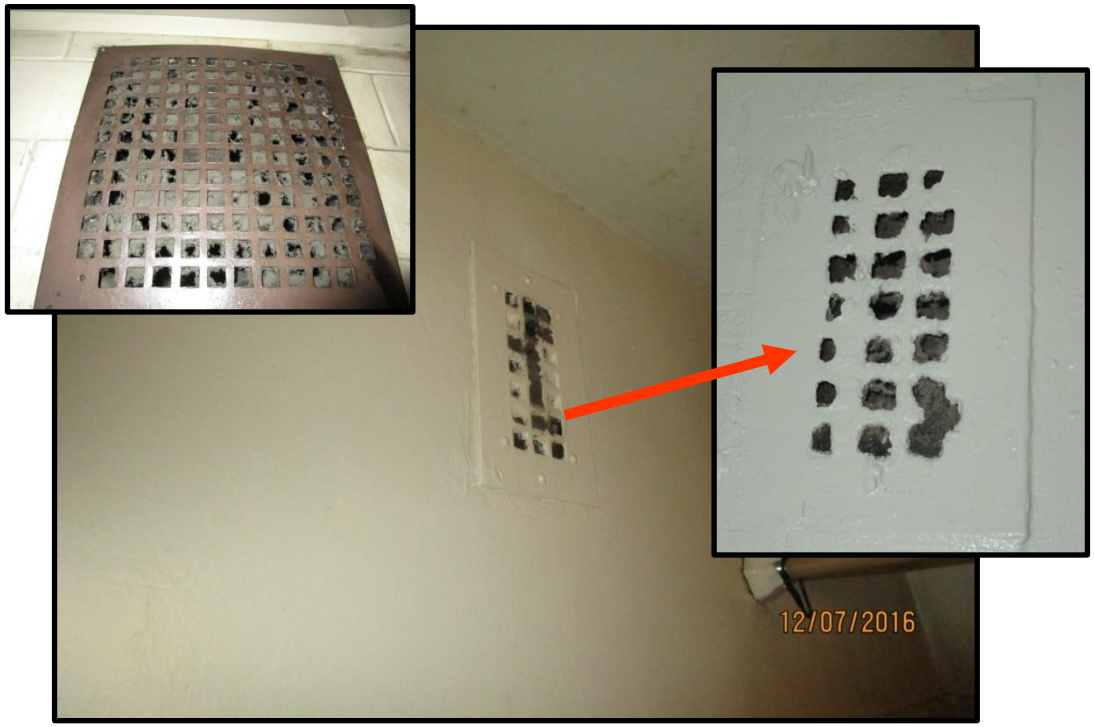
Controlling Shower Vapor Condensation - Exhaust Grills



Covered or dirty grills

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Controlling Shower Vapor Condensation – Roof Fans

Motor Problems

Improper Seating of Housing

Loose or Broken Belts

Broken Timers

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Controlling Shower Vapor Condensation – Backflow Dampers

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Condensation on Cold Water Pipes in Wall Cavities

Missing insulation on cold water riser

Damaged insulation on cold water riser

Missing insulation on cold water supply

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Toilet Condensation – in Apartment

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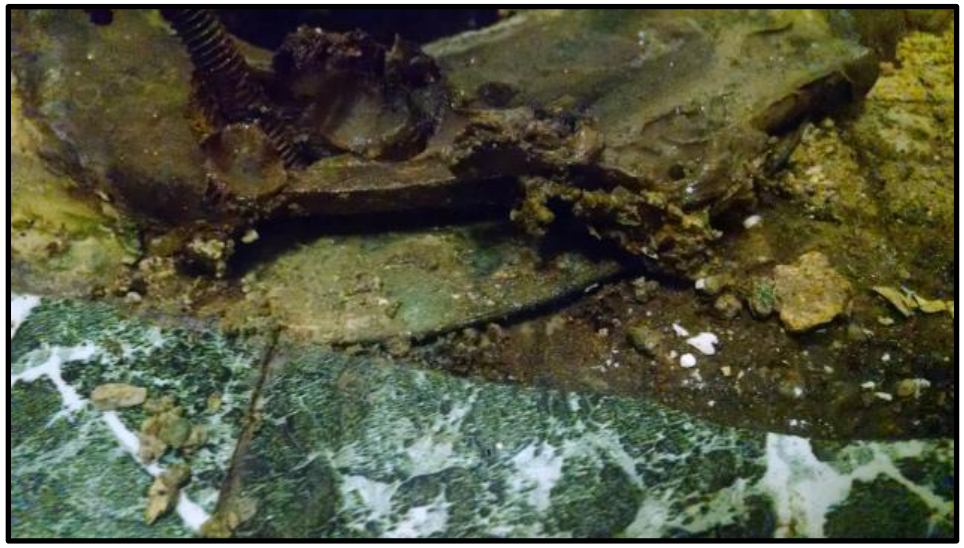
Toilet Condensation – From Above



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Perimeter Wall Condensation

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Moisture Movement Rule #1

- Liquid water will naturally tend to flow horizontally and vertically **downward**.
- It will follow the path of **least resistance.**

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Plumbing Leaks & Flooding

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Roof Leaks

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Moisture in Buildings

- **Capillary Action-** refers to the movement of a liquid across or through a solid's surface.
  - This is due to the liquid's stronger attraction to the solid than to itself. This occurs because the liquid's molecules stick to the solid (adhesion) and to each other (cohesion), allowing one molecule to pull the next along.
  - This process explains how water travels through tree roots or seeps into materials like sponges and towels.

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Moisture Movement Rule #2

- Moisture will enter porous materials due to **capillary action.**
- A solid piece of wood will draw water up to **350-375 ft**. (height of the tallest tree).
- A column of concrete placed in water will draw moisture up to **10 KM or 6 miles**.
- Capillary Action

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Capillary Action Can Be…

- Responsible for movement of groundwater through footing(footers) into concrete wall.
- Identified by the ring of dampness around base of foundation wall.
- Prevented with perimeter drains that help keep water away from footers.

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More On Capillary Action

- Moisture can be drawn into **an opening of 3/16" or less** (about the thickness of three stacked credit cards).
- If two materials without capillary pores are placed close together, **they can form a narrow space that acts like a capillary pore**, pulling in moisture.

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Moisture in Buildings

- Materials like **overlapping siding** can create capillary gaps.
- A thin film of water can form on the surface of **wood siding**.
- This water is drawn upward **between the laps of siding** through **capillary suction**.
- Moisture can also pass through layers like **building paper and sheathing** if gaps or pathways exist.

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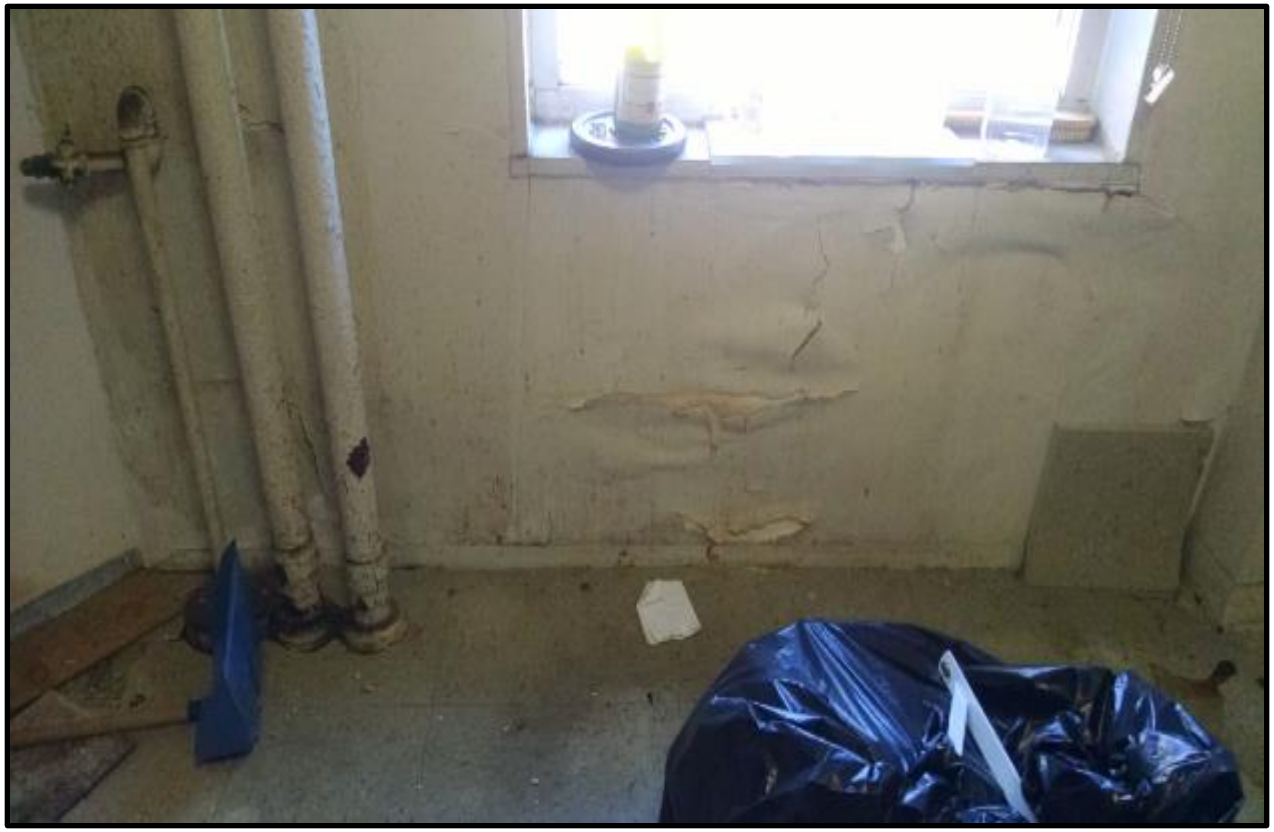
Façade Leaks



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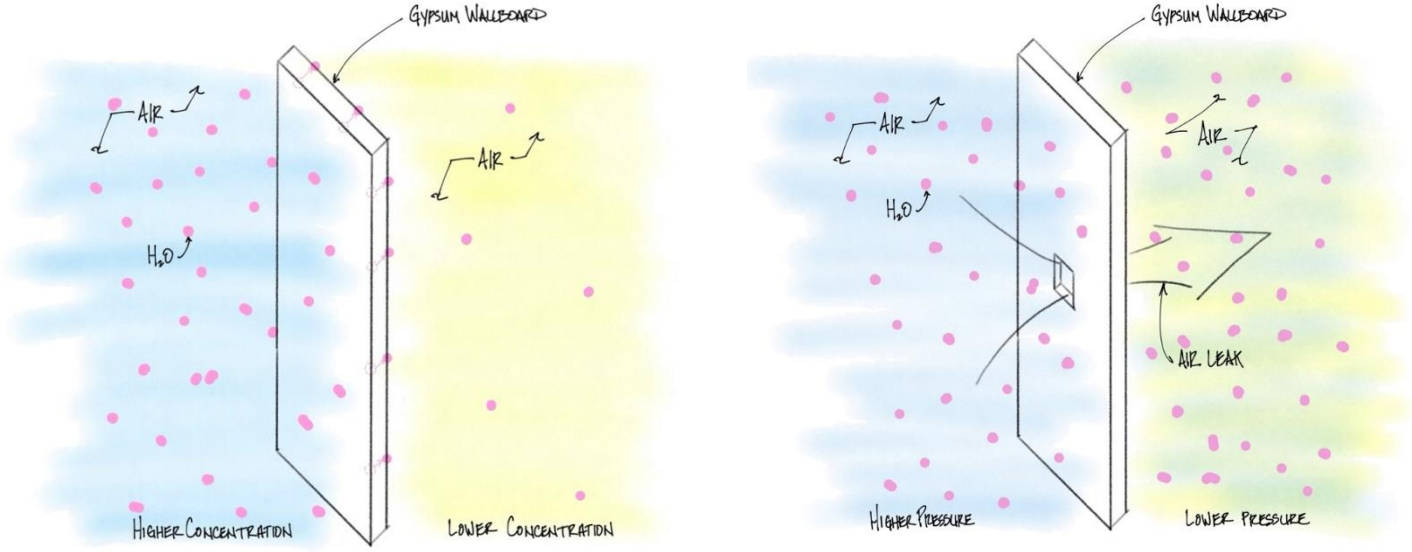
Moisture Movement Rule #3

- Moisture moves through building materials by **vapor diffusion.**
- **Vapor diffusion** is the movement of moisture in a vapor state because of a vapor pressure difference.



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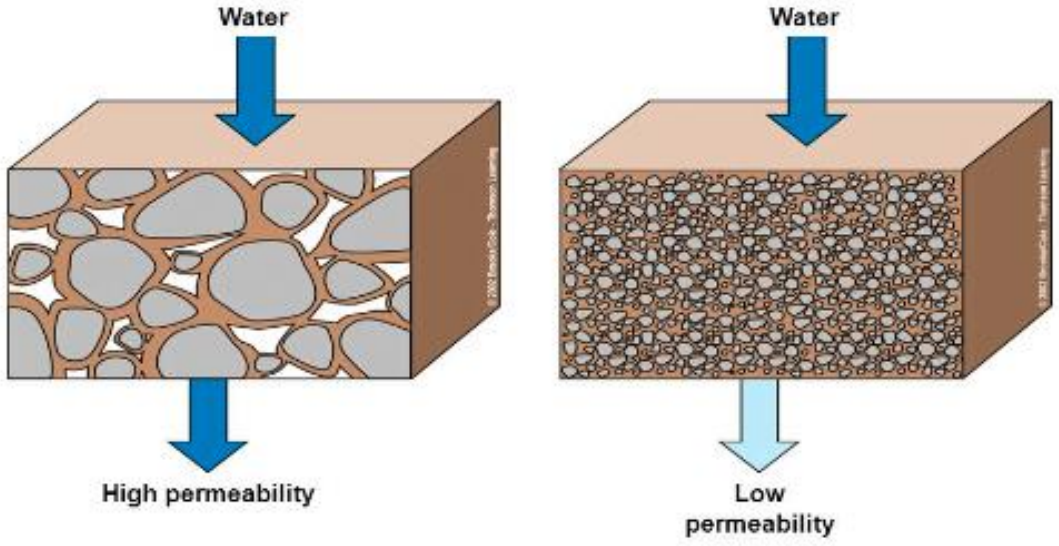
Moisture in Buildings

- The **permeance factor** measures how easily water vapor moves through a material.
- It's expressed in **perms**, which indicate how many grains of moisture pass through one square foot of material in an hour, under a vapor pressure of 1 inch of mercury (1" Hg).



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Moisture Movement Rule #4

Moisture moves **from hot to cold**:

Moisture can move through building materials by **diffusion** or through **holes** that allow air through.

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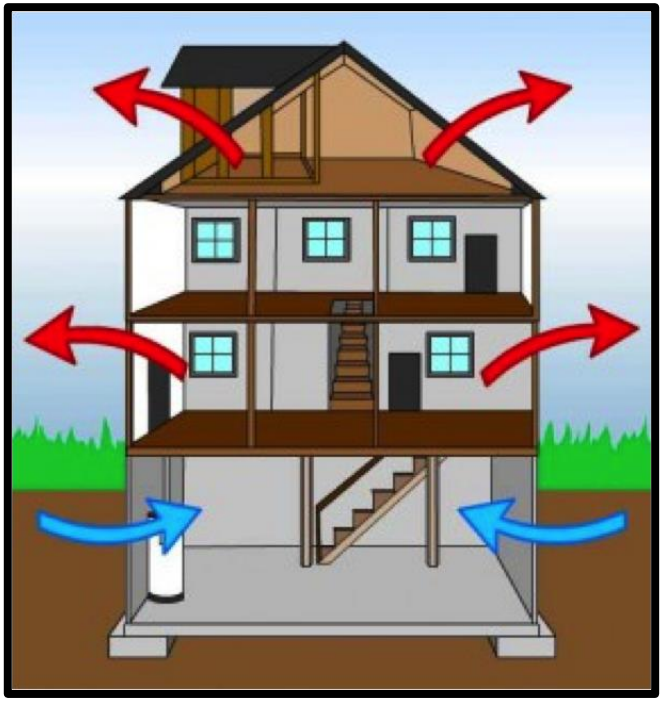
Moisture Movement Rule #5

- Moisture moves from an area of **higher air pressure to an area of lower air pressure.**
- This is called the **stack effect.**



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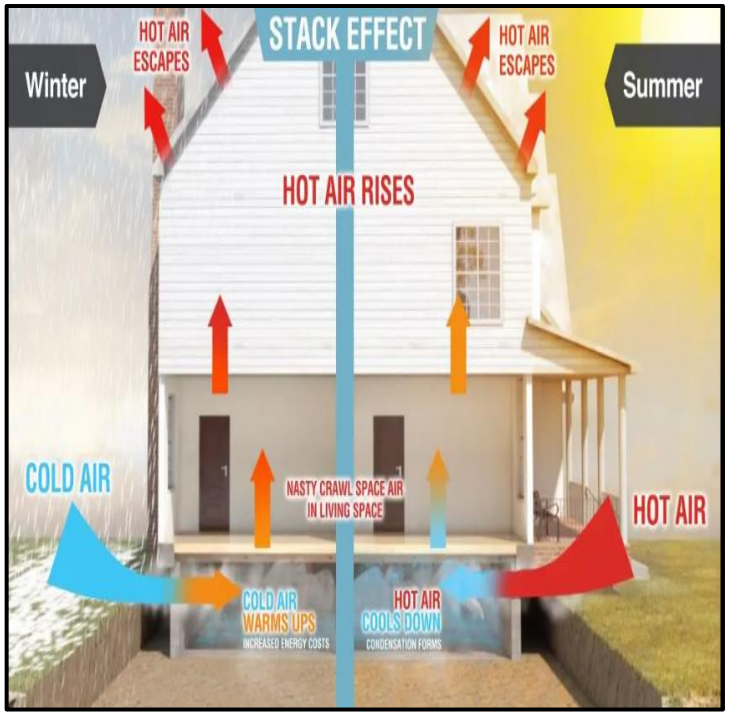
Moisture in Buildings

Stack effect

- Stack effect is caused by **warm air rising** within a structure.
- As warm air rises, it **creates a higher air pressure** at the ceiling area and **forces air out** of the building.
- As the air leaves, or exfiltrates, **it is displaced with outside air that is drawn into the building from the floor** area (infiltrates).
- In a typical home, stack effect alone can cause about **0.5 ACH of natural ventilation**, which translates to roughly **150 cfm of airflow**. That's a significant amount of uncontrolled air leakage — which can affect comfort, energy efficiency, and indoor air quality.



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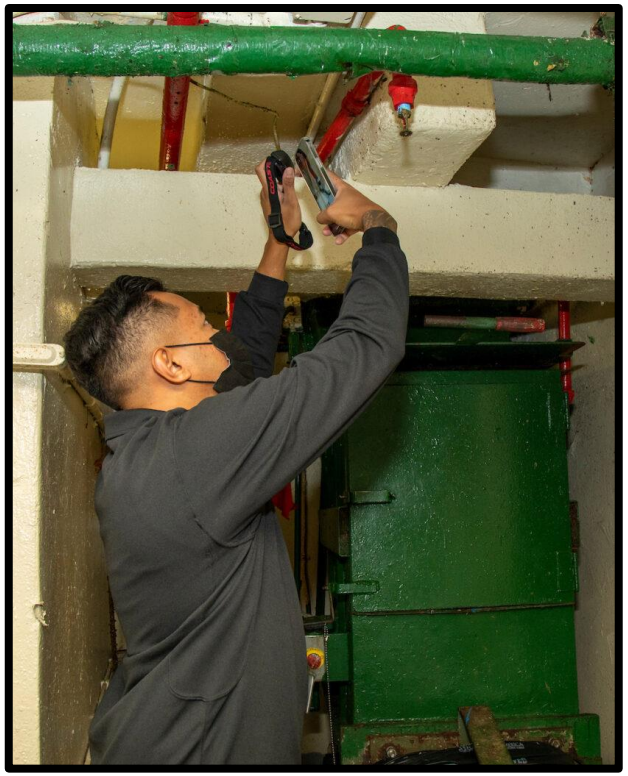
Prevention & Control Measures

- **Inspection**, **testing**, and **maintenance**
- Avoid development of contamination
- Safe operating procedures
- Improved Maintenance
- Housekeeping



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Understanding Building Systems

Building Construction

Residential Properties are built according to:

- Design Objectives
- Building Code
- Housing Code
- Permitting Requirements

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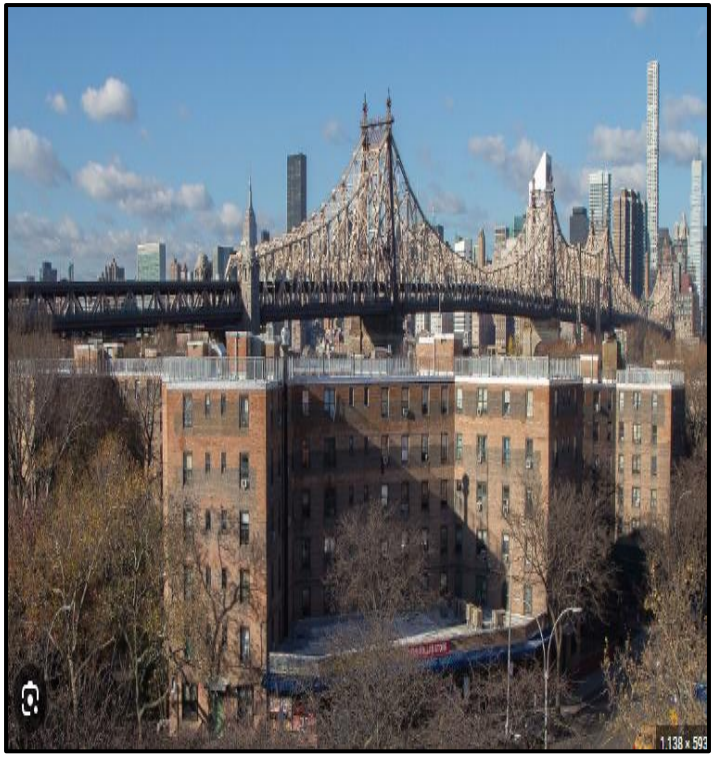
NYCHA Developments

