NYCHA MOLD TRAINING

1

Why Are We Here Today?

- Exposure to excessive moisture and mold is considered a major asthma trigger (IOM 2004, WHO 2009, and NYC DOHMH 2008)
- The mold problems in NYCHA apartments keep coming back:
  1. Mold growth conditions are being painted over and paint is food for mold.
  2. The **Root-Cause** of the moisture conditions has not been identified and corrected.


Photo Source: NY Daily News

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Mold and the Asthma Epidemic in NYCHA Housing

- >400,000 low-income residents
- Childhood asthma at epidemic levels (21.8%)
- In 2013, with help from LSAFHS and NRDC, NYCHA residents with asthma filed class action lawsuit against NYCHA (Baez case). Residents prevail. Consent decree requires NYCHA to promptly and effectively identify and remediate mold and correct underlying moisture root causes.
- NYCHA violates consent decree – court appoints Special Master

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Health Inequity - Asthma in Low Income Housing

Prevalence, Health Inequity, and Opportunity

Over 24 million Americans have asthma (7.8% of US population)[1], CT 9.3%[2]
Over 6 million American children have asthma (8.4% of US population)[1], CT 10.5%[2]
Wide health disparities in childhood asthma by housing type in NYC[3]

Private NYC Housing
7% asthma prevalence

Typical NYC Apartment
12% asthma prevalence

NYC Public Housing
22% asthma prevalence

https://www.cdc.gov/asthma/mostrecentdata.html

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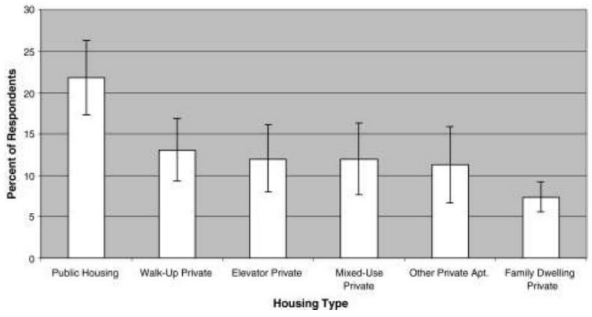
Asthma Prevalence Data



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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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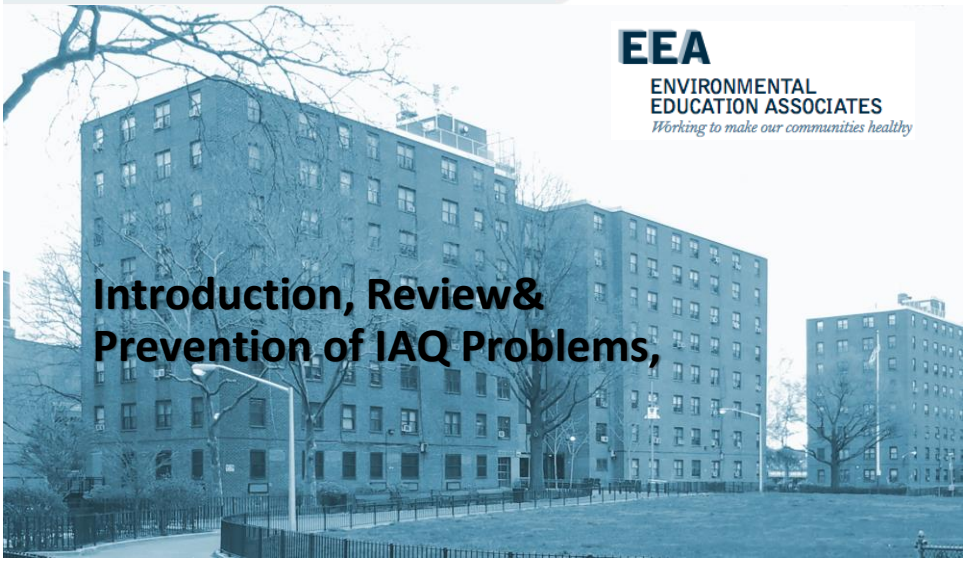

8

Understanding Condensation

Q: Why does condensation form on the outside of a cold drink in the summer?

A. Dew point!

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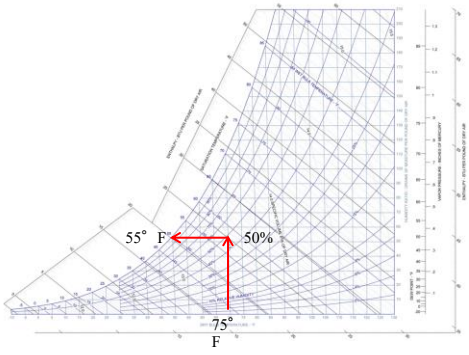
What is Dew Point?



Psychometric Chart

Warm air can hold more moisture than cold air. The dew point is reached when the air is cooled to the point of saturation (100% Relative Humidity). When this occurs, we call it condensation.

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Relative Humidity

- The amount of moisture in the air at a given temperature, as compared with the amount of moisture the air could hold before reaching saturation at that temperature

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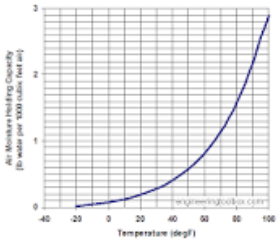
Temperature

- 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, and knowing it 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 causes:
  - Eyes, noses & throats to dry
  - Produces irritations & soreness
  - Increases susceptibility to infection
  - Increases problems associated with static electricity
- High RH causes:
  - High moisture
  - Promotes growth of fungi and mold

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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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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.

- How can 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.
  - Discontinue the use of shower 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.
  - Improve general ventilation in the apartment by keeping windows open slightly at all times.

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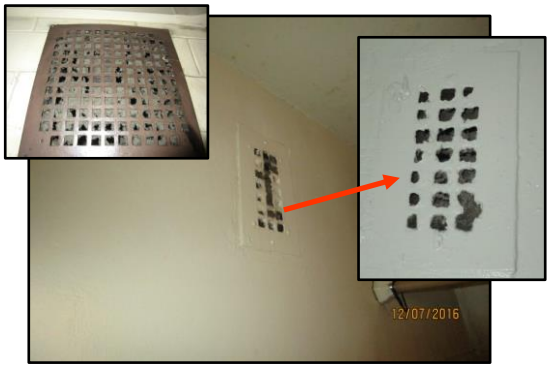
Controlling Shower Vapor Condensation - Exhaust Grills



Covered or dirty grills

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Controlling Shower Vapor Condensation – Roof Fans

Motor Problems

Improper Seating of Housing

Broken Timers

Loose or Broken Belts

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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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Conducting Wall-Breaks to Locate Root-Cause of Excessive Moisture

- When should you conduct a wall-break?
- What should you be looking for?
- How large of an opening should you make and when should you use a borescope?
- Dust control during wall-breaks
  - Standard Procedure Lead Safety for Renovation, Repair, and Painting (SP 040:18:2)
- Lead-based paint
- Asbestos pipe wrap insulation

  -Look carefully, consider suspect ACM to be ACM.

See detailed discussion in Wall Break section on slides 127-136

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What's Wrong With This Wall-Break?

What could have been done differently?

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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 laterally 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 Movement Rule #2

- Moisture will enter into 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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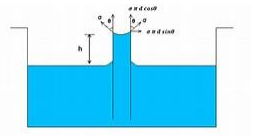
Moisture in Buildings

- **Capillary Action** - The movement of a liquid along the surface of a solid caused by the greater attraction of the liquid's molecules to the surface of the solid than to each other. The liquid's molecules adhere to the solid surface and also to each other, so that each molecule pulls the next one along. Water moves through the roots of trees or into the pores of a sponge or towel by capillary action.



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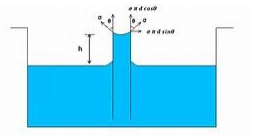
Capillary Action

- Responsible for movement of groundwater through footing (footers) into concrete wall.
- Ring of dampness around base of foundation wall.
- Perimeter drains help keep water away from footers.



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Capillary Action

- Moisture can be drawn into an opening of 3/16” or less.
- If two materials without capillary pores are placed close enough together, they create a capillary pore that can draw moisture.
- How close?

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Capillary Action

- Answer 3/16 “ or less
- I I the distance between these two lines

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Moisture in Buildings

- Materials like overlapping siding can create capillary gaps
- Capillary rise in wood siding
- Film of water on surface of siding
- Water film draws up between laps of siding by capillary suction
- Building paper
- Sheathing

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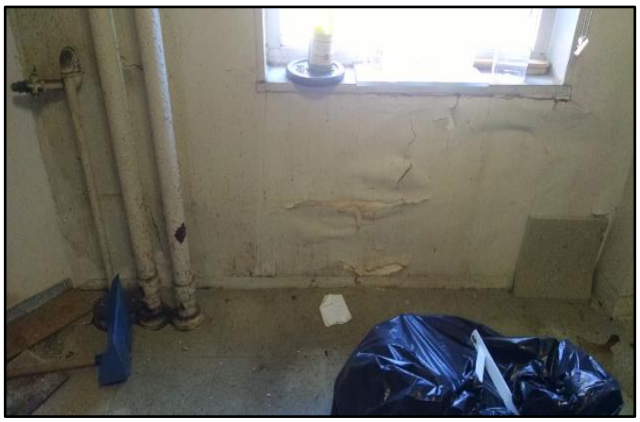
Façade Leaks



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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 as a result of a vapor pressure difference

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Moisture in Buildings

- **Permeance factor** is a measure of water flow through materials
- Permeance factors (perms) specify the vapor flow in grains of moisture per hour, through one square foot of material surface, at one inch of mercury (1” Hg) of vapor pressure

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Moisture in Buildings

Q: How much water can be collected over an entire heating season in most cold climates?

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Moisture in Buildings

A: One-third quart of water can be collected by diffusion through a gypsum board without a vapor diffusion retarder. Whereas 30 quarts of water can be collected through air leakage.

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Moisture Movement Rule #4

Moisture moves from hot to cold

- Moisture can move through building materials by diffusion or through a hole by air transport.