- Multi-story
- Similar construction plans
- Similar construction materials
- Similar moisture problems
  - Poor ventilation
  - Condensation
  - Leaks
- Similar capital needs



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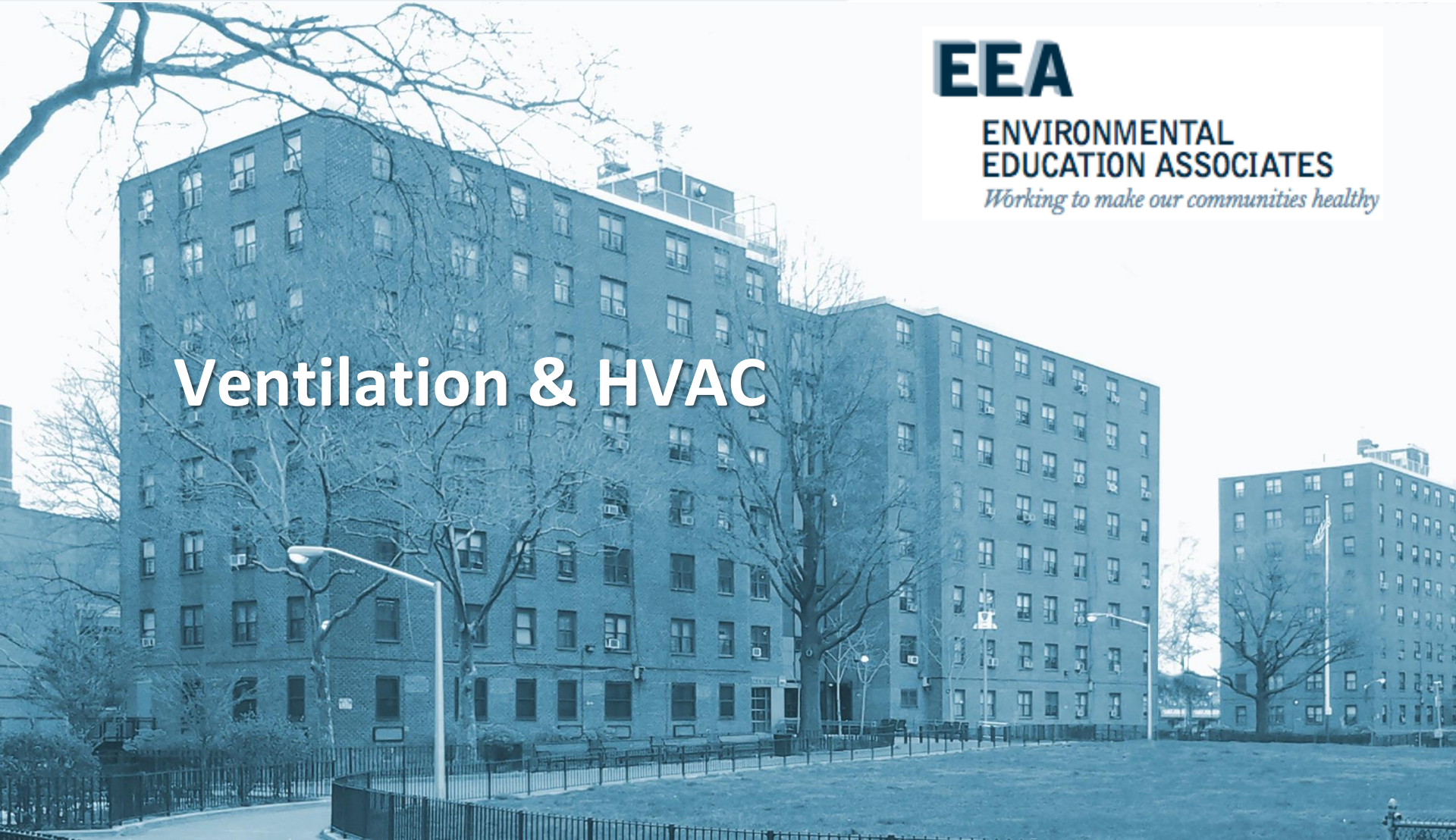

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Ventilation & HVAC

HVAC

- Heating
- Ventilation
- Air Conditioning

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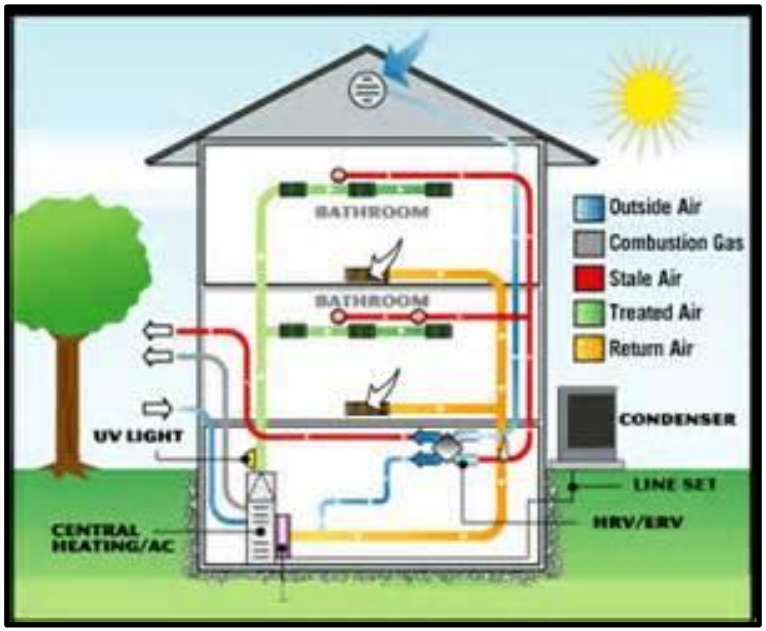
HVAC Systems Primary Functions

- Temperature Control
  - Cooling
  - Heating
- Humidity Control
  - Humidification
  - Dehumidification
- Air Quality Control
  - Ventilation
  - Cleaning



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Air Movement

- Too **little** air flow causes **stuffy** and uncomfortable environment.
- Too **much** causes **drafts** & excessive cold.
- Internal partitioning & clutter creates "**dead spaces**".

Ventilation Basics 1

Ventilation Basics 2

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NYCHA & Ventilation Guiding Questions

- Why is good ventilation important?
- How is it achieved in NYCHA buildings (and others)?
- What are the most common ventilation problems?
- What are the best practices for resolving these problems?

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Purpose of Exhaust Ventilation

- To remove pollutants at their source:
  - Kitchens- Cooking grease, water vapor, gas, CO
  - **Bathrooms- Moisture (Mold)**
- To provide adequate fresh air to a space
- Required by NYC Building Code

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Ventilation

- **Natural Ventilation**
  - Operable window
- **Central Exhaust Rooftop Fans**
  - Vertical shafts
  - Horizontal takeoffs
  - Wall or ceiling grilles
- **In-line fans**
  - Small fan in the duct
  - Most energy efficient
- **Continuous vs. Intermittent**

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Evaluating the Ventilation System

- Does the building have a ventilation system?
- Is the system on all the time?
- Is the system continuous or does it go on and off during the day?
- Does each room have a vent?
- Are the vents supplying or removing air?

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Ventilation Systems

Grill and duct buildup is common, and **mold can grow on the debris**. While we don't remove registers or air vents, **we must visually check** that dust and debris haven't built up in the ducts and created a surface for mold to grow.

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Air Conditioning

- NYCHA residential units **do not** have central air conditioning.
- **Window units** account for efforts to cool spaces.

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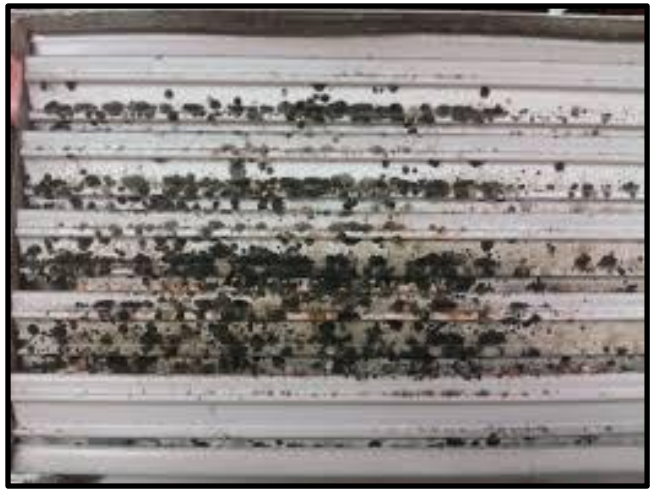
Problem - Air Conditioning



Leaking or poorly installed AC units can result in **water damage and mold contamination** in the unit and on adjacent building materials.

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Solution – Air Conditioning

- Install according to the **manufacturer's instructions**
- **Remove obstructions** to drainage
- **Clean** with an anti-microbial cleaner
- **Change filters** on a regular basis

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Root Cause Review

Root Causes – Sealant Related Issues

Sealant Related Issues - Issues that can be resolved by removing and replacing old caulking.

iWM Selection	iWM Description
• **Caulking DML (Maintenance)**	Caulking DML (Maintenance) should be selected when mold, water damage, or wet conditions are found in a bathroom or adjacent room due to water penetrating through missing or damaged areas of the bathtub/shower caulking.
• **Grouting DML (Bricklayer)**	Grouting DML(Bricklayer) should be selected when mold, water damage, or wet conditions are found in a bathroom or adjacent room due to water penetrating through missing or damaged areas in the shower/bathtub grouting resulting in the need to replace tiles.
• **Grouting DML (Plasterer)**	Grouting DML(Plasterer) should be selected when mold, water damage, or moisture is found in a bathroom or adjacent room due to water penetrating through missing or damaged areas of in the shower/bathtub grouting requiring a Carpenter's corrective action prior to a Plasterer's replacement/installation of grout.
• **Grouting/ Caulking DML (Plasterer)**	Grouting/ Caulking DML (Plasterer) should be selected when moisture is regularly accumulating around a bathtub due to a lack of caulking or grouting (e.g. grout chipping, tiles falling).
• **Grouting/ Caulking DML (Bricklayer)**	Grouting/ Caulking DML (Bricklayer) should be selected when mold is found in the areas where there is missing mortar or caulking which allows water to penetrate the building.

Root Causes – Leak Issues

Leak Issues – Issues caused by a leak other than a sealant issue.

iWM Selection	iWM Description
• **Leak Around Window**	Leak Around Window should be selected when there is mold, water damage, or wet conditions around the window due to lack of sealant around the window, thereby causing water to penetrate.
• **Leak From Above - Previously Identified ***	Leak From Above - Previously Identified should be selected when the root cause or remediation work for the mold, water damage, or wet condition had been identified or abated by Property Maintenance staff or Skilled Trades on a prior work order.
• **Leak Through Façade**	Leak Through Façade should be selected when mold, water damage, or wet condition are caused by water penetration through a crack or damaged/missing mortar on an exterior wall.
• **Leak From Above/Beside - Investigate**	Leak from Above/Beside Investigate should be selected when there is visible mold, water damage, or wet conditions caused by an active leak from a unit above or beside the unit with a mold condition.
• **Plumbing Leak - In Unit**	Plumbing Leak- In Unit should be selected when the mold, water damage, or wet condition is caused by a pipe leaking within the wall cavity. A wall-break will be required to diagnose this problem.

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Root Causes – Leak Issues

Leak Issues – Issues caused by a leak other than a sealant issue.

iWM Selection	iWM Description
• **Roof Leak - Non-Capital**	Roof Leak-Non-Capital should be selected when the mold, water damage, or wet condition is caused by a leak from the roof and a replacement or repair of a portion of the roof would be required.
• **Sink Supply Line Leak**	Sink Supply Line Leak should be selected when the mold, water damage, or wet condition is caused by a leak in the supply line.
• **Sink Waste Line Leak**	Sink Waste Line Leak should be selected when the mold, water damage, or wet condition is caused by a leak(s) in the waste line.
• **Toilet Leak**	Toilet Leak should be selected when the mold condition, water damage, or wet condition is caused by an active leak coming from the toilet.

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Root Causes – Resident Caused

Resident-Caused – Issues that can be prevented due to adjustments to resident education and behavior.

iWM Selection	iWM Description
• **Resident - Caused (Code 1)**	Resident-Caused by little of no ventilation during or after a shower. Resident is to leave the window open after a shower to air out the room.
• **Resident - Caused (Code 2)**	Resident-Caused by improper installation of a dishwasher. Contact property management to submit an APPLIANCE AGREEMENT: AIR CONDITIONER/DISHWASHER/FREEZER/WASHING MACHINE (CLOTHES) and resident is responsible to have it installed correctly.
• **Resident - Caused (Code 3)**	Resident-Caused by improper installation of a washing machine. Contact property management to submit an APPLIANCE AGREEMENT: AIR CONDITIONER/DISHWASHER/FREEZER/WASHING MACHINE (CLOTHES) and resident is responsible to have it installed correctly.

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Root Causes – Resident Caused

Resident-Caused – Issues that can be prevented due to adjustments to resident education and behavior.

iWM Selection	iWM Description
• **Resident -Caused (Code 4)**	Resident-Caused by blocking or covering a vent. Resident will need to uncover the vent to allow for air circulation.
• **Resident -Caused (Code 5)**	Resident-Caused by improper installation of a clothing dryer. Contact property management to submit an APPLIANCE AGREEMENT: AIR CONDITIONER/DISHWASHER/FREEZER/WASHING MACHINE (CLOTHES) and resident is responsible to have it installed correctly.
• **Resident -Caused (Code 6)**	Resident-Caused by other actions. Mold Busters Education will be needed for resident for future prevention of mold. A mandatory inspection will be needed to find the exact reason(s). Notes describing the situation and two (2) pictures are required: One (1) clear close-up picture is required and one (1) clear wide perspective, showing the entire situation.

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Root Causes – Ventilation

Ventilation – Issues that are a result of inoperable roof fans and/or lateral duct issues.

iWM Selection	iWM Description
• **Roof Fan Out Of Order**	Roof Fan Out of Order should be selected when the mold condition is the result of inadequate exhaust ventilation due to an out of order roof fan. This is confirmed following an inspection of the roof fan.
• **Vent Clogged/ Covered**	Inadequate Exhaust Ventilation - Vent Clogged/Covered should be selected when the mold is the result of inadequate exhaust ventilation due to the exhaust grill and/or lateral ductwork being clogged with dust or otherwise obstructed.
• **Window Inoperable**	Windows Inoperable should be selected when the mold condition is caused because of lack of ventilation due to the window's inability to open.

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Root Causes – Other Issues

Other – Issue(s) are being caused due to reasons outside of the four categories listed previously.

iWM Selection	iWM Description
Bathtub Shower Issues	Bathtub Shower Issues should be selected when the cause of mold, water damage, or wet conditions is related to the following issues: bathtub missing, faucet leaking, faucet running, faucet dripping etc.
Pipe Insulation DML	Pipe Insulation DML should be selected when the mold, water damage, or wet condition is caused by damaged or missing pipe insulation resulting in condensation (or sweating) on pipe surfaces. A wall-break will be required to diagnose this problem.
Perimeter Surface Condensation	Caused by warm air in the apartment coming into contact with relatively colder building surfaces (during cold outdoor weather), which results in condensation (sweating) on perimeter walls, adjacent ceiling surfaces, and concrete structural beams/columns.
Toilet Bowl/ Tank Needs Barrier	Toilet Bowl/Toilet Tank Needs Barrier should be selected when the surface of the toilet tank is in direct contact with the surface of the wall, allowing condensation to transfer across surfaces.
Tub Surround DML	Tub Surround DML should be selected mold, water damage, or wet conditions are found in a bathroom or adjacent room due to water penetrating through missing or damaged areas of the tub surround that require repair or replacement.
Other *	Other - should be selected if the root cause is not listed or not evident through the standard assessment practices. A detailed explanation of visible conditions is required.

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Break

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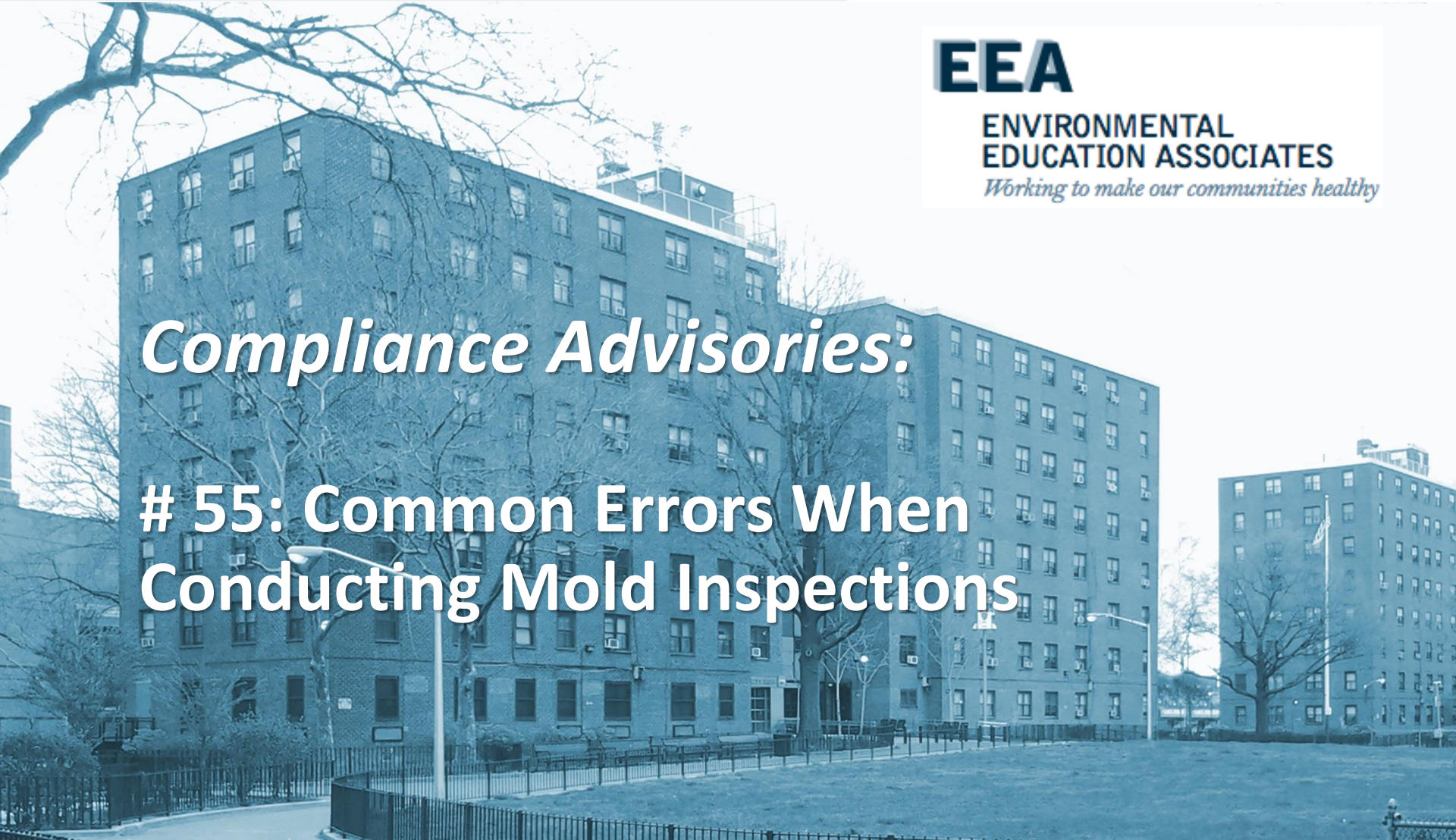
NYCHA MOLD TRAINING



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Compliance Advisories:

55: Common Errors When Conducting Mold Inspections

Common Mold Inspection Errors

#1 - Improperly Conducting Wet Measurements

Moisture control is the key to mold control so properly measuring moisture is essential in addressing mold:

To identify mold caused by moisture, Inspectors must:

- **Visually inspect** the area for mold and **record** estimated square footage on all surfaces.
- Use a **moisture meter** on all surfaces; **record** readings in iWM, especially those **≥599**.
- For visible mold or water damage, take readings **every 6 inches until 2 feet past damage** or until **readings drop below 599**.
- If moisture is found, **inspect shared walls and adjacent rooms.**

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Common Mold Inspection Errors

Moisture control is the key to mold control so properly measuring moisture is essential in addressing mold.

For accurate wet measurements in a bathroom, it is recommended to measure approximately **1-2 feet above the floor** on both sides of the vanity or sink. Additionally, you can take the wet measurement **against the ceiling** above the shower nozzle and **next to the lead bend pipe**.

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Common Mold Inspection Errors

#2 - Marking Inspections as "Unfounded" and Partial or Incomplete Water Damage Assessments

Inspectors should only label an inspection "Unfounded" in IWM if there is ***no mold, no water damage, and no wet measurements identified.***

Some inspectors have made the error of labeling an inspection as "Unfounded" when there is no visible mold **even though there is visible water damage**. This common mistake can be corrected by:

- **Thoroughly checking all rooms** that may have a shared source of water damage (such as, a linen closet that shares a wall with a bathroom that has water damage).
- If belongings block access, ask the resident to move them. **If they refuse, note it in the work order and photograph the blocked area**.
- Record the ***exact*** **location** or wall of the water damage - e.g., the specific wall(s), floor, ceiling.

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Common Mold Inspection Errors

Inspectors should only label an inspection "Unfounded" in IWM if there is ***no mold, no water damage, and no wet measurements identified.***

Water from an adjoining wall

Resident's belongings blocking access

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Common Mold Inspection Errors

#3 - Improperly identifying Root Causes

The root cause is the fundamental reason for the occurrence of mold, water damage, or moisture.

- Mold and water damage often result from specific sources of water or excessive moisture—such as **leaking pipes** or **fixtures**, or **condensation**. In some cases, **poor ventilation** (like blocked exhaust ducts or consistently closed windows) can also be a contributing factor.
- To effectively address mold concerns, it's critical for inspectors to identify and correct the underlying causes of moisture. **Addressing the root cause not only resolves the immediate problem but also helps prevent it from recurring.**
- NYCHA mold inspectors can choose from a list of root causes, selecting up to 4 on a single work order.
- During the inspection, review the full list of potential root causes on your handheld device. Carefully assess each option and select those that **most accurately** reflect the conditions contributing to moisture, mold, or water damage in the unit.

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Common Mold Inspection Errors

#3 - Improperly identifying Root Causes

#	Root Cause of Mold or Mildew Inspection Drop-Down	Definition Pop-Up Upon Initial Selection
1	Caulking DML (Maintenance)	Selected when moisture is regularly pooling around the bathtub due to a lack of caulking. This should only be selected where the caulking is damaged or missing, not simply in cases where there is mold on the caulking.
2	Grouting DML (Bricklayer)	Selected when mold is found in a bathroom around the bathtub/shower and moisture was penetrating through the cracks of the tiles due to lack of grouting resulting in the need to replace tiles. This should only be selected where the grout is damaged or missing, not simply in cases where there is mold on the grouting.
3	Grouting DML (Plasterer)	Selected when mold is found in a bathroom around the tub surround requiring a carpenter's corrective action prior to a plasterer's replacement/ installation of grout.
4	Grouting/Caulking DML (Plasterer)	Selected when moisture is regularly pooling around a bathtub due to a lack of caulking which could cause grout chipping or tiles falling.
5	Grouting/Caulking DML (Bricklayer)	Selected when mold is found in the areas where there is missing mortar which allows water to penetrate the building.
6	Leak Around Window	Selected when there is visible mold around the window due to lack of sealant around the window, thereby causing water to penetrate.
7	Leak from Above - Previously Identified	Selected when the root cause or remediation work for the mold condition had been identified or abated by Property Maintenance staff on a prior work order.
8	Leak Through Façade	Selected when mold is caused by water penetration through a space in the façade (outside surface of the exterior wall).
9	Leak from Above/Beside Investigate	Selected when there is visible mold or water damage caused by an active leak from a unit above or beside the unit with a mold condition.

The iWM App on your Handheld has a pop-up to view a definition of each root cause to help you make an informed decision. **In many mold initial inspections, more than one root cause can be selected and up to four root causes can be selected during a mold inspection.** Pictured is a list of the potential root causes and the definition of each root cause.

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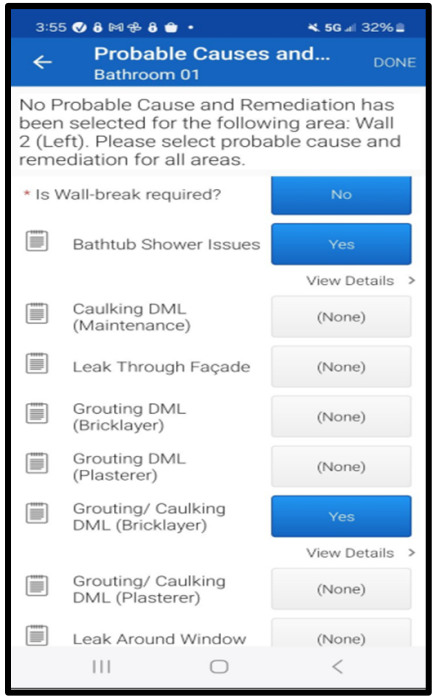
Common Mold Inspection Errors

#3 - Improperly identifying Root Causes

#	Root Cause of Mold or Mildew Inspection Drop-Down	Definition Pop-Up Upon Initial Selection
10	Other	Selected if the root cause is not listed or not evident through the standard assessment practices. A detailed explanation of visible conditions is required.
11	Pipe Insulation DML	Selected when mold is caused due to pipes sweating because of lack or improper pipe insulation in the wall.
12	Perimeter Surface Condensation	Selected when the mold or water damage is caused by warm air in the apartment coming into contact with relatively colder building surfaces (during cold outdoor weather), which results in condensation (sweating) on perimeter walls, adjacent ceiling surfaces, and concrete structural beams/columns.
13	Plumbing Leak - In unit	Selected when the mold issue was caused by a pipe leaking through the walls, causing visible water damage and/or mold.
14	Resident-Caused	Selected if the reported mold and/or saturated building materials were caused by a resident's actions or inactions (e.g., overflowing/clogged toilet or sink, not opening the window for ventilation during or after a shower, improper installation of the dishwasher or washing machine, covering the vent, making use of a dryer in the apartment, etc.).
15	Roof Fan Out of Order	Selected when the mold condition is caused by lack of ventilation due to out of order roof fan.
16	Roof Leak-Non-Capital	Selected when the mold or water damage is caused by a leak from the roof and a replacement or repair of a portion of the roof would be required.
17	Sink Supply Line Leak	Selected when the mold condition or water damage is caused by a leak in the supply line.
18	Sink Waste line Leak	Selected when the mold or water damage is caused by a leak(s) in the waste line.
19	Toilet Leak	Selected when the mold condition or water damage was caused by an active leak coming from the toilet.
20	Toilet Bowl/Tank Needs Barrier	Selected when the mold or water damage is caused by a toilet that runs continuously resulting in condensation or "sweating" on the toilet tank that drips onto the floor below
21	Tub Surround DML	Selected when the tub surround is damaged and needs to be replaced, which occurs if there is a chip in the tub surround or if moisture accumulates, causing mold to grow in the area which is chipping.
22	Vent Clogged/Covered	Selected when the mold or water activity condition is caused by a lack of mechanical or natural ventilation due to the vent being clogged or covered by someone/ something other than the resident (e.g., roof fan or vent covered by snow or other covering).

#	Root Cause of Mold or Mildew Inspection Drop-Down	Definition Pop-Up Upon Initial Selection
23	Window Inoperable	Selected when the mold condition is caused because of lack of ventilation due to the window's inability to open or close.



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Common Mold Inspection Errors

#4: Improper or Insufficient Documentation

Properly documenting the findings of your inspection is a critical step in this process. All work must be documented with photographs.

Upload two or more clear pictures of the condition:

(1) at least **one close-up** photograph of the condition or area of inspection.

(2) at least **one wide shot** photograph of the condition or area of inspection.

Close Up: Living Room Ceiling

Full View: Living Room Ceiling

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Common Mold Inspection Errors

Before

After

Employees **must** take and upload photographs of the work into Maximo using the handheld device. Required photographs include:

- The condition **before** work is performed.
- The condition **after** work is completed.
- Other photographs as needed to **demonstrate that work behind a surface was completed to standard**, e.g., photographs of insulated pipes, mold free areas.

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Common Mold Inspection Errors

#4: Improper or Insufficient Documentation

*Inspectors must also enter information found during the inspection. The **Compliance Department** has found the following types of common errors:*

- Failure to **document air flow** readings (CFM) from the anemometer.
- Failure to **record the humidity** reading of the room with the hygrometer.
- **Duplication of CFM or humidity reading** which appears as deceptive.
- **Incorrect answers** to the questions about whether conditions like mold or water damage are founded.
- Inability to properly identify water damage during inspections where the **affected area is relatively small.**
- Failure to identify water damage on **sheetrock**.
- Failure to record the **surface structure** (e.g., concrete, plaster, sheetrock) and **framing structure** (e.g., wood, steel) of the room's walls, floor, ceiling, and component(s).

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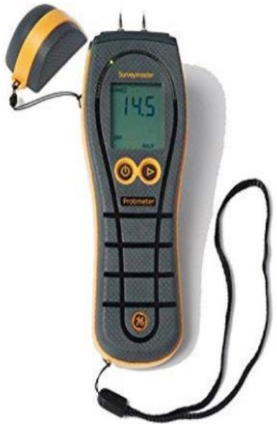
Knowledge Check

Match the measurement reading with the correct instrument:

600



45 RH%

30 CFM

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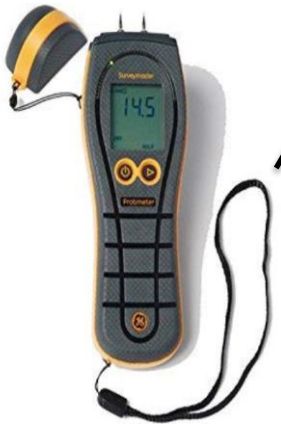
Knowledge Check

Match the measurement reading with the correct instrument:



600

45 RH%

30 CFM

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NYCHA MOLD INSPECTION

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Compliance Advisory Alert:

1: Entering Accurate, Equipment-based Data Into Mold Inspection Work Orders

Compliance Alert #1 – Data Entry

A small number of staff were found to be **estimating** — rather than accurately measuring — key data such as moisture, airflow, and humidity levels. These readings were being entered into work orders based on visual assessments or assumptions, not actual measurements. In some cases, staff either did not bring the required equipment to the inspection or did not know how to properly use it. In other cases, the necessary tools were missing from the development site altogether.

BE ON ALERT: Entering equipment-readings into Maximo without using (or properly using) the required equipment is an example of a **deceptive practice** and **should not** be practiced or condoned by any staff or supervisors.

This practice **violates** the mold standard procedure and the General Regulations of Behavior set forth in the Human Resources Manual.

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Compliance Alert #1 – Data Entry

Please check SP 040:14:1, “Mold/Mildew Control in NYCHA Residential Buildings for a full list of equipment needed to combat mold in our buildings.

- If a development does not have the equipment or the equipment is not functioning, the development **must immediately** order replacement equipment.
- **Verify** that the equipment is stored in a secure location that is **accessible** by those that have received the necessary mold inspection training.

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IWM App Review

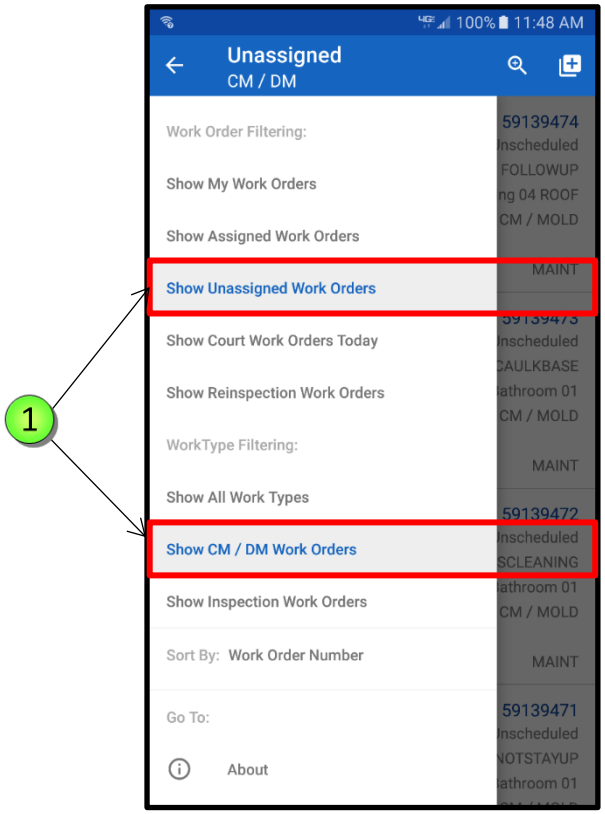
Mold Work Order Process – Inspection

1

The first **Parent Work Order** appears in:

- **Show Unassigned Work Orders**
- **Show CM /DM Work Orders**

NOTE: If the Work Order is assigned to a worker it will appear in **Show Assigned Work Orders** or **Show My Work Orders**.



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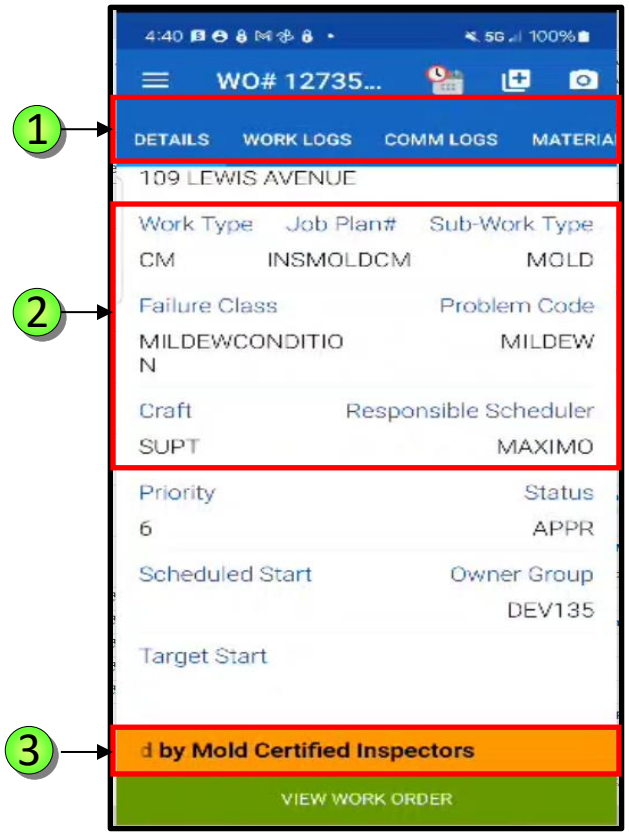
View Work Order Details

1. The user can review the **Work Order Details** by scrolling up and down on the **Details** tab.

2. The fields below are unique for the **Mold Inspection** Work Order:

   Work Type = **CM**
   Job Plan# = **INSMOLDCM**
   Sub-work Type = **MOLD**
   Failure Class = **MILDEWCONDITION**
   Problem Code = **MILDEW**

3. Only Inspectors who **completed Mold Inspection** course will be allowed to start Mold Inspection work order



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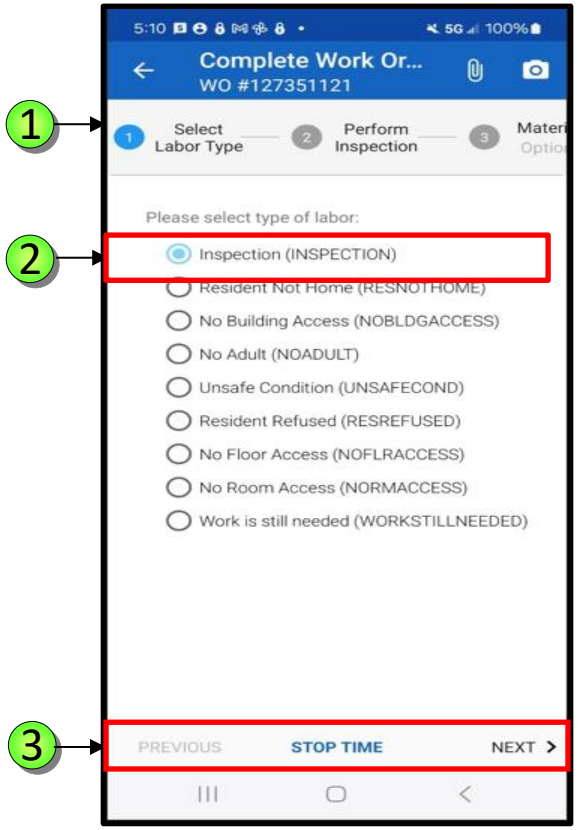
View and Select Labor – Start the Timer

1. After reviewing the **Work Order Details,** the user is now ready to begin the work. **START TIME** is displayed at the bottom of the screen.
2. Tap on **START TIME**

   Select **Inspection**
3. Tap **NEXT**



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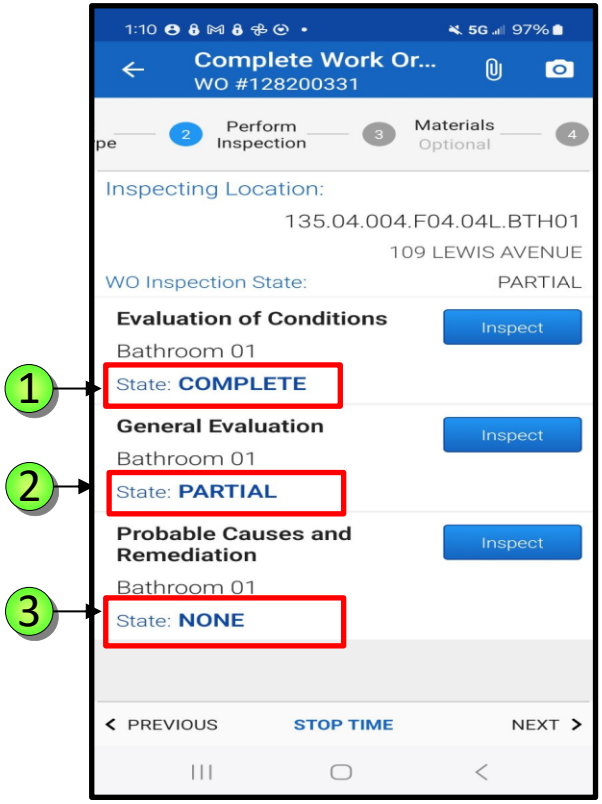
Inspection Status

On **Perform Inspection** screen you can see the **WO Inspection State.** This is the current **State** of the Inspection.

1. **COMPLETE** – All required results have been entered.
2. **PARTIAL** – Some results have been entered, but not **All** required results.
3. **NONE** – No results have been entered.
4. **NOTE: WO Inspection State** of the whole WO will appear on this screen and on the **Work Order List** screen.



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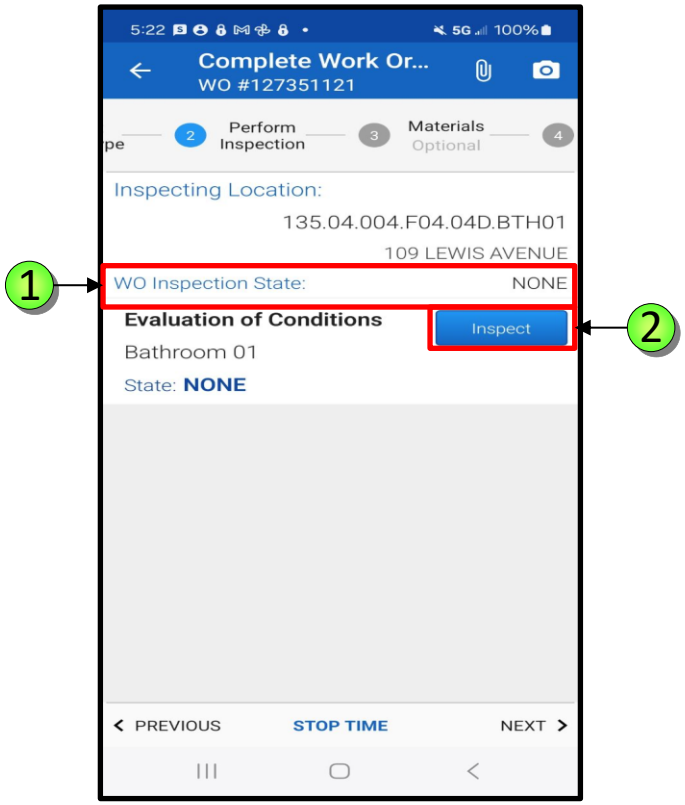
Perform Inspection

The first task in a series of tasks is

Task 1: Evaluation of Conditions

1. The **WO Inspection State** is **NONE.**
2. Tap **INSPECT**



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Step 1:
Evaluation of Mold Growth

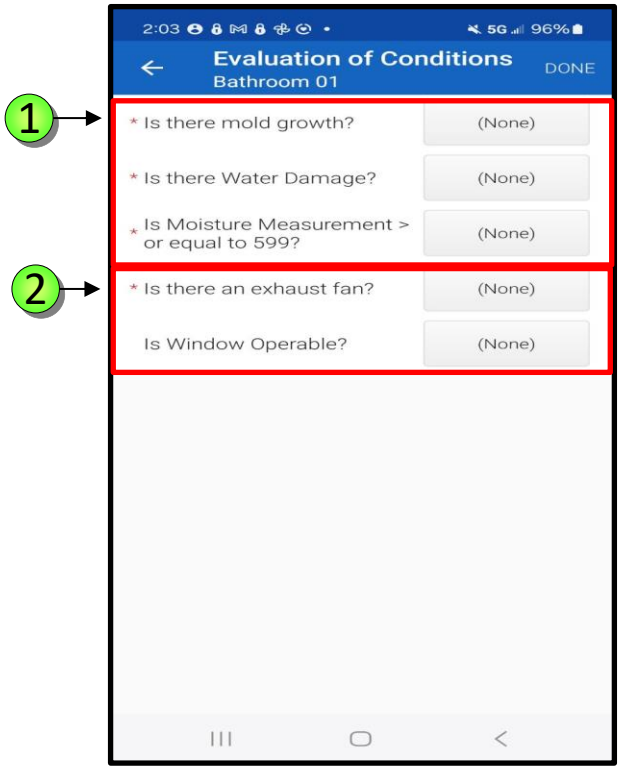
Items that must be inspected are marked by a red asterisks **(*)**

All questions that have an asterisk **(*)** are mandatory.