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Moisture Movement Rule #5

- Moisture moves from an area of higher air pressure to an area of lower air pressure
- 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)
- Stack effect can result in up to .5 ACH or 150 cfm in one home

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Prevention & Control Measures

- Inspection, Testing & Maintenance
- Avoid development of contamination
- Safe operating procedures
- Improved Maintenance
- Housekeeping

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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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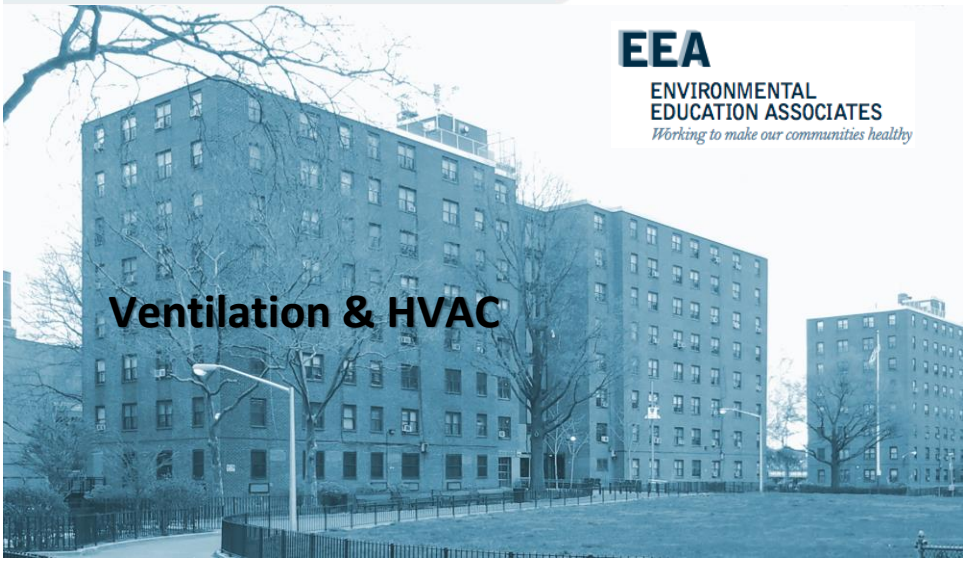

HVAC

- Heating
- Ventilation
- Air Conditioning

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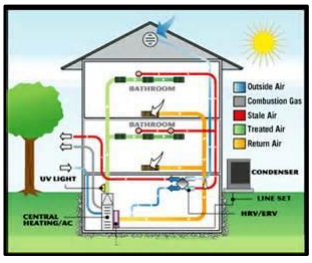
HVAC Systems Primary Functions

- 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 draught & excessive cold.
- Internal partitioning & clutter creates “dead spaces”.

Ventilation Basics 1

Ventilation Basics 2

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NYCHA & Ventilation Guiding Questions

- Why is ventilation important?
- How is it achieved in NYCHA buildings (and others)?
- What are the most common problems?
- What are some 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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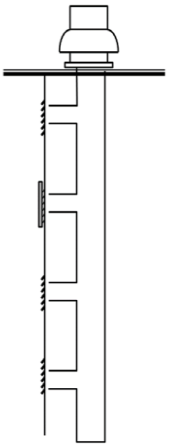
Ventilation Central Exhaust

- 65% of NYCHA homes have mechanical ventilation in bathrooms
- Approximately 114,000 units
- In the process of updating these numbers for more accuracy



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Ventilation Systems

Grill & duct build-up is common, and fungal growth can attach to that debris. While we do not remove registers and air vents, we must ensure that we visually verify that debris and dust has not accumulated in the ducting and providing a growth platform for mold.

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Roof Fans

- Roof fan installation complete with **8,436 fans** installed
- Roof Fan Standard Procedure (SP 050:21:1) published on: 7/30/ 21
- **73,805** vents have been cleaned.
- **40 CFM** increase on average as a result of the clean vents initiative.
- Fire damper replacement project in the works.

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Functioning Roof Fan

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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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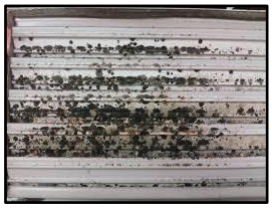
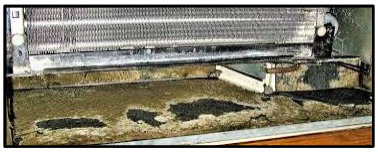
Problem - Air Conditioning





- 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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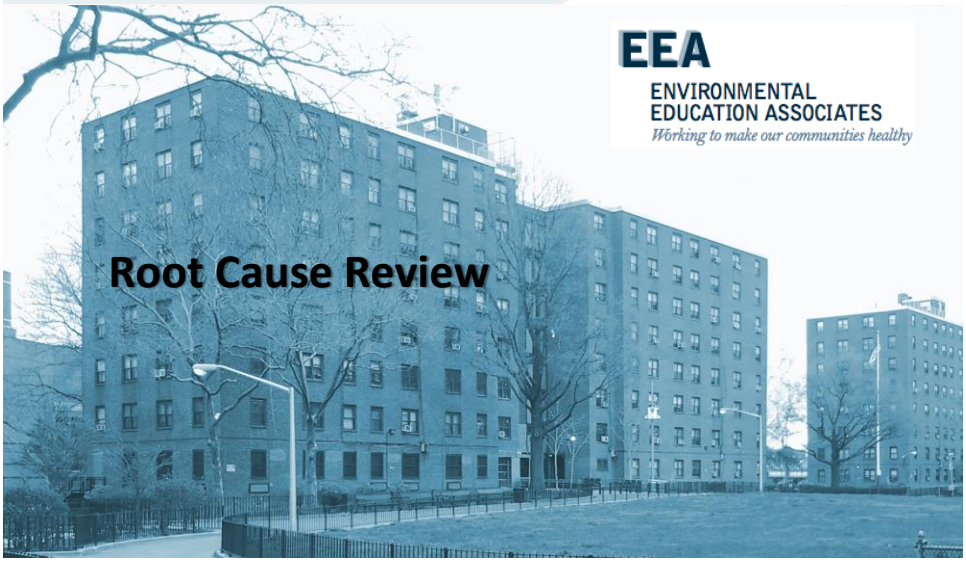