1 **Evaluation of Conditions** screen requires evaluation for:

- **Mold** Growth (Yes/No)
- **Water Damaged (Yes/No)**
- **Moisture Measurement >= 599 (Yes/No)**

2
- ***For bathroom or kitchen locations additional questions appear and one of the required to be answered for ventilation:***
  - ***Is there an exhaust fan?***
  - ***Is Window Operable?***



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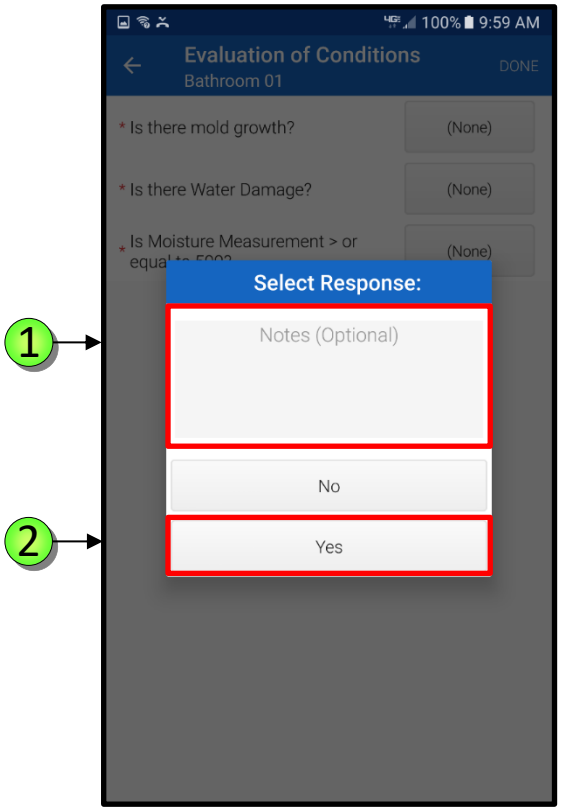
Evaluation of Mold Growth

The **Select Response** window display 3 options:

- **Notes** (optional)
- **No**
- **Yes**

1 In the **Notes** field, the user can input free-text information.

2 Tap **YES**



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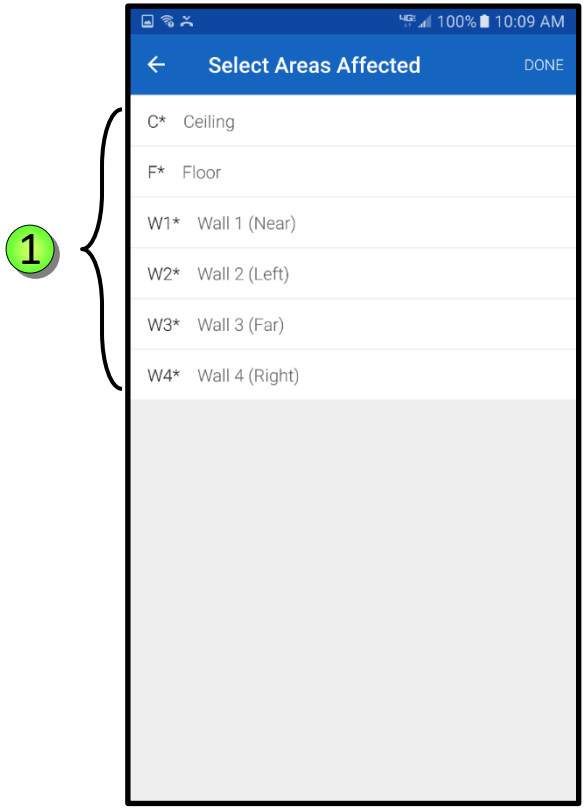
Evaluation of Mold Growth

1

The **Select Areas Affected** screen displays, all of the fields or areas to select.

To select an affected area, tap on it, **iWM** then highlights the selected area in **Green** color.

To unselect an area, tap on it again and the **Green** bar disappears.



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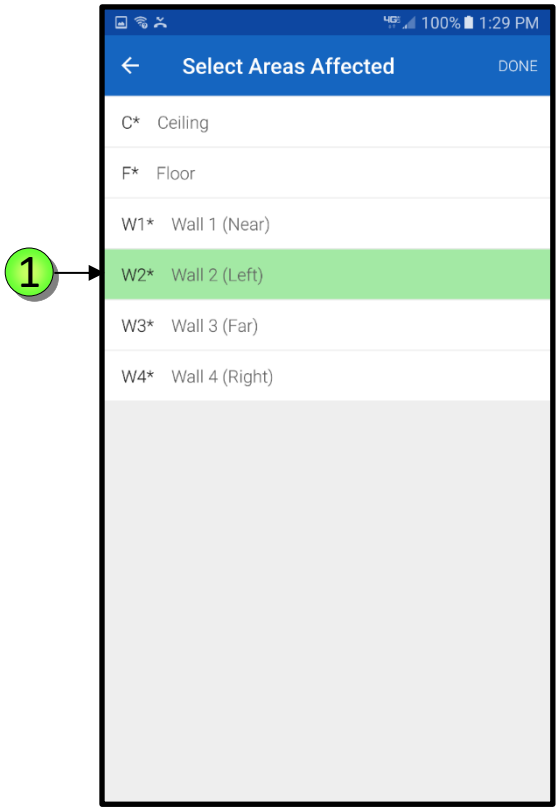
Evaluation of Mold Growth

1. Tap on **W2* Wall 2 (left)**, the system highlights it in Green.

   Tap **DONE**



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Evaluation of Mold Growth

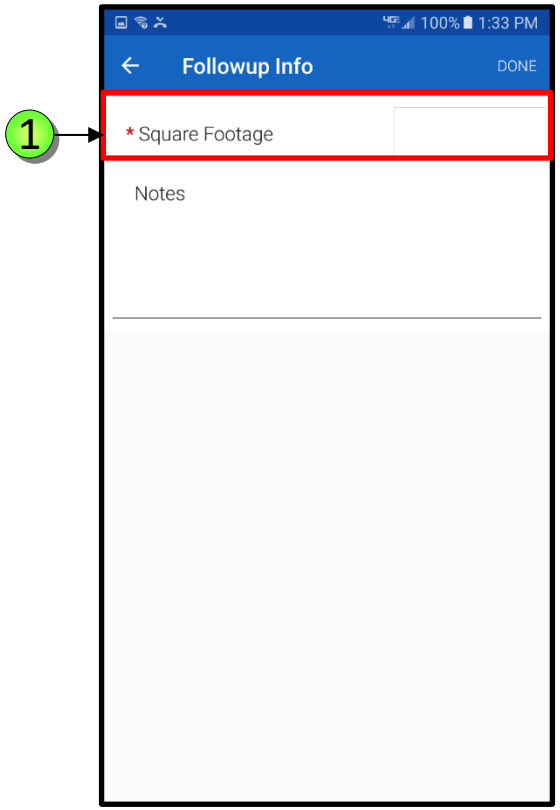
1

Tap inside the field and the device keyboard displays.

Type **25**

Tap **DONE** on the device keyboard

Tape **DONE**



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Evaluation of Mold Growth

1. The second Mandatory question on the **Evaluation of Conditions** screen is: **"is there Water Damage?"**

2. Tap **NONE** next to **is there Water Damage?**

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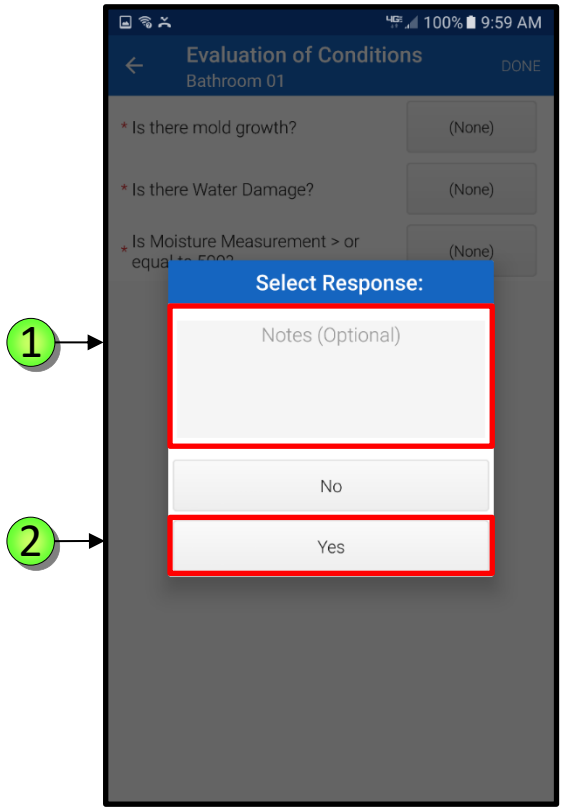
Evaluation of Water Damage

The **Select Response** window display 3 options:

- **Notes** (optional)
- **No**
- **Yes**

1 In the **Notes** field, the user can input free-text information.

2 Tap **YES**



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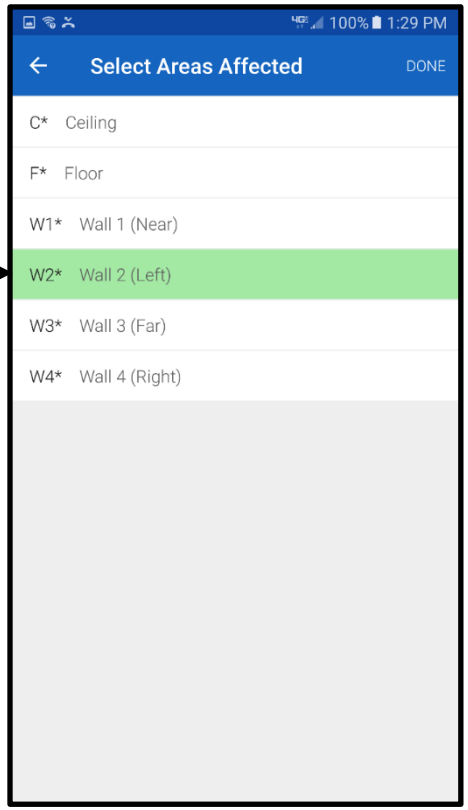
Evaluation of Water Damage

1. Tap on **W2* Wall 2 (left)**, the system highlights it in Green.

   Tap **DONE**



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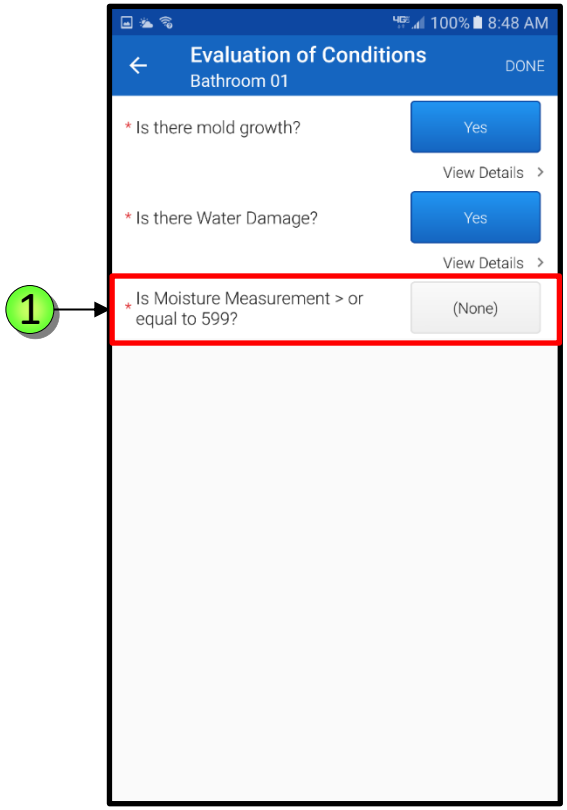
Moisture Measurement

1

The last question on the **Evaluation of Conditions** is to evaluate the moisture level.

Evaluate the moisture measurement level (greater than) >= 599

Tap **NONE**



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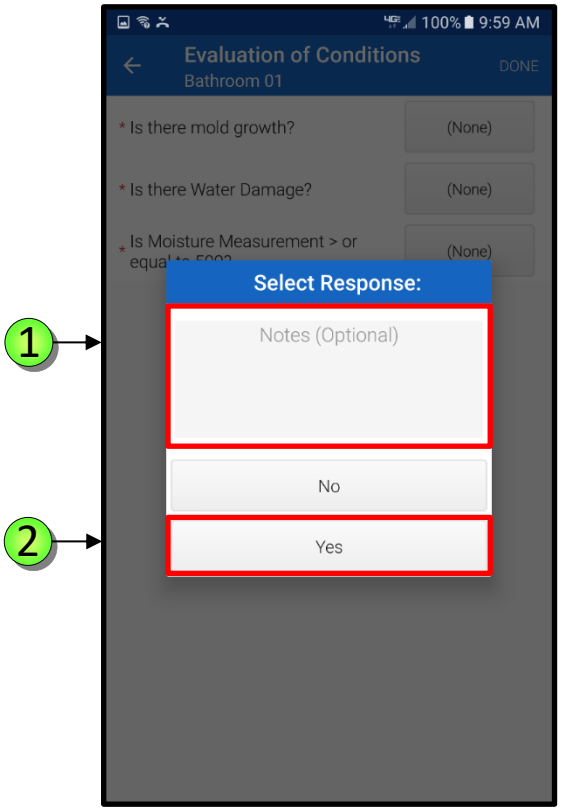
Moisture Measurement

The **Select Response** window display 3 options:

- **Notes** (optional)
- **No**
- **Yes**

1 In the **Notes** field, the user can input free-text information.

2 Tap **YES**



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Moisture Measurement

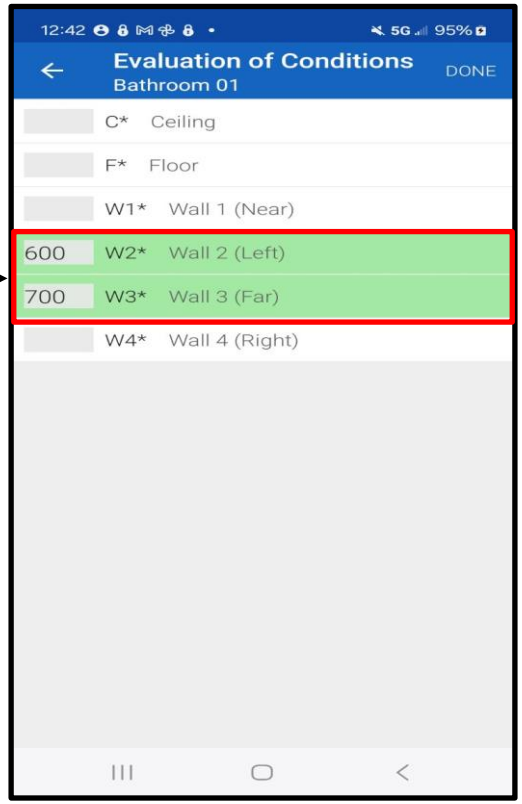
1

Input measurements for every surface area where moisture measure.

Enter measurements for **Wall 2 and Wall 3**

Tap **NONE**

1



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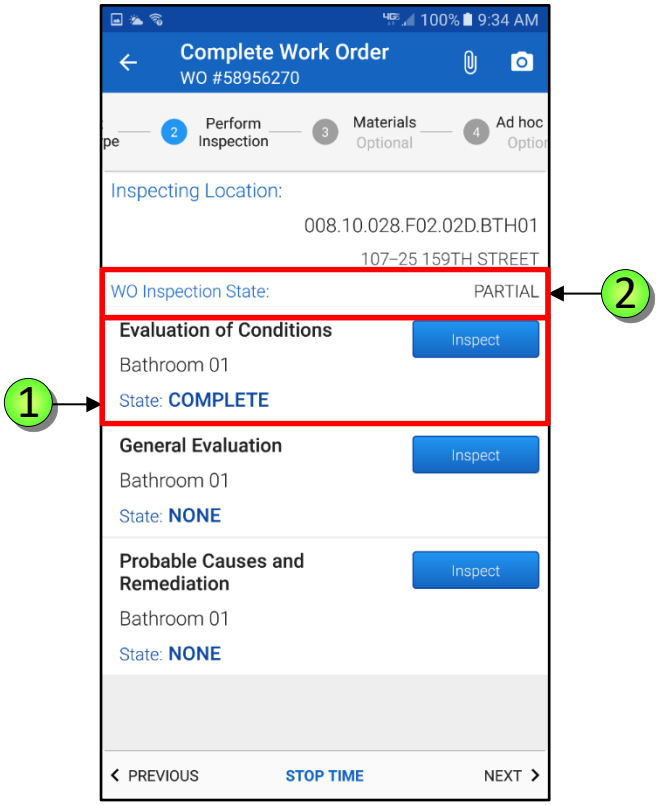
Evaluation of Conditions

1. The **Evaluation of Conditions** status is now **COMPLETE,** and
2. **WO Inspection State** is **PARTIAL**.

NOTE: If the **Evaluation of Conditions** (**Task 1**) has all the answers as **NO** for **Mold Growth**, **Water Damage** and **Wet Reading** questions, then **do not** answer the rest of the inspection questions.

Inspection is complete.

The inspector can then take a **photo** and **submit** the inspection results to **Maximo**.



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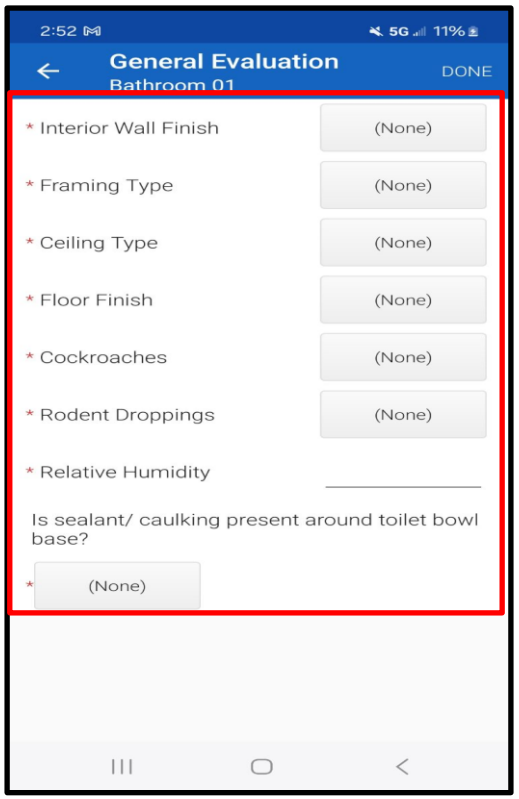
Step 2:
General Evaluation

1

Items that have to be inspected are marked by a red asterisks **(*)**

All questions that have an asterisk **(*)** are **mandatory**.

Tap **NONE,** next to **Interior Wall Finish**



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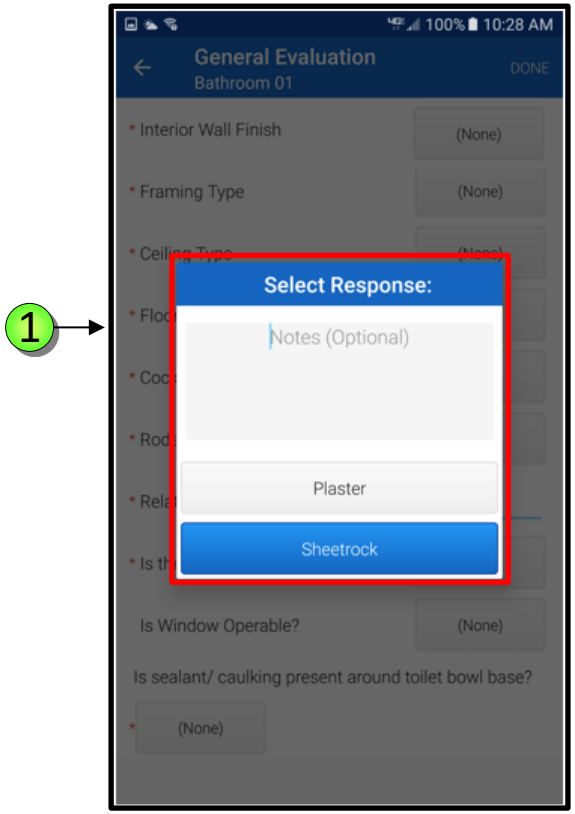
General Evaluation

1

Items that have to be inspected are marked by a red asterisks **(*)**

All questions that have an asterisk **(*)** are **mandatory**.

Tap **NONE,** next to **Interior Wall Finish**



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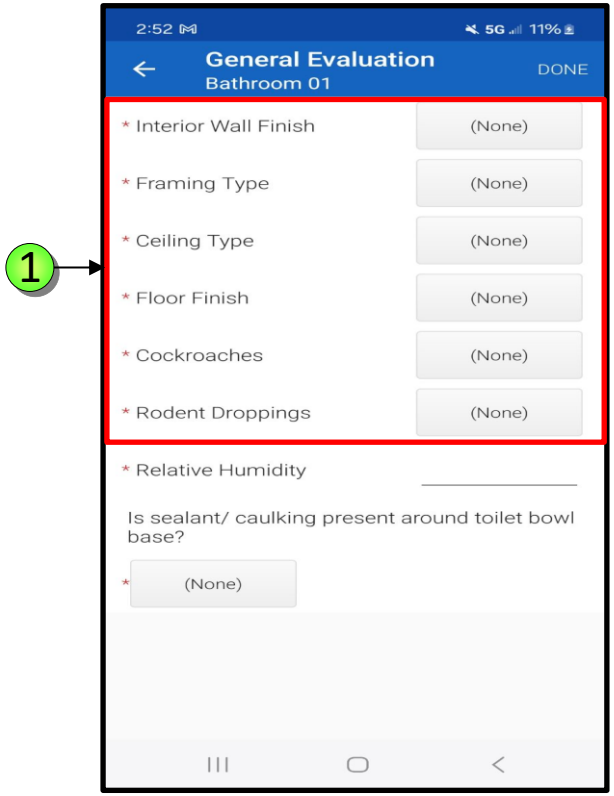
General Evaluation

The process is the same for the following items:

1

- **Framing Type**: **Steel** or **Wood**
- **Ceiling Type**: **Concrete** or **Sheetrock**
- **Floor Type**: **Ceramic**, **Vinyl** or **Wood**
- **Cockroaches: No** or **Yes**
- **Rodent Droppings: No** or **Yes**

Tap **NONE** next to **Framing Type**



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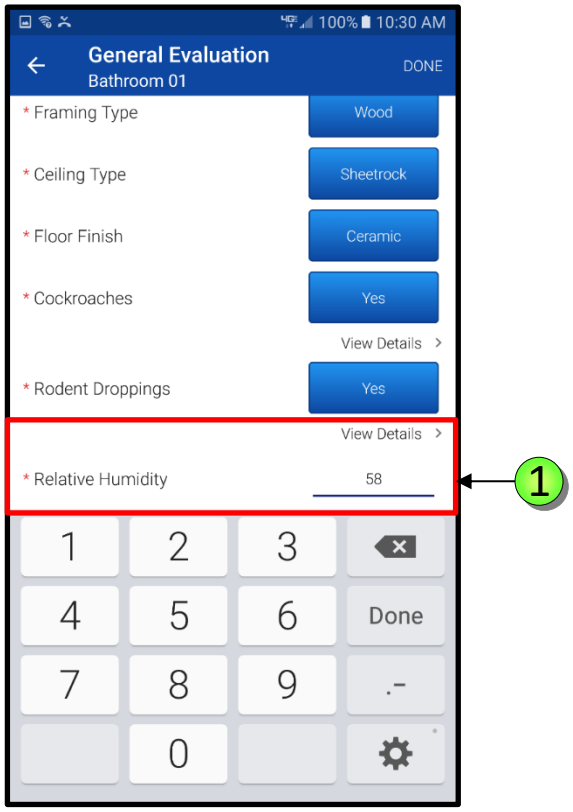
General Evaluation

The Supervisor shall input the **Relative Humidity** of the room. Upon tapping the **Relative Humidity** field, the device keyboard appears.