63

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 into the building.

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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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71

NYCHA MOLD TRAINING UPDATE

72

Performance Reporting

NYCHA Office of Mold Assessment & Remediation (OMAR) shall centrally assign staff to review reports to identify developments with:

- High parent mold work order completion time frames.
- High rates of unfounded mold work orders.
- High reoccurrence rates for mold work orders.

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Inspectors Performance Shortfalls

- Failure to use/properly use each of the Mold Busters tools during the inspection process (particularly Testo kit and app)
- Failure to conduct a complete mold inspection (meaning accounting for all 3 indicators: signs of visible mold, water damage, moisture reading)
- Failure to make accurate entries (square footage of mold)
- Failure to use/properly use borescope to inspect wall cavities

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Remediators Performance Shortfalls

- Failure to ensure mold impacted surfaces are:
  - Cleaned with the appropriate detergent solution/fungicide cleaner.
  - Failure to apply appropriate mold resistant coating.
  - Completely dry prior to moving forward in the mold remediation process.

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Performance management: EOP Program

In June 2022, OMAR launched EOP to turn around struggling consolidations by building joint strategies to improve mold and leak compliance, assisting with select backlogs, and assisting with overcoming procurement roadblocks:

- Improving mold inspection timelines and quality of inspections
- Providing assistance to address priority mold and leak work orders (inspections, mold cleaning, mold-resistant paint)
- Providing field training, when needed
- Focusing on work order verification and addressing aging backlog
- Identifying any scheduling gaps and assisting with expediating repairs requiring immediate attention
- Flagging high-priority OCC cases

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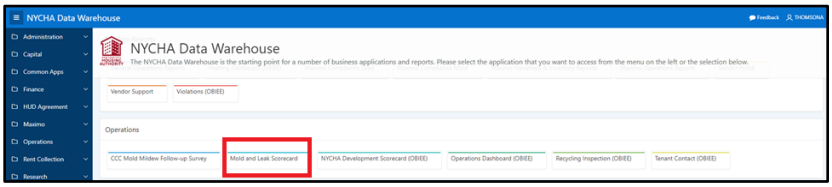
Mold and Leak Scorecard

A ranking tool that evaluates NYCHA's performance on key metrics at the consolidation, neighborhood, borough, and NYCHA-wide level.



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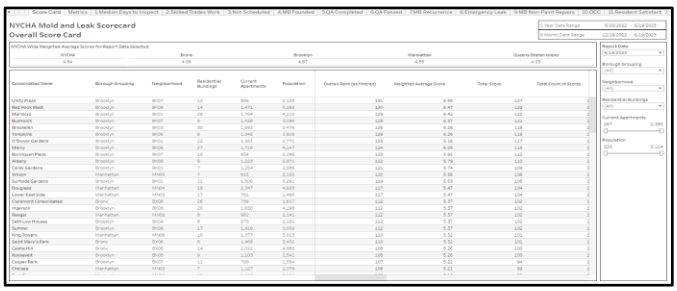
Mold and Leak Scorecard Views

This view allows PMs and Supers to monitor consolidation ranking on the Mold and Leak Scorecard and compare against other consolidations in neighborhood or across the authority.



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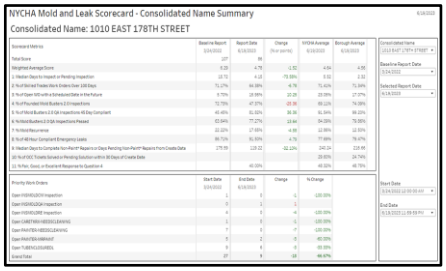
Mold and Leak Scorecard Views

- Monitor the number of open mold inspections per consolidation.
- Ensure that initial mold inspection work orders are addressed in a timely manner.
- Ensure that mold QA inspections are addressed in a timely manner.
- Monitor the quality of the work
  - Flag high unfounded rates
  - Flag high recurrence rates
  - Flag high percent of failing mold QAs
- Ensure that emergency leaks are promptly addressed



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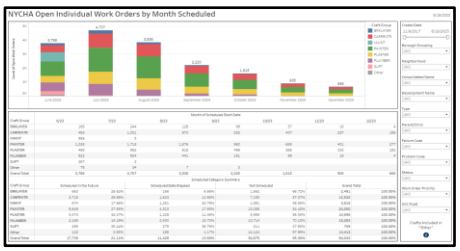
Mold and Leak Scorecard Views