1 Type **58**

Tap **DONE** on the device to remove the keyboard.



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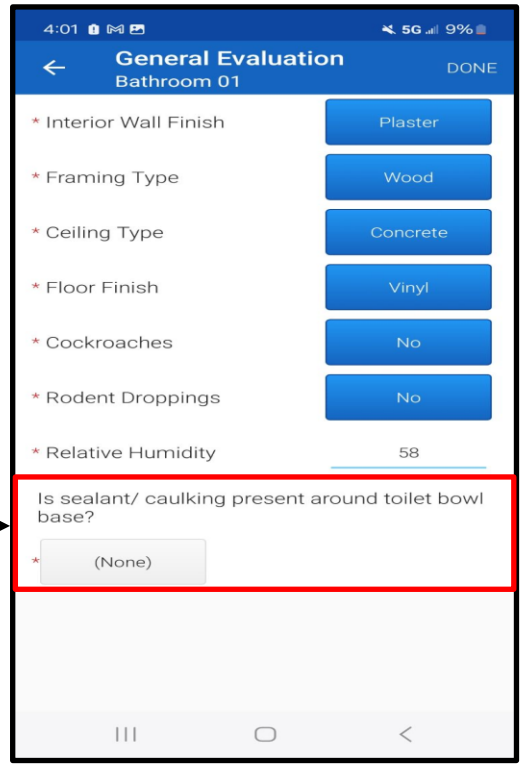
General Evaluation

1 If the location is a bathroom, the Supervisor must answer the question, "**Is sealant/caulking present around toilet bowl base?"** as **YES** or **NO.**

Tap **NONE** and select **NO** from the **Select Response** window.

NOTE: Maximo will auto-generate a Work Order, if the answer is **NO**, to fix the **caulking/sealant** with mold resistant caulking, upon submission of the inspection results.

Tap **DONE**



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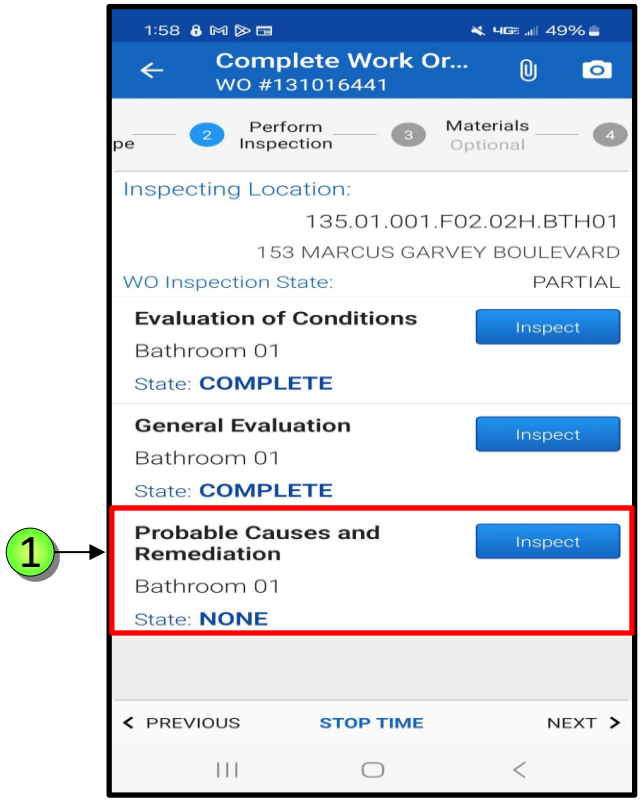
Step 3:
Probably Causes & Remediation

The third task in a series of tasks is

1 **Task 3: Probable Causes and Remediation**

Tap **INSPECT**



1

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Probable Causes & Remediation

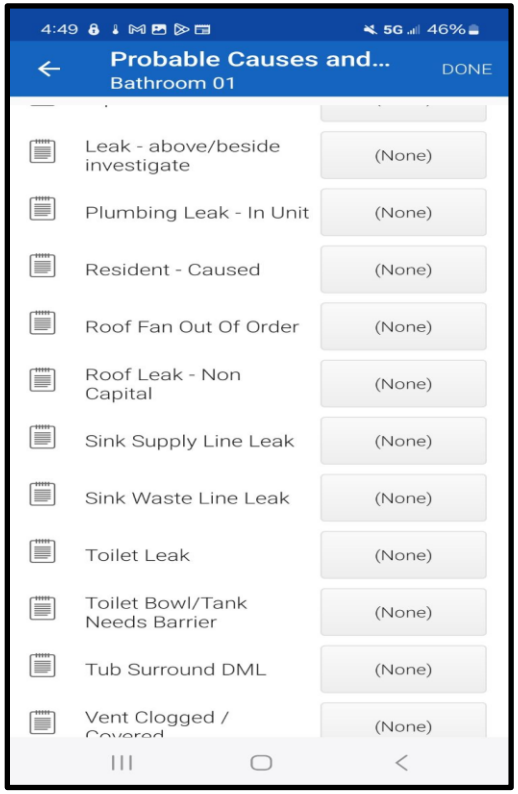
On the top of the screen, **iWM** is reminding the user to select a **Probable Cause and Remediation method** for the **Walls 1**, **Walls 2**, and the **Floor**.

Those were the **Affected Areas** selected in **Task 1: Evaluation of Conditions**.

IWM restricts user to select up-to 4 Probable Causes

Selecting **Remediation** for all these walls is **mandatory**.

The **Wall-break** is a **Mandatory** question.



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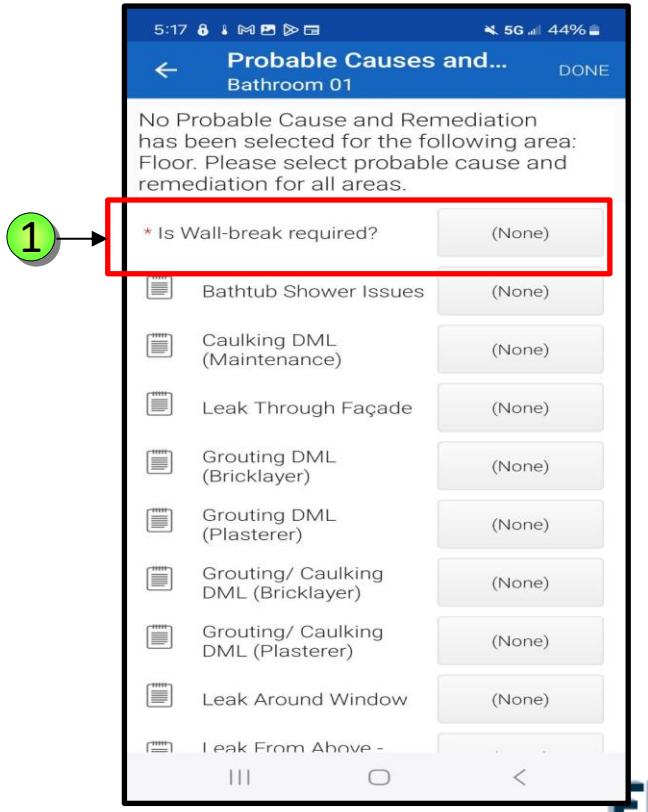
Probable Causes & Remediation

The **Wall-break** is the only **Mandatory** question on the screen.

You must select **<u>at least</u> ONE** other **Probable Cause** on the **Probable Causes And Remediation** screen (up-to 4).

The Supervisor will answer **YES** for whichever causes are applicable. **<u>Only select what's needed</u>**.

Tap **NONE** next **Wall-break** question.



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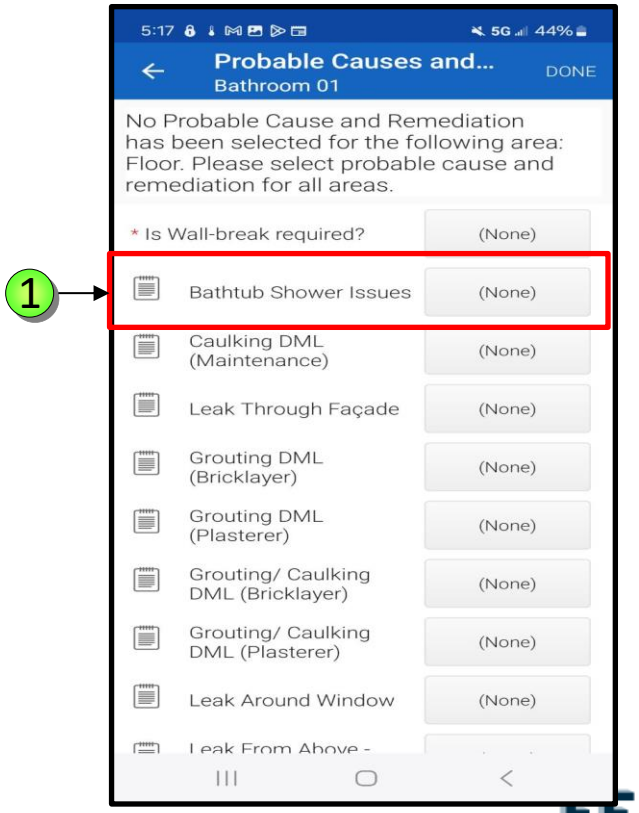
Probable Causes & Remediation

If the Supervisor answered **YES** for the **Probable Root Cause**, select the **Areas Affected** by the specific cause.

NOTE: Only **"Areas Affected"** that were selected from **Task 1** will show in list. And **EACH** surface **Area Selected** from **Task 1** must be accounted for against a **Probable Cause**.

Multiple surface areas can be selected per **Probable Cause**.

Tap **NONE** next to **Bathtub/ Shower Issues**



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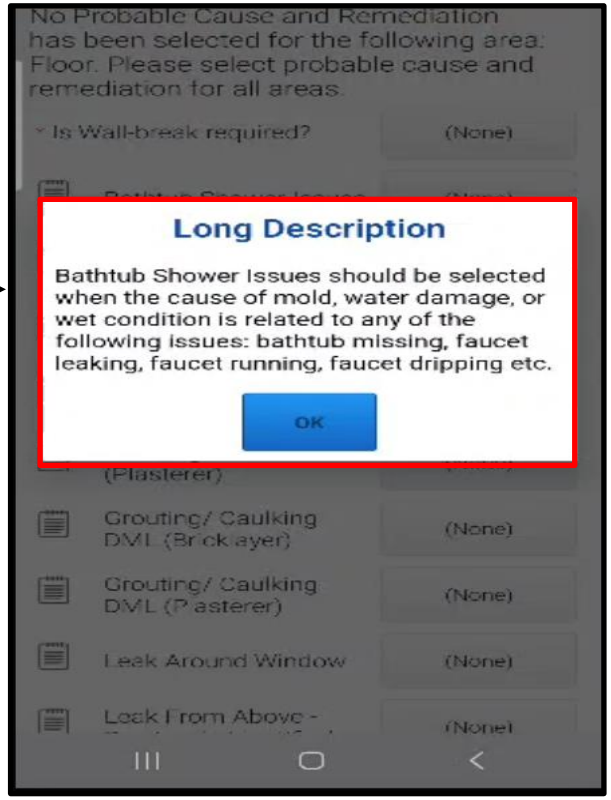
Probable Causes & Remediation

1

Inspector can get further detail on each root cause by tapping notepad

1



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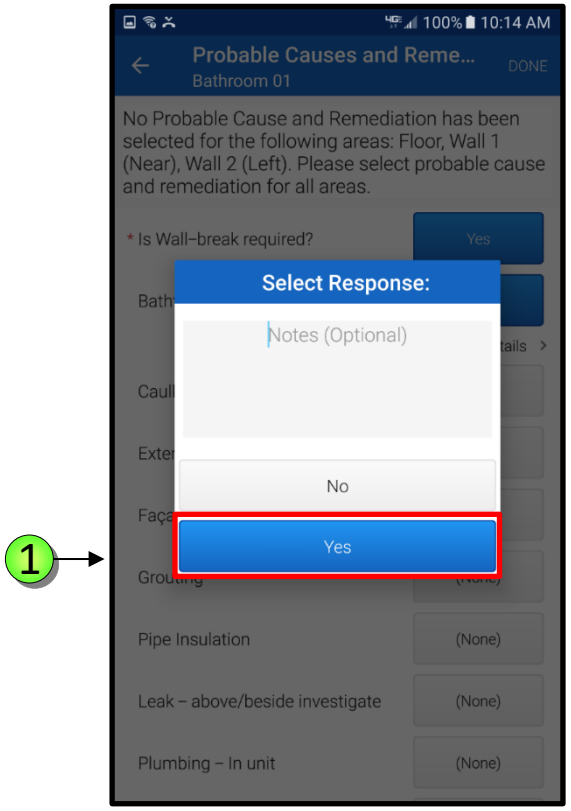
Probable Causes & Remediation

The **Select Response** window appears, the available answers **YES** or **NO**.

Tap **YES**



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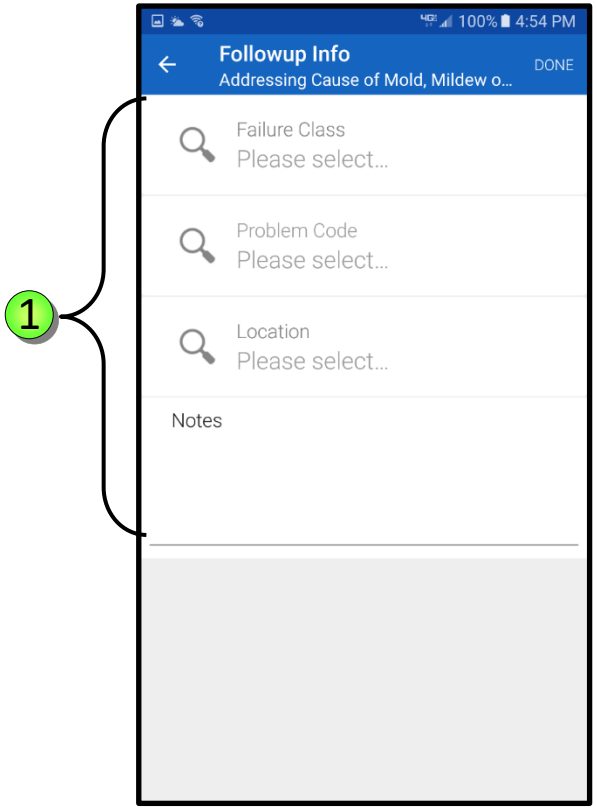
Probable Causes & Remediation

The **Followup Info** screen displays, with 4 fields:

- **Failure Class**
- **Problem Code**
- **Location**
- **Notes (Optional)**

Tap **Failure Class**



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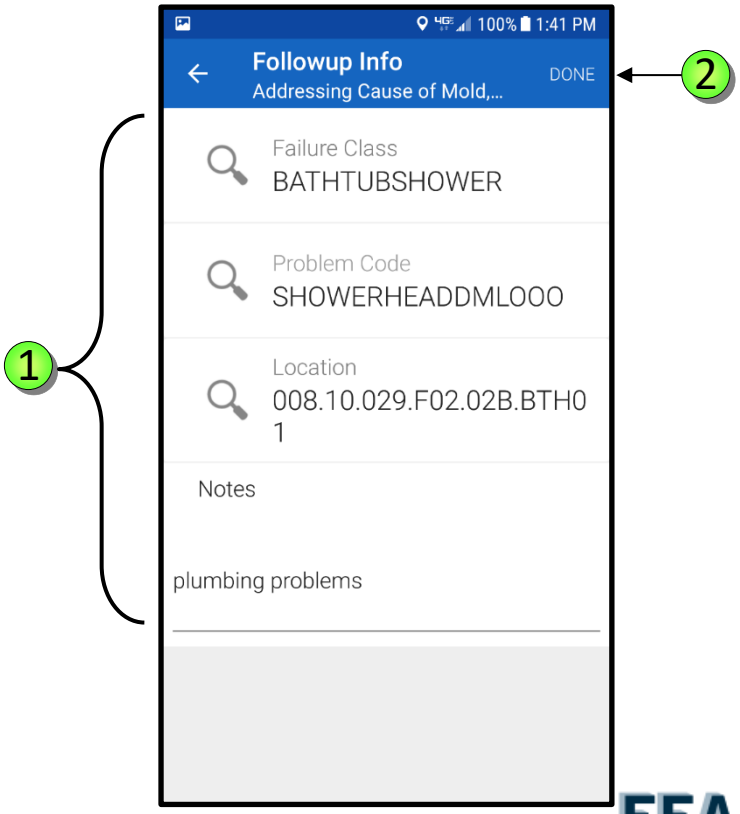
Probable Causes & Remediation

The completed **FollowUp Info** screen, with all the fields.

Tap **DONE**



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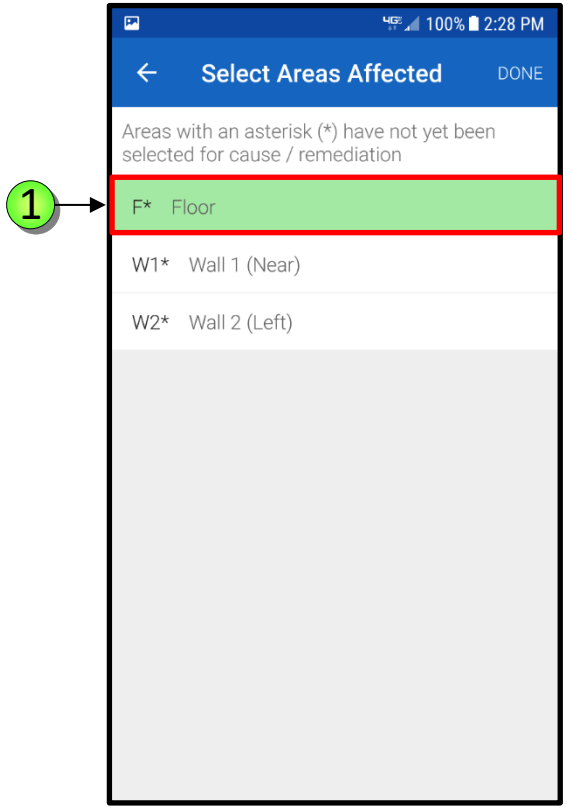
Probable Causes & Remediation

Select the **Areas Affected** by the **root cause repair**, One area at a time.

Tap **F* Floor.**

Once selected, **iWM** will highlight it in **green** color.

Tap **DONE**



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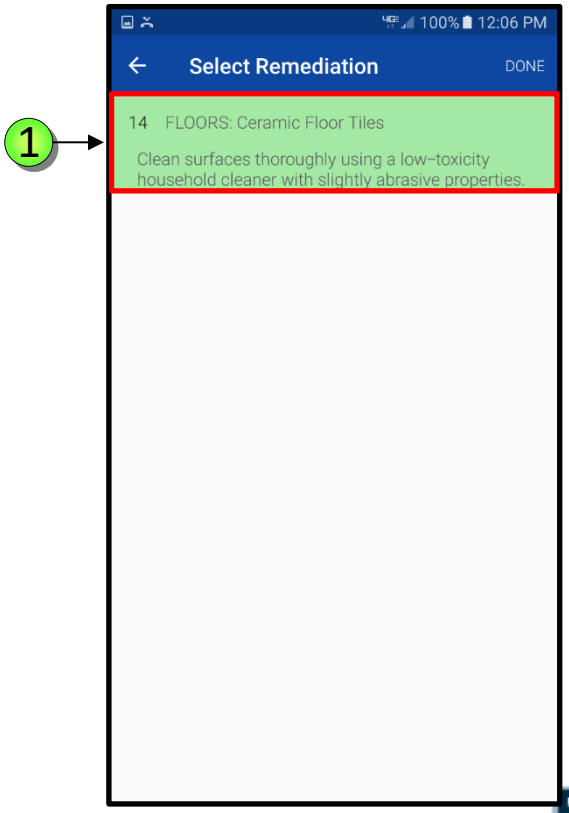
Probable Causes & Remediation

1

The **Select Remediation** screen appears. Select the **Remediation Method** from the displayed list. Tap on **No. 14**, **Floors** by tapping on it. Once selected **iWM** will highlight in **green** color.

Notice the **Reference Number** associated with the Remedy as this what will display in the **View Details**.

Tap **DONE**



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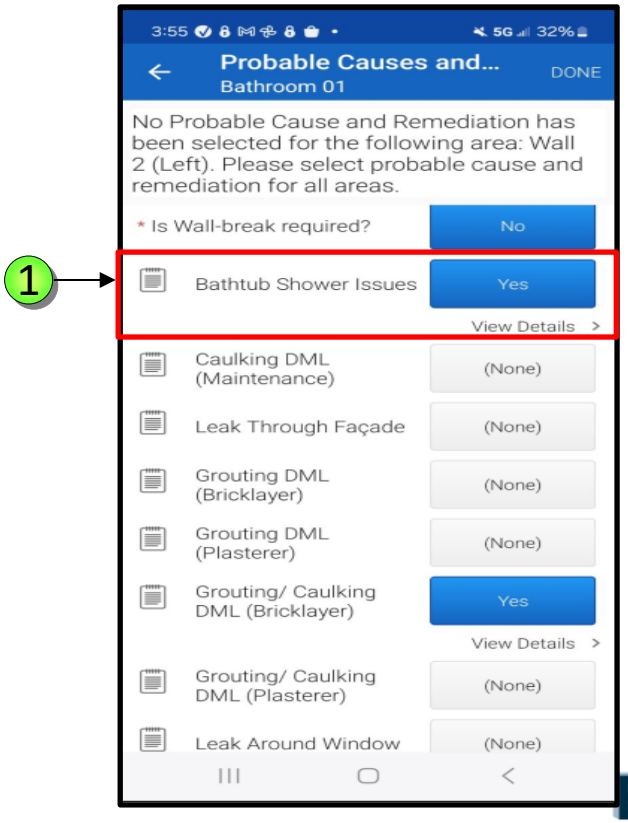
Probable Causes & Remediation

1. Tap on **View Details** below the **Bathtub/Shower** field to review information entered.



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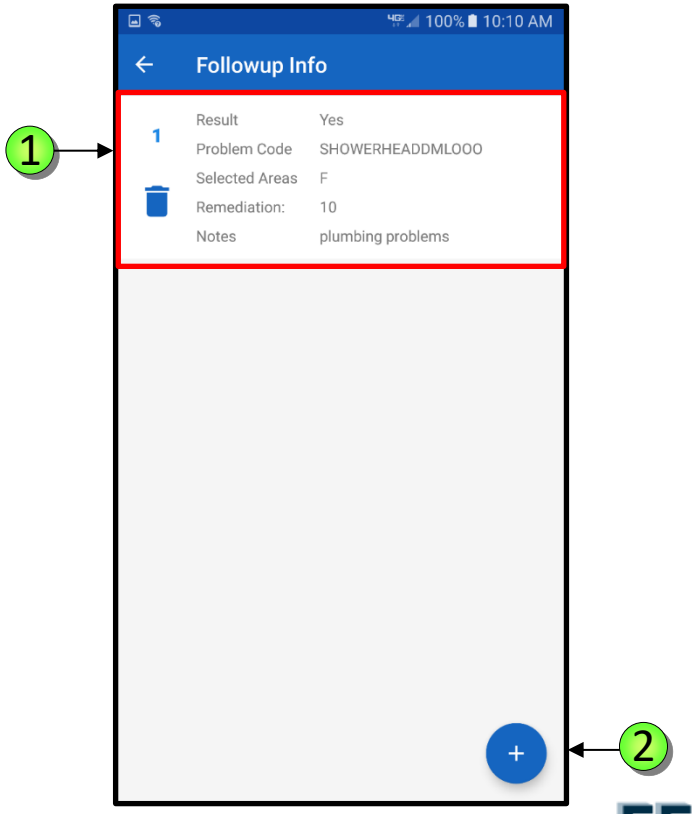
Probable Causes & Remediation

1. Notice the corresponding number is replacing the **Remediation** method that was selected. In this case is number **10**.

2. Tap **plus sign** (+), to add more **Root Cause repair** methods about the same wall.

   Then follow the same process as before.



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Note:
Leak From Above – Previously Identified

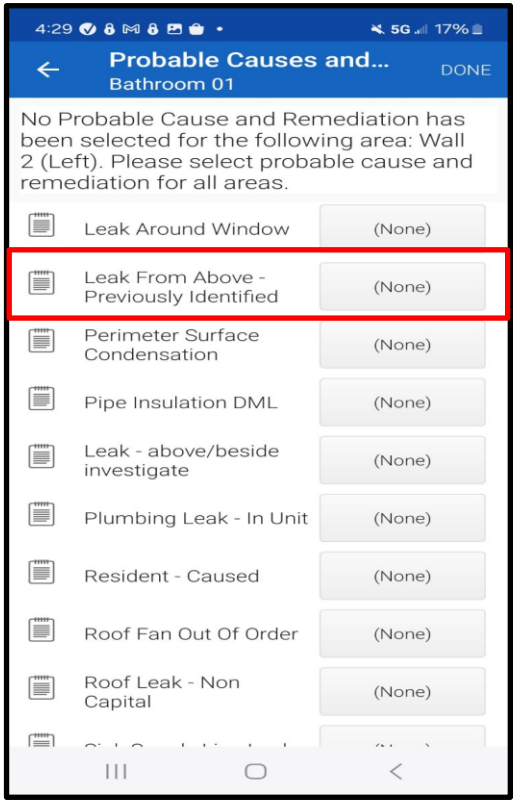
1. Leak From Above - Previously Identified will require staff member to enter a “Related WO” that is linked to this Probable Cause

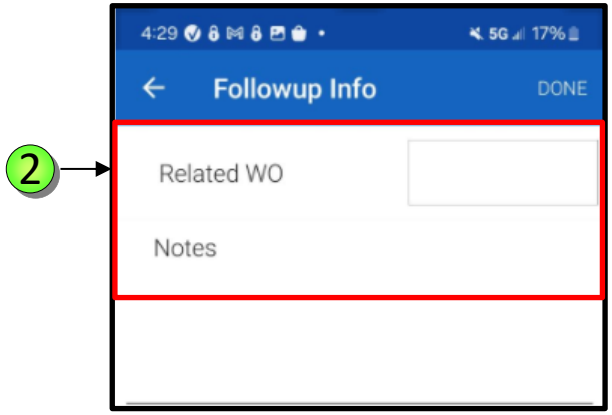
   Pre-inspection to look-up leak history for the specific unit.

   Mold WO does not cancel or duplicate previous generated tickets.

   Escalates the matter if root cause is being caused by something else if it keeps reoccurring.

   A note and pictures are required for this root cause.





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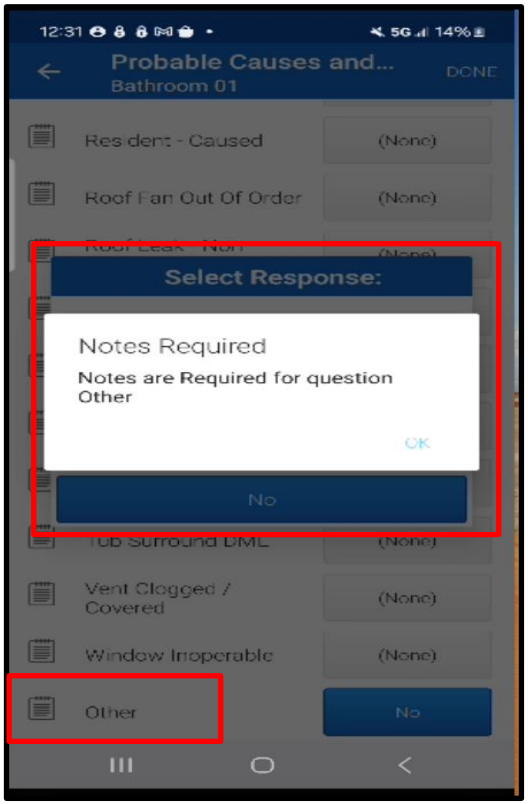
Note: Other

1. This option should be selected if the root cause is not listed or not evident through the standard assessment practices.

   A note and pictures are required for this root cause.



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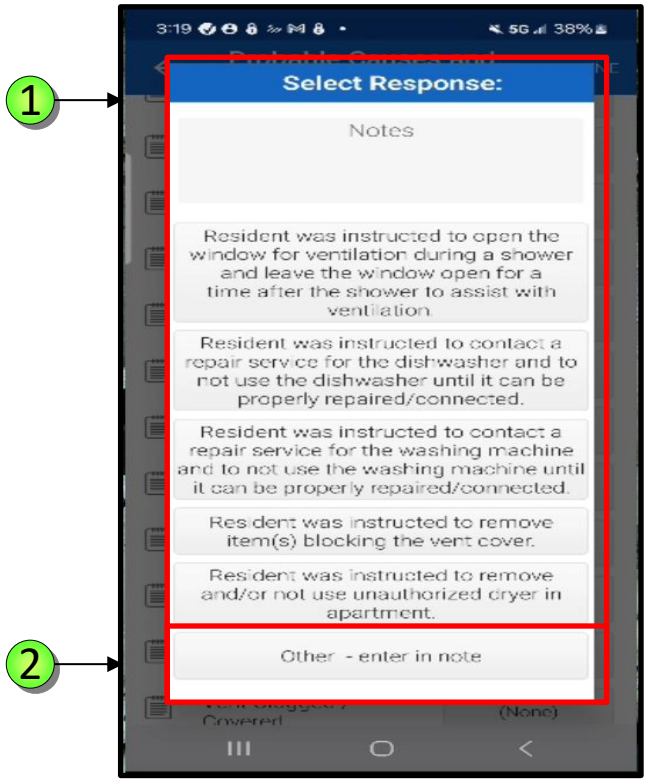
Note: Mold Root Causes – Resident Caused

1. Issues that can be prevented by adjusting resident behavior and improving resident education via Mold Busters.

   Select this ONLY when there is proof that the resident's direct behavior is the cause.

2. Resident-Caused by Other Actions (Code 6) * Mold Busters Education will be needed for the resident(s) for future prevention of mold. A mandatory inspection will be needed to find the exact reason(s).

   A note and pictures are required for this root cause.



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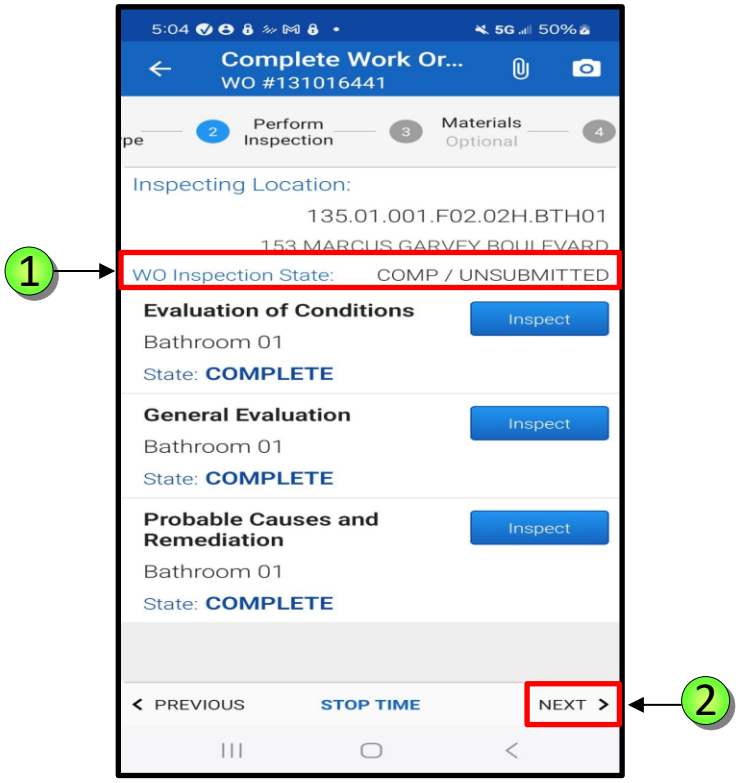
Inspection Status

1. All the **three tasks** now have a Status of **COMPLETE**. The **WO Inspection State** is **COMP/UNSUBMITTED**.

   The Supervisor has answered **all the required fields** after performing the inspection.

2. Tap **NEXT**



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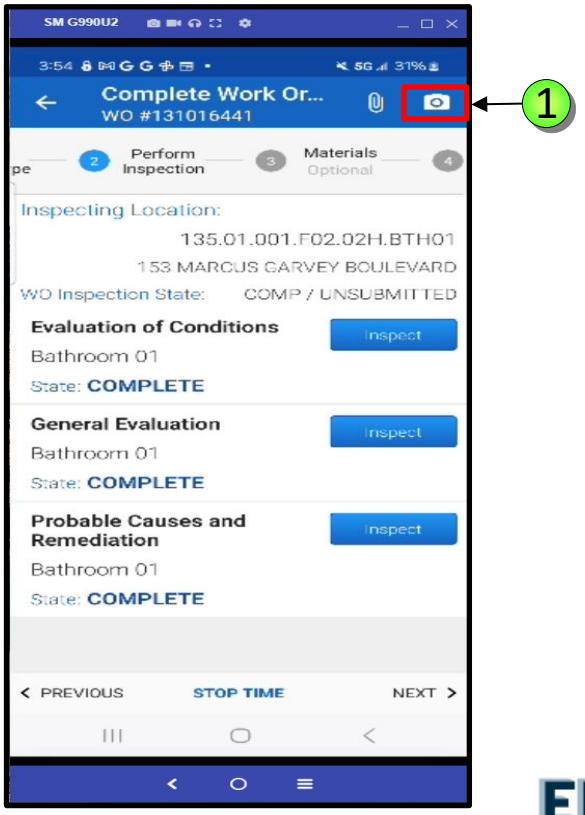
Taking Photos for Work Orders

NYCHA has made it very easy to add photos to Work Orders. Photos can be taken anytime during the work flow and automatically attached to the Work Order.

NOTE: Photos are required for **Mold and Mildew Work Orders** as evidence for supervisors and courts to evaluate.

Tap on the **Camera icon** in the upper right corner to open the camera.



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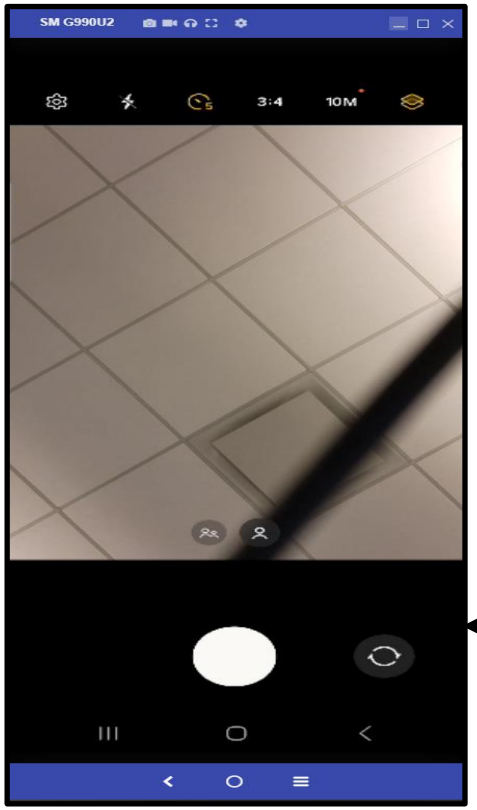
Taking Photos for Work Orders

1. Tap the image on the preview screen to focus the camera.

2. Then, tap the **Circle** icon at the bottom of the screen to take the photo.

NOTE: Once you save a picture you can not delete it.



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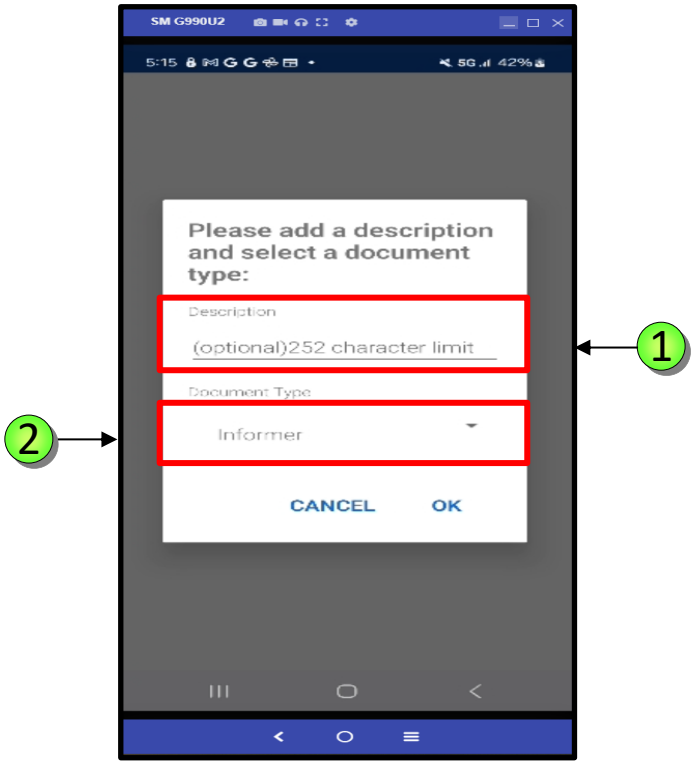
Taking Photos for Work Orders

1. You can then type a **Description** to the photo taken.

   Document Type is defaulted to **Informer.**

2. **By utilizing drop down,** inspector can also select Mold Receipt to **upload receipt**.

   Tap **OK**



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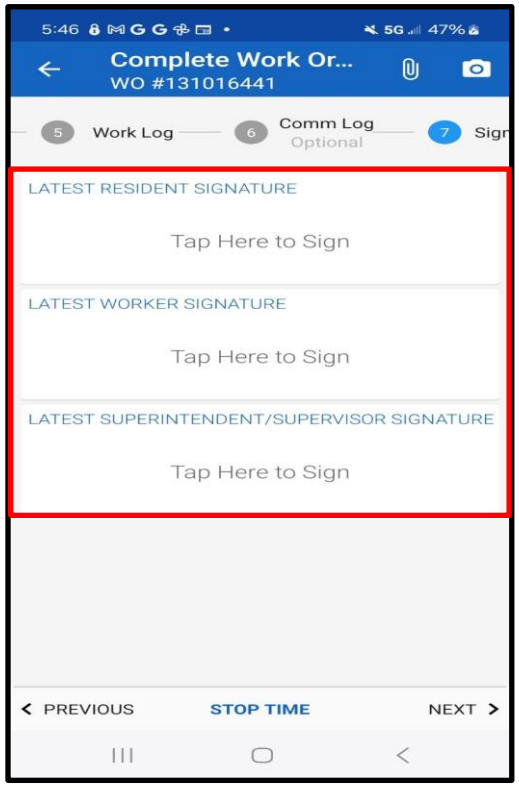
Obtaining Signatures

1. The **Signatures** screen will display three selections **RESIDENT**, **WORKER** and **SUPERINTENDENT**.

   Worker Signature is Optional, however it should be used when Inspection is done by Maintenance Worker



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Obtaining Signatures

1. The **Resident: Info** screen is displayed. If the **Resident Refused Work** to be completed, check the box.
2. The Resident can enter in their **NAME** and any **COMMENTS**, then tap **DONE**.

NOTE: This information is optional.

3. Tap **NEXT**

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Root Cause Case Study

Mold on Bathtub Caulking

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Root Cause Case Study - Mold on Caulking

- Mold commonly grows on caulking around bathtubs, tub enclosures, and ceramic tiles in all residences.
- Mold can result from the buildup of organic material on caulking and moisture from normal shower use.
- Occupants can control this growth through use of household cleaners. However, residual discoloration may be present after cleaning. If not routinely maintained, caulking may deteriorate, creating water migration pathways.

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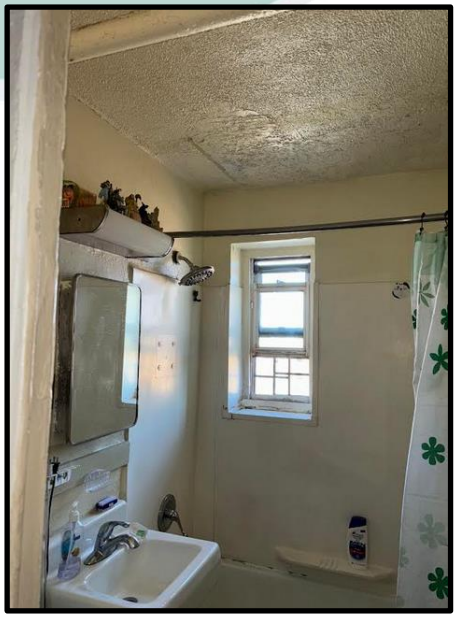
Root Cause Case Study - Mold on Caulking

Scenario - mold complaint in bathroom



Findings:

- No mold growth on the painted plaster walls or the painted concrete ceiling.
- Mold growth/discoloration on caulking around bathtub and tub enclosure
- No visible water damage on the walls or ceiling.
- No wet readings on the walls or ceiling.

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Root Cause Case Study - Mold on Caulking

- **Do NOT** close the work order as unfounded.
- Answer "**Yes**" to the question "Is there Mold Growth?" in the *Evaluation of Conditions* section of the mold inspection work order.
- Record "Areas Affected" as the **Wall along which the bathtub runs.**
- Record **square footage** of mold growth (approx. 1 square foot).
- For Mold Remediation method select **option 13** (Minor mold growth (on painted surfaces, shower grout, cabinets, etc.). Maximo will automatically create a work order for Caretaker X.