NYCHA Mold and Leak Scorecard Views to utilize to assist with performance management:

- This view allows PMs and Supers to monitor craft scheduling and take proactive action to escalate repair needs



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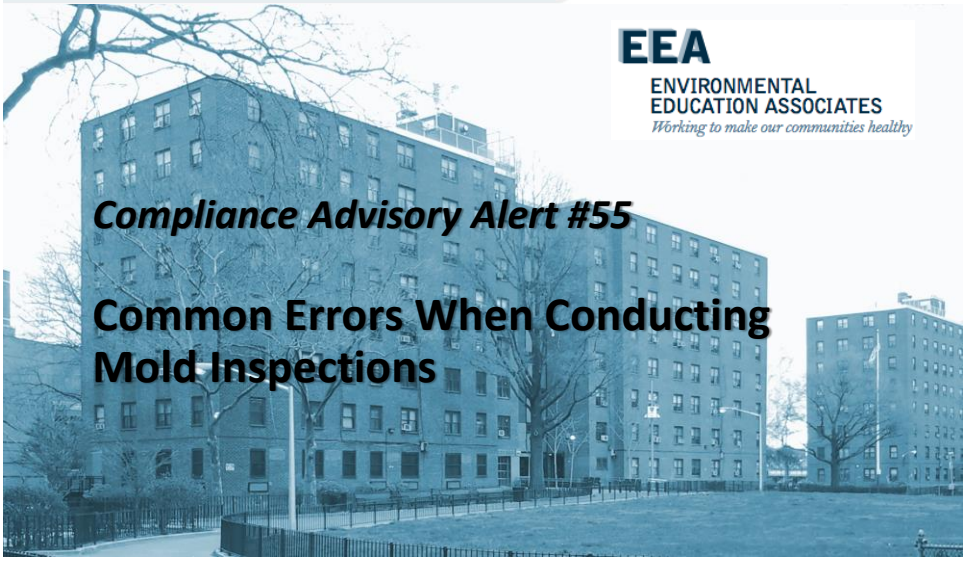
NYCHA MOLD TRAINING



81

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 accurately identify mold issues stemming from moisture, Mold Inspectors must:

- Visually inspect the room or area identified in the work order for mold growth and record the total estimated square footage of mold on each wall (1-4), floor, ceiling, and any components;
- Use the moisture meter to measure the walls, floor, ceiling, and components in the room for subsurface moisture and record all measurements in the iWM handheld using the IN work orders, including any wet measurement greater than or equal to 599;
- Take multiple measurements of each surface or component and record if a measurement is equal to or greater than a wet measurement of 599 (if there is visible water damage or mold growth, take readings in intervals of 6 inches in each direction to the point at least 2 feet beyond any visible damage until the reading is below 599);
- If a moisture condition is found, the inspector must conduct a general evaluation of the room and the common or shared walls in adjoining rooms and common areas.

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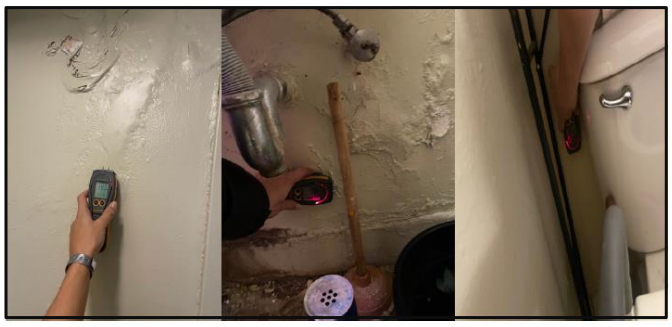
82

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)
- Properly identifying and documenting water damage everywhere it is found, including adjoining walls and rooms
- If a resident's belongings prevent you from checking an area for water damage, request access from the resident by explaining the reason you need to enter the area. If residents refuse to move their belongings to allow you access, document this refusal in the work order and take a photo of the resident's belongings in 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.

- A root cause for a mold condition or water damage could be the source of water or excessive moisture (e.g., leaking pipes or fixtures, condensation) or the lack of ventilation (e.g., blocked exhaust ducts, closed windows).
- Pinpointing and rectifying the root causes of moisture or water damage in an apartment is essential. This not only resolves the issue at its source but also prevents the recurrence of associated symptoms, especially in responding to mold complaints.
- NYCHA mold inspectors can choose from a list of root causes, selecting up to 4 on a single work order.
- During an inspection, carefully review the entire list of 23 probable root causes on the handheld to identify as accurately as possible the cause(s) of moisture, mold, or water damage.
- If you cannot verify the root cause to be one or more of the 23 items listed, you may select "***Other****" as the cause.

NOTE:	The "Other*" option should only be selected if the root cause is not on the list of 23 items or not evident through the standard assessment practices. If you select the "Other*" option, you must include a note and picture(s). An example of what you could put in the note is: Temperature differences between apartments, above and below, is causing condensation between them.

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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 is selected and up to four root causes can be selected during a mold inspection.** Below is a list of the potential root causes and the definition of each root cause.