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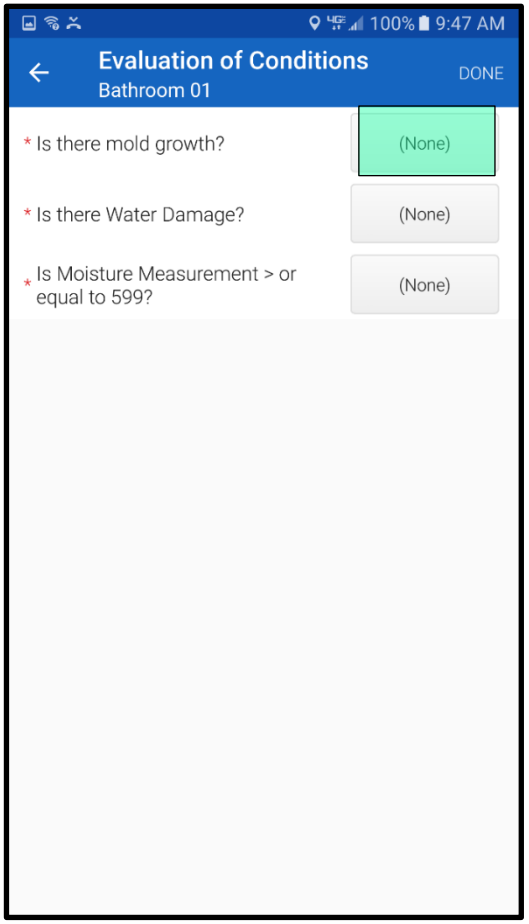
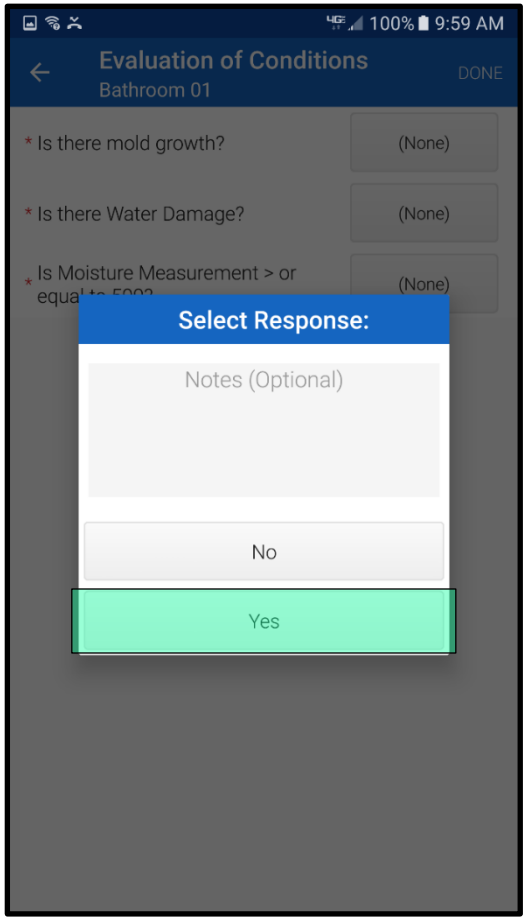
Root Cause Case Study - Mold on Caulking





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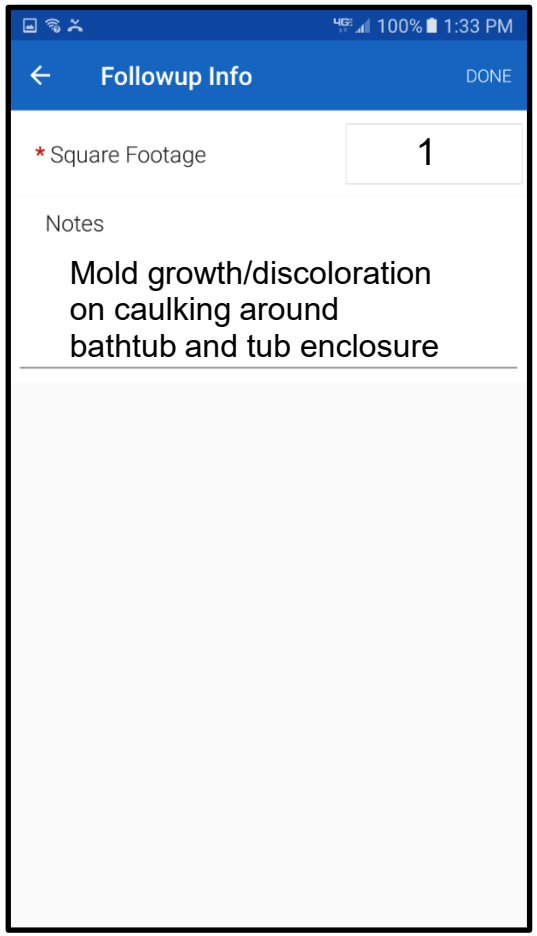
Root Cause Case Study - Mold on Caulking



1

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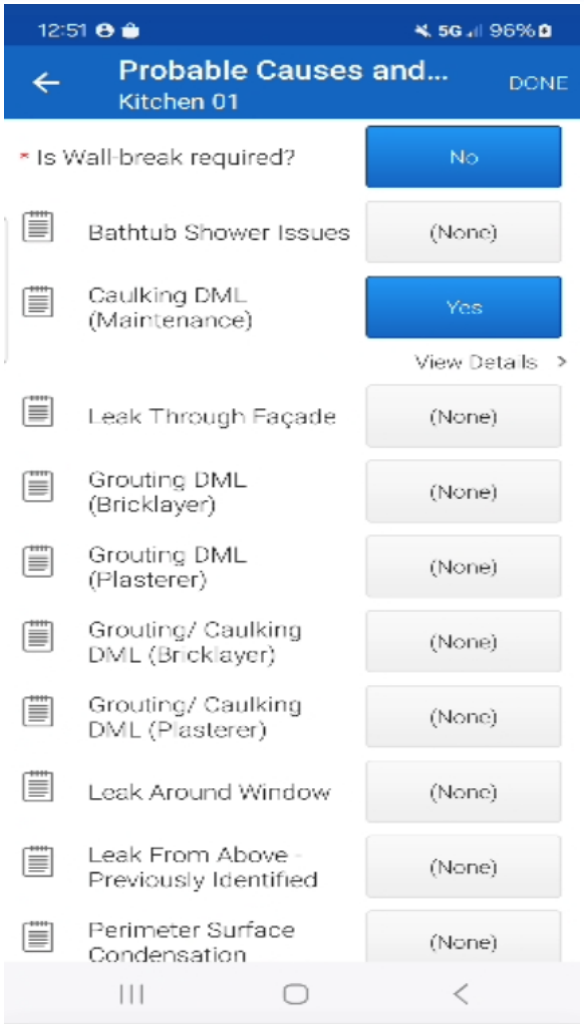
Root Cause Case Study - Mold on Caulking



- In the *Probable Causes and Remediation* section of the mold inspection work order, select **"Caulking DML (Maintenance)"** from the probable root cause list.
- Indicate in notes: **"mold on caulking - replace".**

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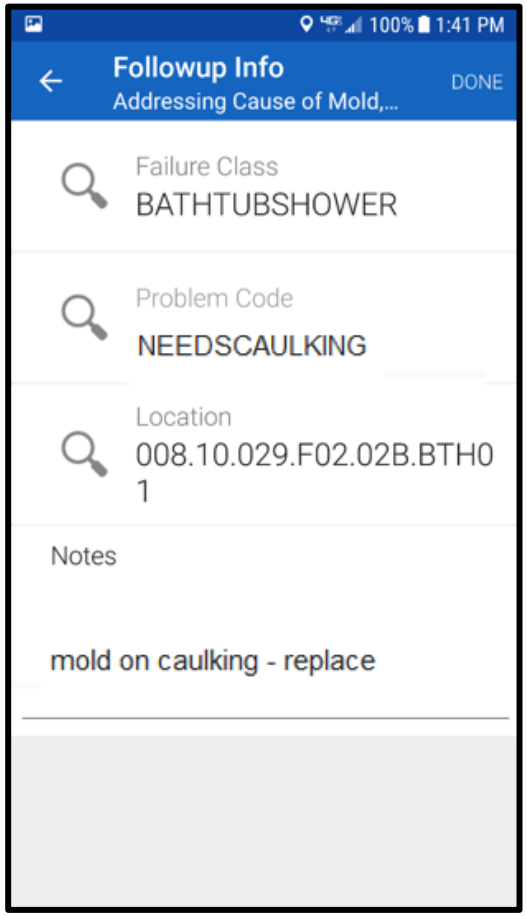
Root Cause Case Study - Mold on Caulking



- In the *Followup Info* section of the mold inspection work order, create a child work order to replace moldy caulking using the FC/PC combination **BATHTUBSHOWER** and **NEEDSCAULKING.**

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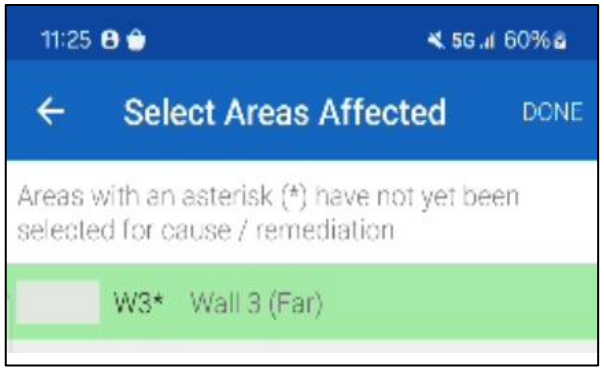
Root Cause Case Study - Mold on Caulking



- In the *Select Areas Affected* section select **W3*.**

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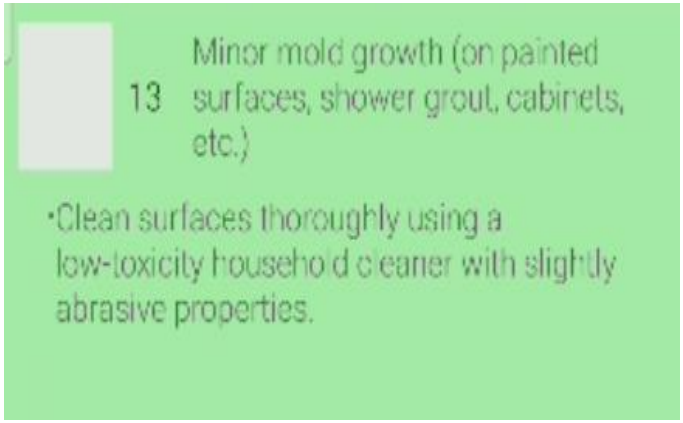
Root Cause Case Study - Mold on Caulking



- Select **Remediation Method 13** "Minor Mold growth (on painted surfaces, shower grout, cabinets, etc). Maximo will create mold cleaning work order assigned to Caretaker X.

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IWM Practical Exercises

Mold Inspection Work Orders – CM

Kitchen 1 Issues
Mold in Bathroom
Apartment 2 Kitchen

Mold QA Work Orders – IN

Kitchen 01
Bathroom 01
Kitchen 02

Mold Re-Inspection Work Orders – CM

Kitchen 01
Bathroom 01
Kitchen 02

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End of Day

Thank you!
Have a great rest of the day!

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NYCHA MOLD TRAINING

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Building Science for Inspectors – Day 2

NYCHA MOLD TRAINING

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Remediation Overview

Follow the C's

- **Contain** Use containment to control the spread of contamination
- **Control** Use specialized techniques & products to kill the mold
- **Clean** Use anti-fungal cleaners & disinfectants

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Overview of Containment

- The goal of containment is to **limit the spread** of mold throughout the building to **minimize mold exposure** to remediators and building occupants.
- The larger the contaminated area, and the greater the possibility that someone will be exposed to mold and the greater the need for containment.

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Contain

- Pre-clean and install critical barriers.
- Barriers are constructed to seal off all openings and penetrations to the work area.
- Barriers to be constructed of 6 mil fire-retardant poly sealed with duct tape.

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EPA Guidelines for Containment

Two types of containment are described in EPA's mold remediation guidance:

- ***Limited***- Limited containment is generally used for areas involving **between 10 and 100 square feet** of mold contamination.
- ***Full containment-*** is used when areas **larger than 100 square feet** are to be remediated or in cases where it is likely that mold could be spread throughout the building during remediation.

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SP 040:18:2 , Lead Safety for RRP – Site Prep

In **apartments**, discuss the following with the resident:

- Extent of containment needed
- How the containment area will be prepared
- Advise residents **not to enter the containment area until after clean-up**
- Direct residents **not to allow children** to enter any area in which plastic sheeting is being used or stored due to the **risk of suffocation**

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SP 040:18:2 , Lead Safety for RRP – Site Prep

- Secure the apartment and/or work area against unauthorized entry.
- Move all objects out of the room, if possible.

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Limited Containment

- A **single layer of 6-mil fire-retardant polyethylene sheeting** enclosing the mold work area.
- Access to the contained area is through a **slit entry covered by a flap** on the outside of the containment area.
- Containment is generally recommended for areas involving **10 to 100 square feet** of mold contamination.

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Limited Containment

In small areas, the polyethylene sheeting can be secured to the floor and ceiling with duct tape. In other areas, a frame of aluminum or wooden studs can be built to hold the polyethylene sheeting.

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Limited Containment

All supply and air vents, doors, and pipe chases in the containment area **must be sealed** with polyethylene sheeting to minimize the spread of mold and mold spores to other areas of the building.

Stairs should also be sealed if a riser is missing or open.

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Installation of Critical Barriers

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Warning Signs

- Shall be **displayed at all accessible entrances** to remediation areas.
- Should be in the **language of the local population.**
- Should **only** be removed **after final clean.**

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Preparing the Work Area

- Pre-clean and remove all movable objects using a HEPA-filtered vacuum and or wet cleaning.

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Preparing the Work Area

- 6 mil polyethylene sheets (poly) should cover **all horizontal surfaces** in the room where the repairs occur.
- The entrance door should also be **covered and weighted at the base** to prevent dust from entering other rooms.

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Preparing the Work Area

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SP 040:18:2: Lead Safety for RRP – Site Prep

- **Cover** all items which were not moved from the work area with **one layer** of disposable polyethylene sheeting.
- The sheeting must be **taped together** with duct tape and taped to the floors or bottom of the walls or baseboards, to form a **continuous barrier** to the penetration of dust.

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Installation of Floor Poly

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Installation of Wall Poly

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Non-Movable Items

Items which can't be moved must be **cleaned**, **covered**, and **sealed** with a layer of 6 mil poly to protect them from damage and contamination.

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Pre-Clean Up

- Once the temporary wall closure is complete, use a **HEPA-filter vacuum** to remove dust, then **wet wipe** the work area using a clean rag or moistened towel to remove any remaining dust.
- If you suspect lead is present, use a clean rag or moistened towel with lead-specific detergent to wipe down the work area.

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Work Area Prep

- The time invested in prepping the work area is easily regained during the clean-up phase.

Mold Remediation – Containment Barrier

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Work Area Prep

- Hands-On: Prepare an enclosure for containing mold contamination.

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Wall Breaks

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Wall Break

When a chase wall measures **599 or greater** on the moisture meter, wet readings **do not** extend to the upper section of the wall, and the root cause(s) of the leak or wet condition is **not readily visible**:

- Make a small wall break in the room.
- Inspect the conditions within the wall cavity to identify the root cause.

The root cause could be attributed to an active leak within the wall cavity or to uninsulated cold water supply pipes that are causing moisture to penetrate the walls or apartment.

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Wall Break

After determining that a wall break must be performed, staff must **immediately** obtain the necessary supplies before proceeding with repairs.

Supplies include, but are not limited to:

- 6 mil polyethylene sheets
- duct tape
- a spray bottle
- a sheet of pre-cut Masonite

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Wall Break

- If not able to complete a wall break during the initial visit to find the root cause, **do not close the parent work order**. Instead:
- Document in the work log that **a follow up visit is needed** to conduct a wall break.
- **Coordinate with the resident** to set up a follow up visit time, when possible.

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Precautions while performing repairs: Temporary Wall Closure

- Where possible, score painted walls with a utility knife or use a pry bar or chisel to open a glazed wall. **Sawing and drilling should be avoided**, if possible, as they produce significantly more dust and make containment and clean up more difficult.
- The wall opening should measure **1' by 1'** when done for exploratory purposes (e.g., locating a leak), **2' by 2'** for smaller repairs, and **4' by 4'** for larger repairs.
- By opening the wall according to these standard sizes, staff can quickly and easily create a temporary closure using pre-cut Masonite. Developments should maintain a stock of **Masonite cut in these sizes** to fit the standard wall opening.

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Precautions while performing repairs: Temporary Wall Closure

- Staff **must** make a temporary closure over the opening so that residents are not left with an open wall until final repairs can be completed.
- Staff should place a pre-cut Masonite sheet over the opening and screw in to secure it. The **edges should be covered with duct tape** to seal it.

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Precautions while performing repairs: Temporary Wall Closure

When the wall opening is performed on a tub wall, staff **must waterproof** the temporary Masonite closure:

- Use a new piece of polyethylene sheeting to cover the affected wall from the side and top edges to the tub ledge and **extend 12 inches past the corner** onto the adjacent wall, securing all edges with duct tape.
- Carefully cut an opening for the tub spout and shower controls.
- Tape down edges **as thoroughly as possible.**

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Precautions while performing repairs: Temporary Wall Closure

- Staff must **document** in the work order notes that a wall opening was made on a tub wall.
- To prevent damage to units below, permanent repairs should be **expedited**.
- Staff must also **notify the development supervisor(s)**, who will alert the Planning Unit to prioritize the follow-up work order.

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Cleaning Exhaust Vents

Common Problems: Exhaust Grill

Dirty

Closed

Not sealed

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Common Problems: Duct Shaft

Dirty

Blocked

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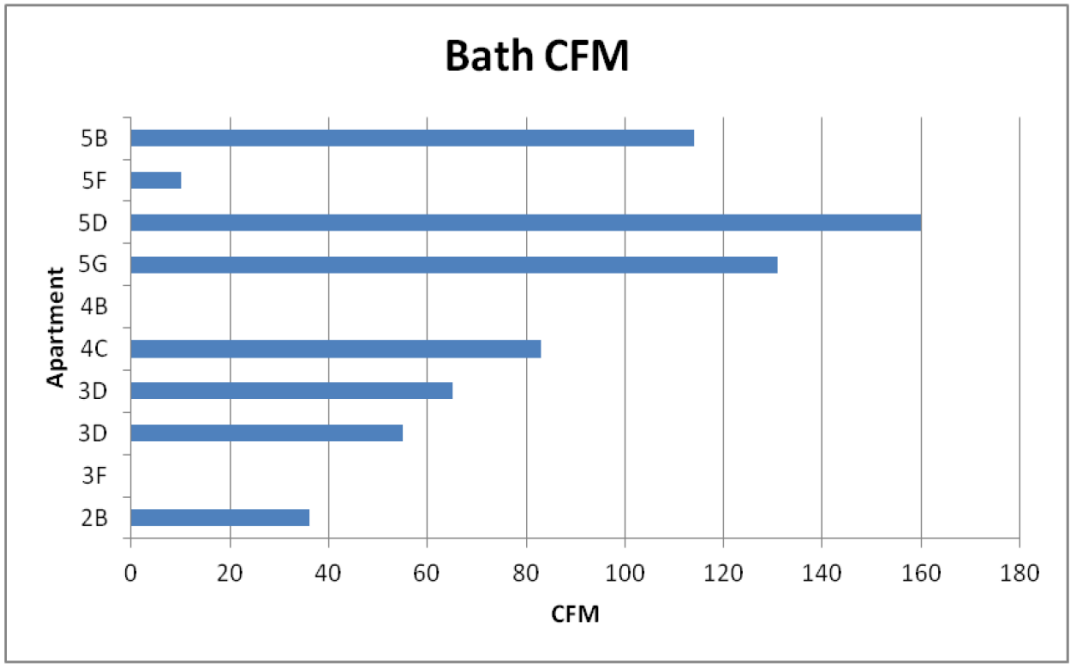
Common Problems: Imbalance

Over-ventilation

- Wastes energy

Under-ventilation

- Leads to poor IAQ and possible mold



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Solution:
Proper Ventilation!

Simple Fixes:

- Clean duct shafts/branches
- Clean or replace exhaust grilles

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Instructions for Cleaning Horizontal Vent Ductwork

When cleaning horizontal vent ductwork from inside the apartment, employees:

- Remove the face of the grill to the vertical shaft and
- HEPA-vacuum the grill and the interior and exterior of the horizontal vent ductwork.
- Must use caution when cleaning the fire damper inside the ductwork.

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Pipe Insulation

Background

- When performing repairs that require a wall break and/or repairs to water/fire system piping or heat supply lines, NYCHA can quickly and efficiently retrofit piping with insulation in accordance with New York City code 28-316.1.
- This Interim Guidance provides information on how to inspect and install insulation when a wall break has been performed during repairs.
- Maintenance workers, bricklayers, carpenters, plumbers, plasterers and roofers are responsible for conducting repairs that require wall breaks and/or repairs to water piping. Thus, **all** maintenance workers and **all** of the aforementioned trades will be responsible for adhering to the following guidance.

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Pipe Condensation & Insulation

If there is **water damage or wet reading on the lower three feet of the chase** wall:

- Make an initial wall break.
- Inspect the conditions within the plumbing chase wall cavity for an active leak:
  - **If there is an active leak,** follow the steps outlined in the Leak Standard Procedure to address the leak and/or create a follow up repair.
  - **If there is no active leak,** inspect the domestic water supply pipes for condensation (cold and hot water supply pipes).

Follow the guidance for making wall breaks outlined in the Leak Standard Procedure

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Continued…

Pipe Condensation & Insulation

If there is condensation, take steps to identify the root cause(s):

- Inspect the **tank room** or **boiler room** (if directly under the line) for condensation appearing from **steam leaks.**
- Inspect apartments in the line (e.g., above and/or adjacent apartments) for continuously running shower body valves, toilets, bathroom faucets, and kitchen faucets. Conduct a **multi-apartment inspection** and, if needed, a vertical line inspection to find the root cause(s).
- Address the root cause(s) following steps in the Leak SP.

Example of condensation on the cold-water riser.

Continued…

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Pipe Condensation & Insulation

- Evaluate the domestic hot and cold-water supply pipes for **missing or damaged insulation.**
  - Pipe insulation deficiencies can result in condensation formation (sweating) on cold water plumbing pipes during the summer months that manifest on the **lower section** of chase walls.
  - Condensation on uninsulated or not properly insulated domestic cold water supply pipes can lead to mold growth or visible water damage on the chase walls, if not properly addressed.

Continued…

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Pipe Condensation & Insulation

How do you determine appropriate method to address pipe condensation?

- **Method #1**: **Applying "Interim Controls**
- **Method #2: Insulating** Domestic Water Supply Pipes

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Applying “Interim Controls”

Applying **“Interim Controls”** can substantially reduce the potential for mold growth on chase walls even in the presence of existing insulation deficiencies and continued pipe condensation.

- Ideally, to fully resolve condensation issues, hot and cold-water supply and branch pipes with missing or damaged insulation must be fully insulated or re-insulated. However:
  - This requires removing substantial portions of the chase wall, and in many cases, could also require the abatement of asbestos-containing pipe insulation, and the temporary relocation of residents.
  - Many domestic water branch pipes were not insulated as part of the original design in many NYCHA buildings and cannot be fully insulated due to obstructions within the wall cavity (e.g., framing, wall surfaces, and other pipes).

Therefore, NYCHA has developed the “Interim Control” procedure by applying NYCHA-approved mold-resistant materials (e.g., mold-resistant sheetrock and mold-resistant paint), when insulating domestic water supplies pipes is not practical or feasible.