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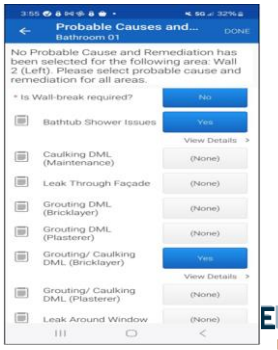
Common Mold Inspection Errors

#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 use the hygrometer to take and record the humidity reading of the room
- 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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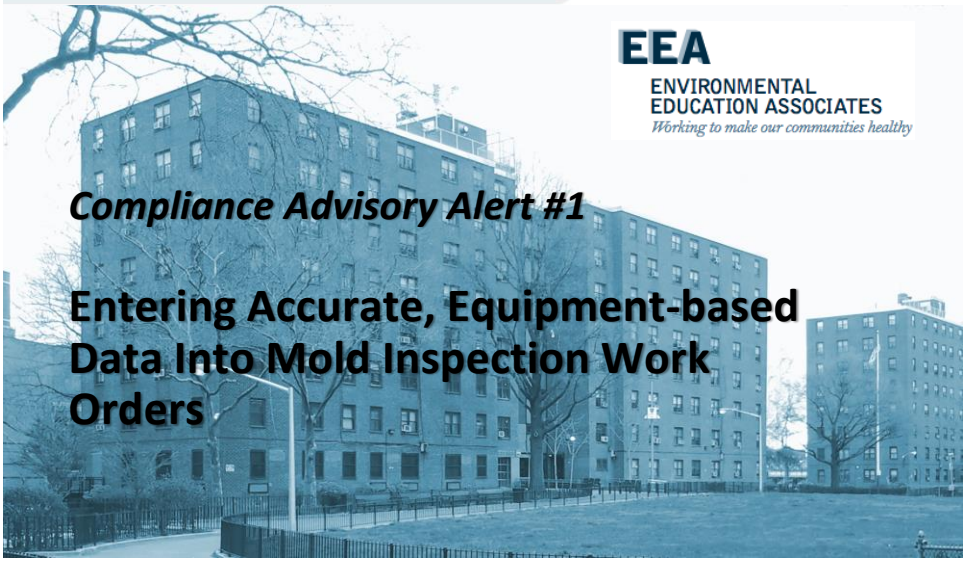
NYCHA MOLD INSPECTION



94

Compliance Alert #1 – Data Entry

Compliance, Environmental Health & Safety, and Quality Assurance recently learned that a small number of staff were not actually using their moisture meters, anemometers, or hygrometers when conducting mold inspection work orders. Instead, these staff were making "guesstimates" of these readings and entering the "guesstimates" into the work orders. In some of these instances, the staff did not bring the equipment with them on inspections because they did not have familiarity with the equipment or because the development had lost the equipment.

BE ON ALERT: Entering equipment-readings into Maximo without actually 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;

BE ON ALERT: Entering equipment-readings into Maximo without actually 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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NYCHA MOLD TRAINING

Compliance Alert #1
Unsafe Public Spaces

During recent oversight visits to several developments, staff have observed existing unsafe conditions in public spaces. Some of these conditions may not always be reported to Property Management, may not have work orders that have been created, or that may not have been immediately addressed.

BE ON ALERT Property Management staff have an affirmative duty and obligation to identify, report and correct unsafe conditions in public spaces on a daily basis as such conditions may threaten the life, health and/or safety or residents and staff. In addition, such conditions constitute exigent health and safety deficiencies during a PHAS inspection, which must be corrected or abated within 24 hours.

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Compliance Alert #1
Unsafe Public Spaces

Unsafe Conditions in Public Spaces include, but are not limited to;

- Air Quality – Propane/Natural Gas/Methane Gas Detected
- Electrical – Missing Breakers and Covers
- Electrical – Exposed Wires/Open Panels
- Water Leaks on/near Electrical Equipment
- Emergency/Fire Exits Blocked/Unusable Fire Escapes
- Misaligned Chimney/Ventilation System
- Outlets/Switches/Cover Plates – Missing/Broken
- Smoke Detectors – Missing/Inoperable
- Window Security Bars Prevent Egress
- Fire Extinguishers Expired
- Carbon Monoxide Hazards

Review the Compliance Alert #27 requirements in your Course Manual

NYCHA MOLD TRAINING

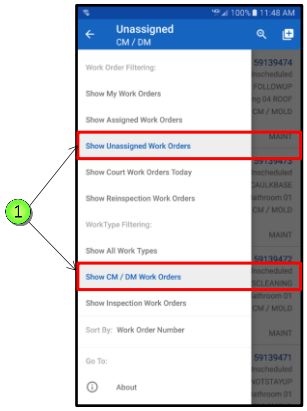
Mold Work Order Process – Inspection

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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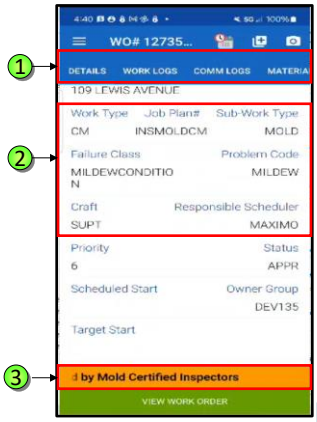
View Work Order Details