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Applying "Interim Controls"

- Select "**Interim Controls**" to address condensation deficiencies when:
  - Condensation on cold and/or hot water supply pipes appears to be the **only** root cause of the water damage and/or wet condition on the chase wall, **or;**
  - There might be **an additional root** cause attributing to the water damage and/or wet condition (e.g., plumbing leak and condensation), **but the wall break to address plumbing leak won't provide sufficient access to insulate domestic water pipes.**
- NYCHA staff should make an **initial wall break** to inspect the conditions within the wall cavity (i.e., to verify root cause) **before** they can make this determination.

Example of condensation on the cold-water supply pipes.

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Applying "Interim Controls"

- If wet reading and/or water damage on the lower portions on chase wall can be attributed to pipe condensation:
  - Select root case '**Pipe Condensation**' in the iWM App.
  - **Create child WO(s)** to address the deficiencies.

Plaster Constructions	Sheetrock Constructions
❑ Create a child WO to replaster the surface, as needed. **(e.g., WALLS/ NEEDSPLASTERING)**	❑ Create a child WO to replace water-damaged sheetrock*. **(e.g., WALLS/ SHEETROCKDML)**
❑ Create a child WO to apply mold-resistant paint*. **(e.g., WALLS/ MRPAINT)**	❑ Create a child WO to apply mold-resistant paint*. **(e.g., WALLS/ MRPAINT)**

*Asterisk (*) indicates **mandatory** step;*
'MRPaint' is an abbreviation for the 'Mold-Resistant Paint'

For instructions for removing sheetrock that displays visible water damage, mold growth, and/or that measures wet, see Standard Procedure 040:14:1, *Mold/Mildew Control in NYCHA Residential Buildings*.

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Process Details

For repairs requiring a wall containing pipes to be opened, maintenance and applicable skilled trades staff are instructed to **inspect** pipes, valves, and fittings that are exposed for the presence of insulation.

- Apartment repairs - staff must **inspect all domestic water pipes** for insulation.
- Public spaces - staff must **inspect water/ fire system piping or heat supply lines affected by the repair .**

All **new** piping (other than waste, vent piping and heat return lines) **must be insulated** and any repairs that require removal of insulation **must include replacing the removed insulation.**

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Process Details

- If there is no insulation present, staff **must** install insulation on all pipes, valves and fittings that are exposed and accessible because of the wall break.
- Where possible, one-inch-thick insulation should be installed. If pipe spacing prevents one-inch insulation to be installed, half-inch thick insulation should be installed.

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Process Details

- Owens Corning ASJ Max insulation of both sizes and related materials (or other manufactured insulation approved by Supply Chain Operations) will be available in the **development storeroom** for maintenance and skilled trades staff to install on water pipes of various sizes.
- The full list of insulation and related materials is included in **Appendix A.**
- Should they not be available in the development storeroom at the time of the appointment, staff should make a **temporary closure to the wall opening using Masonite** until the material is obtained at which point work may resume.

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Process Details

- Maintenance workers and applicable skilled trades staff are responsible for **fully inspecting** the pipes that are exposed and accessible after the wall is opened.
- Should they find these pipes lack insulation, they **must install the insulation** during the repair. Staff should consult the manufacturer's installation instructions for additional information.
- Staff issued with a handheld **device must take a photo of the installed insulation** once they have completed the installation, select the appropriate insulation remedy codes and **attach the photo to the work order in Maximo.**

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Process Details

- Superintendents, assistant superintendents, and skilled trades supervisors are responsible for ensuring that maintenance and skilled trades staff have properly inspected pipes and installed insulation, as well as **having adhered to policy and procedure** outlined in this interim guidance.
- Superintendents and supervisors should **review the work orders** where insulation has been installed and view the attached photos to evaluate the installation.
- Additionally, superintendents and development staff are responsible for **ensuring that an adequate supply** of insulation is in stock, monitoring the supply, and ordering additional insulation when necessary.

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Process Details

- If staff finds that insulation is ripped, damaged, or unsecured, staff should **remove** what remains of the old insulation, and then **install new insulation** around all pipes, valves, and fittings that are exposed and accessible because of the repair.
- In the event staff suspects existing insulation may contain asbestos, they are to **report it to the development** and follow the existing process for testing and abatement. Once insulation has been tested and/or abated, staff should resume installation as outlined above.

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Compliance Advisory Alert #12

Asbestos Containing Materials (ACM)

Compliance Alert #1
ACM

- While conducting oversight at a development, EH&S observed repairs that included removal of textured ceilings.
- Ceiling had **not** been tested for asbestos, a **violation of NYC DEP & NYS DOL regulations**

BE ON ALERT: Property Management staff, specifically the Supervisors or Asst Supervisor, **must request an asbestos investigation** prior to disturbing any material which may contain ACM. **Failing to test ACM prior to disturbing it, is a form of a deceptive practice.**

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Compliance Alert #1
ACM

Examples of common ACM include, but are not limited to:

Adhesives	Asphalt shingles	Caulking
Ceiling materials	Ceramic floor tile grout/mortar	Cove base adhesive
Cove base molding	Cinderblock wall mortar	Electrical insulation/materials
Fire Stop insulation	Flooring materials	Mastics
Plumbing fittings/insulation	Roofing materials	Shower panel glue
Soffit plaster	**Textured or popcorn ceilings**	Underlayment flooring
Vinyl floor tiles (9"x9"/12"x12")	Wall ceramic tile backing	Wall gypsum board
Wall plaster	Wall systems	Window frame caulking

Review the Compliance Alert #12 requirements in your Course Manual

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Asbestos Pipe Insulation

ACM pipe insulation

- Asbestos containing thermal system insulation (TSI) may be present in **wall cavities**.
- The inspector should check all risers, T fittings, and other pipe connections in the area and beyond the wall opening.

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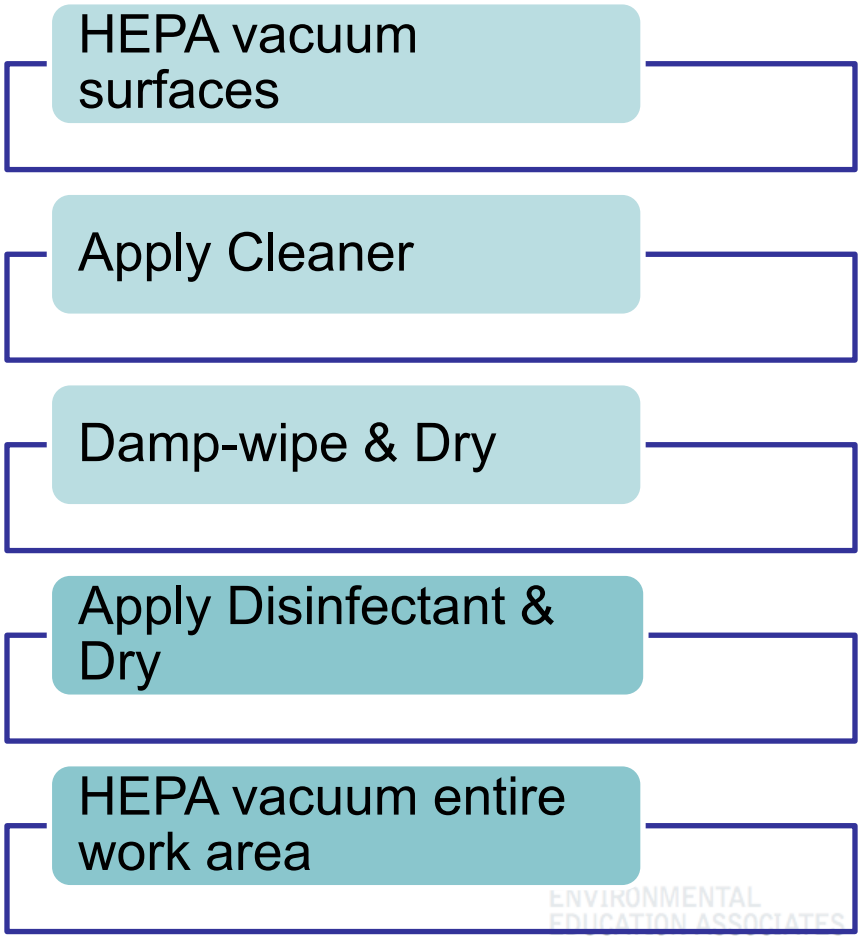
Cleanup & Quality Assurance

Cleaning Methods

- Effective **clean-up** is the key to eliminating exposure to mold contamination.
- Clean-up should be done whenever root cause repairs are done **before leaving the work area**.
- You can clean without disinfecting.
- You can **NOT** disinfect without cleaning.



NYCHA Product - Cleaner

Micro Bio-Wash Cleaner

- NYCHA Approved mold cleaner - **HA# 0806938344**
- Staff **must** follow directions
- Use **correct dilution**
- Allow adequate **dwell time**
- **Safe for use** on washable surfaces

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NYCHA Product - Cleaner

Micro Biowash

ENVIROCHEM

425 Whitehead Avenue
South River, NJ 08882
Phone—732-238-6700
Fax– 732-238-5590

GENERAL DESCRIPTION: MICROBIOWASH is a uniquely designed cleaner. **MICROBIOWASH** is an enzyme enriched product that will not only clean washable surfaces and eliminate odors, but with the biological residual, its action will continue between uses. A concentrated solution of bacterial spores produce enzymes to digest proteins, greases and fats and wipe out odors. **MICROBIOWASH** is safe to use on any washable surface. No rinsing is required. A pleasant residual odor is left after using **MICROBIOWASH.**

PROPERTIES:

Chemical composition . . . . . Synthetic soil cutting and soil suspending agent; penetrating agents; water conditioning agents.
Appearance . . . . . .Pink liquid
pH 6.1
Specific Gravity . . . . . 1.019 (9.6 pounds per gallon)
Stability . . . . . 1 Year @ Ambient Temperature
Wetting Ability . . . . . .Excellent
Foaming . . . . . Low to Moderate
Solubility . . . . . Complete and Fast

USE DIRECTIONS:

GENERAL

This product is ideal for cleaning concrete, ceramic floors, quarry tile, grout and brick. It is recommended for use in food service areas, schools, restaurants, hotels, nursing homes, restrooms and shower rooms. **MICROBIOWASH** leaves surfaces brightened and sparkling clean. May be applied with auto scrubber, mop, brush, pump sprayer or pressure washer.
For best results, remove excess soil. Slight agitation may be necessary. Rinse thoroughly with clean water as needed.

For Light Duty Cleaning: Use 1 to 2 ounces of product per gallon of water.
For Medium Duty Cleaning: Use 3 to 4 ounces of product per gallon of water.
For Grease, Oil and other Heavy Duty Cleaning: Use 6 to 8 ounces of product per gallon of water

Garbage trucks and cans: For best results, spray on at day's end. Rinse before using next day.

MICROBIOWASH can be used safely on any surface not harmed by water alone: including concrete, carper, grout, wood, stainless steel, Formica, vinyl, porcelain, and linoleum.

HANDLING PRECAUTIONS:

CAUTION: WARNING
KEEP OUT OF REACH OF CHILDREN.

Undiluted, this product may cause skin irritation or damage to the eyes. Harmful if swallowed. Avoid contact with skin eyes and clothing. Do not take internally. Avoid all contact with open wounds. In case of contact with eyes, flood repeatedly with water and call physician. Avoid contamination of food.

Keep out of reach of children. Rubber gloves should be worn when using this product. For professional use only

DO NOT USE ON FOOD CONTACT SURFACES.

PACKAGING:

4X1 gallon, 5 gallon, 55 gallon drums

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions

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NYCHA Product - Cleaner

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For best results, remove excess soil. Slight agitation may be necessary. Rinse thoroughly with clean water as needed.

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Garbage trucks and cans: For best results, spray on at day's end. Rinse before using next day.

MICROBIOWASH can be used safely on any surface not harmed by water alone: including concrete, carper, grout, wood, stainless steel, Formica, vinyl, porcelain, and linoleum.

HANDLING PRECAUTIONS:

CAUTION: WARNING
KEEP OUT OF REACH OF CHILDREN.

Undiluted, this product may cause skin irritation or damage to the eyes. Harmful if swallowed. Avoid contact with skin eyes and clothing. Do not take internally. Avoid all contact with open wounds. In case of contact with eyes, flood repeatedly with water and call physician. Avoid contamination of food.

Keep out of reach of children. Rubber gloves should be worn when using this product. For professional use only

DO NOT USE ON FOOD CONTACT SURFACES.

PACKAGING:

4X1 gallon, 5 gallon, 55 gallon drums

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions

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NYCHA Product - Disinfectant

Shockwave RTU:

- NYCHA Approved mold disinfectant – HA# **080657583**
- Staff **must** follow directions
- **No dilution**
- Apply product with a cloth, sponge or other suitable applicator **until surface is thoroughly wet.**
- **Wait 10 minutes and wipe dry or air dry.**

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NYCHA Product - Disinfectant

ShockWave™RTU

Disinfectant/Sanitizer/Cleaner/Fungicide

Product Description **8316**

ShockWaveRTU is an EPA registered disinfectant, sanitizer and cleaner designed specifically for mold remediation contractors. ShockWaveRTU is designed to meet all your disinfecting, sanitizing, cleaning, and deodorizing needs. ShockWaveRTU is strong enough to be used in a hospital or medical environment, and has been specifically formulated to be used on both porous and non-porous materials. ShockWaveRTU is a powerful ready-to-use quaternary ammonium chloride blend, which is ideal for use when clean water is not readily available or for any situation where a ready-to-use formula is required.

ShockWaveRTU has over 120 organism kill claims including Aspergillus niger, Penecillium spinulosum, E. coli, Salmonella, HIV, Hepatitis-B, Herpes, Poliovirus, and many other pathogenic and environmental microbial organisms.

Application Information

WATER DAMAGE RESTORATION: This product is particularly suitable for use in water damage restoration situations to sanitize against odor causing bacteria on the following porous and semi-porous materials: carpets, carpet cushion, subfloors, drywall, trim and frame lumber, tackless strip and paneling. Use as supplied, saturate affected materials with enough product to remain wet for at least 10 minutes. Use proper ventilation.

DISINFECT/CLEAN/DEODORIZE: Preclean all heavily soiled surfaces prior to product application. To clean, deodorize, and disinfect apply product with a cloth, sponge or other suitable applicator until surface is thoroughly wet. Wait 10 minutes, and wipe dry or air dry. Do not use on glasses, dishes or utensils.

FUNGICIDAL: Kills Trichophyton mentagrophytes on hard nonporous surfaces. Spray solution making sure to wet all surfaces completely. Wait 10 minutes, then remove excess liquid or allow to air dry.

DEODORIZER: This product deodorizes garbage storage areas, empty garbage bins and cans, exterior surfaces of toilet bowls and any other odor-causing areas. Spray solution makeing sure to wet all surfaces completely. Allow to air dry.

FIRST AID

Skin: Remove contaminated clothing. Flush affected areas with large quantities of water. Seek medical attention if irritation persists.

Eyes: Flush with large quantities of water, holding eyelids open. Seek medical attention.

Inhalation: Remove victim to fresh air and monitor. Seek medical attention if symptoms persist.

Ingestion: Give large quantities of water. Seek medical attention immediately.

CAUTION!
KEEP OUT OF REACH OF CHILDREN.
Do not take internally. Close container after each use.
Keep from freezing.
Store between 40°F (4.5°C) and 90°F (32°C)
24 hour Emergency "CHEM-TEL" - 800.255.3924

Properties

Product Specifications

Active Ingredient:	Quaternary Ammonium Chloride
Color:	Clear Blue
Odor:	Fresh Linen
Foam:	0
Flash Point:	>200°F
pH:	11.7
Shelf Life:	36 Months Min. (Original Sealed Container)
Calculated VOC:	0 grams/liter

Testing

EPA Registration Number:	61178-2-73884
EPA Est. Number:	8325-PA-01

Available Package Sizes

1 gallon containers (4/case)
5 gallon containers

ShockWaveRTU contributes toward satisfying IEQ Credit 3.3 under LEED-EB by complying with "California Code ofRegulations maximum allowable VOClevels for disinfectants".

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Follow Manufacturer's Directions for Everything

- Use the right **dilution**
- Use the right **application**
- Change solution when recommended
- **Avoid cross-contamination**

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Cleaning Methods

- You can clean without disinfecting
- You can NOT disinfect without cleaning

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OPTION 1: Sherwin-Williams Emerald Satin Mold-Resistant (MR) Paint

- Can be used as alternative to Foster 40/50 and MR Paint

Product Details:

- Product: Sherwin-Williams Emerald Satin Mold-Resistant Paint (Extra White and Tan)
- HA Number: 1404981941
- Cost: $301 per gallon

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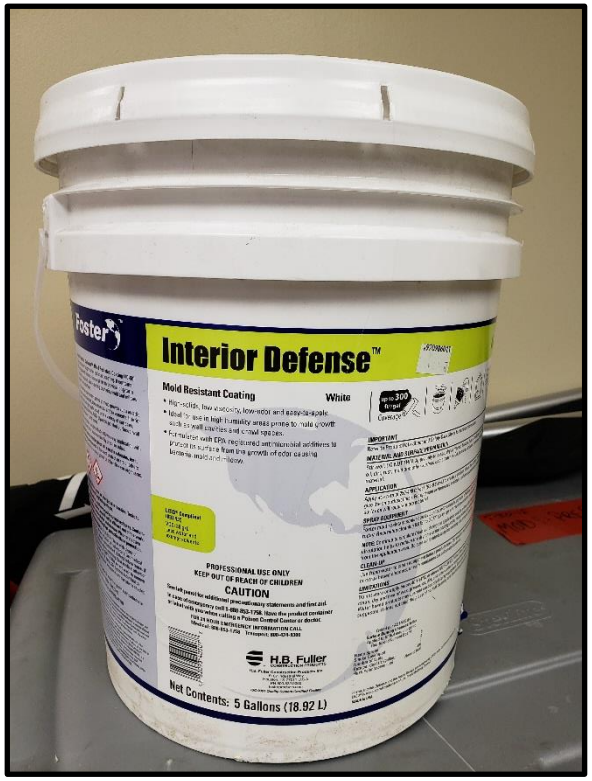
OPTION 2: Fosters 40-50 (ENCAPSULATOR)

- Fosters 40-50 Anti-Microbial Coating
- Used to treat building materials prone to mold growth.
- Applied to framing and drywall, among other substrates during new construction or after remediation.
- Long term protection against mold and mildew growth.



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OPTION 2: Mold Resistant Paint

- Mold- and mildew-resistant paint include additives to prevent the growth of mold and mildew on the paint's surface film.
- **Apply per manufacturers instructions.**
- Must be used together with **Fosters 40-50. Apply after Foster 40-50.**

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Disposal

- Removal of Containment Materials:
  - 6 mil Contractor bags
  - Goose-neck sealed
  - Decontaminated
  - Taken directly to secure container

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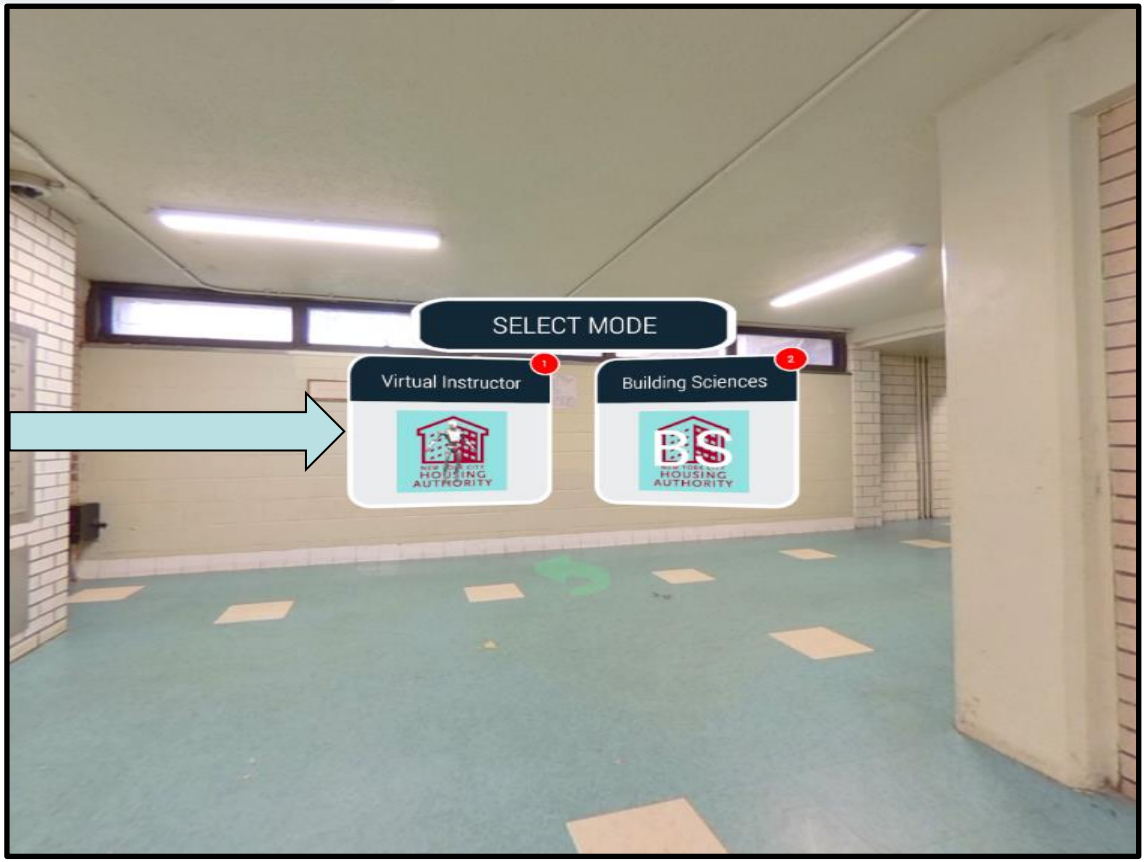
VR Simulation

- Select Virtual Instructor
- Pull the trigger
- Then select Building Sciences



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Knowledge Assessment

- Thanks for your participation!
- Questions & comments
  - training@environmentaleducation.com
  - (888)436-8338

Have a great day!

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