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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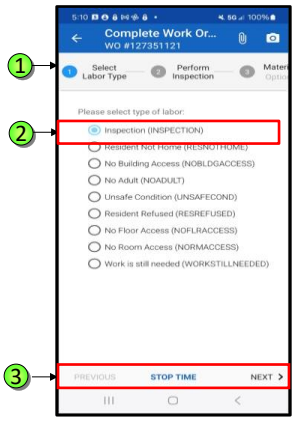
View and Select Labor – Start the Timer

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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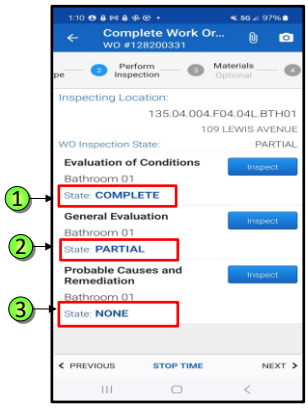
Inspection Status

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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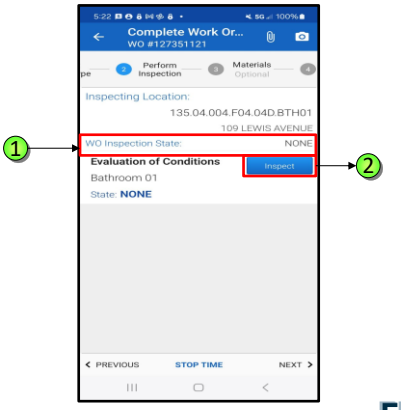
Perform Inspection

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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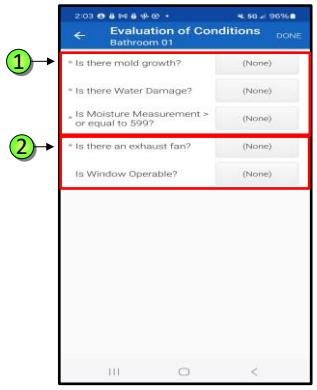
Step 1: Evaluation of Mold Growth

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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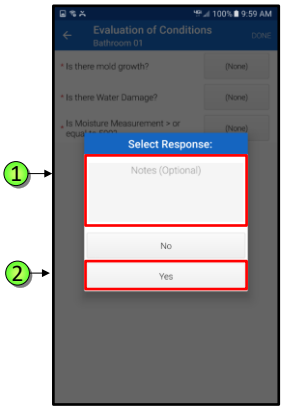
Evaluation of Mold Growth

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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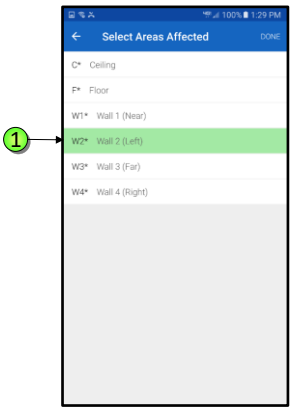
Evaluation of Mold Growth

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

   Tap **DONE**



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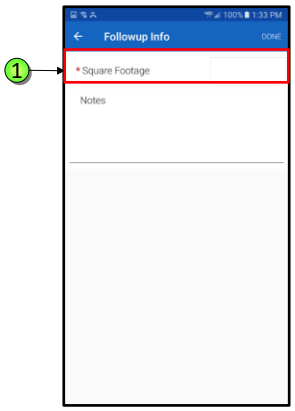
Evaluation of Mold Growth

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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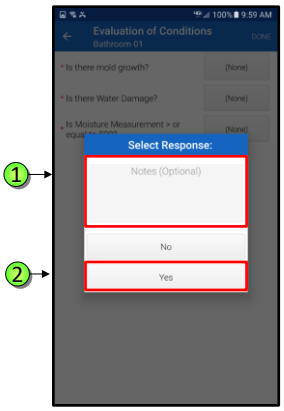
Evaluation of Water Damage

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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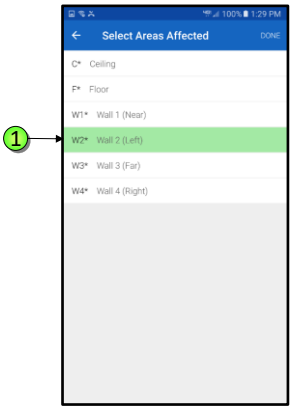
Evaluation of Water Damage

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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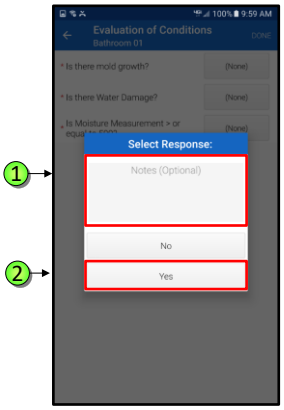
Moisture Measurement

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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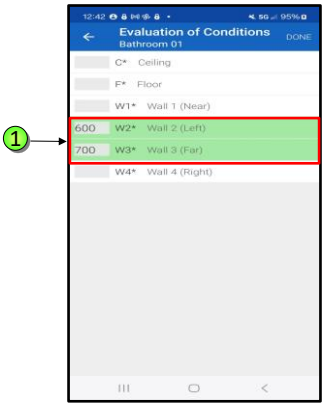
Moisture Measurement

Input measurements for every surface area where moisture measure.

1. Enter measurements for **Wall 2 and Wall 3**
   Tap **NONE**



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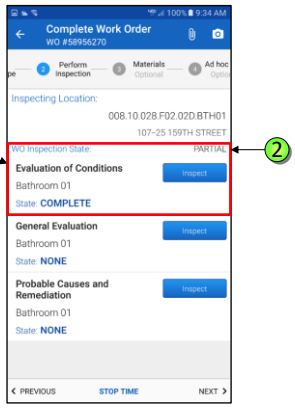
Evaluation of Conditions

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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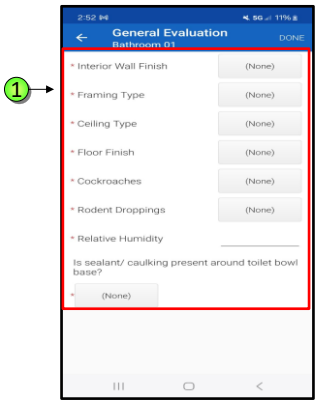
Step 2: General Evaluation

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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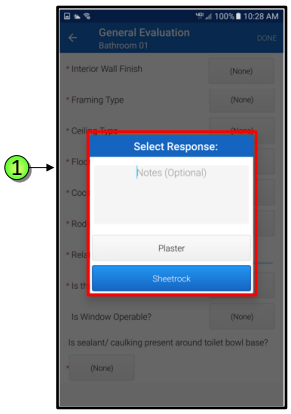
General Evaluation

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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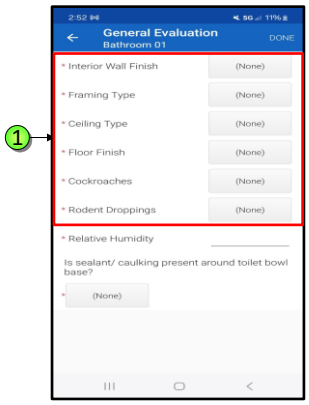
General Evaluation

1

The process is the same for the following items:

- **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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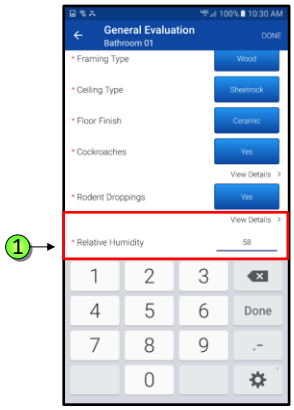
General Evaluation

1. 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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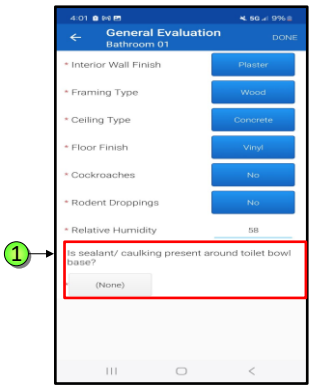
General Evaluation

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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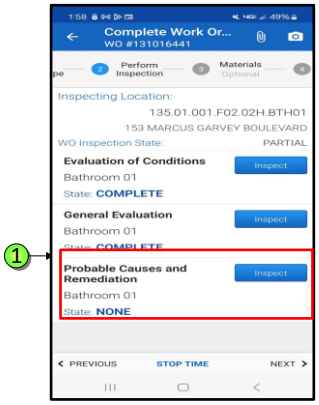
Step 3:
Probably Causes & Remediation

The third task in a series of tasks is

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

Tap **INSPECT**



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Probable Causes & Remediation

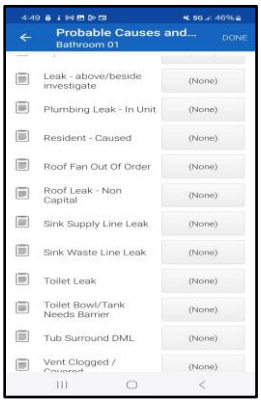
On the top of the screen, **iWM** is reminding the user to select a **Probable Cause and Remediation method** for the **Walls 1**, **Walls 2**, and the **Floor**.

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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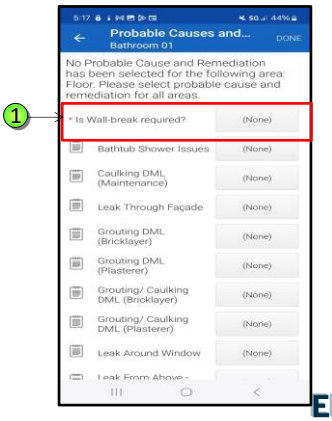
Probable Causes & Remediation

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

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

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

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



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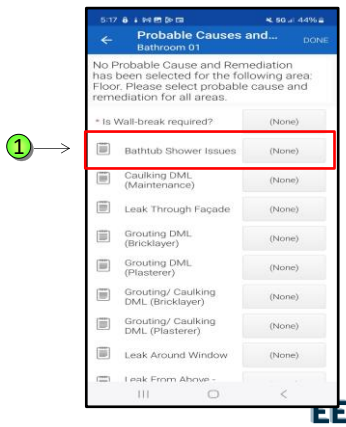
Probable Causes & Remediation

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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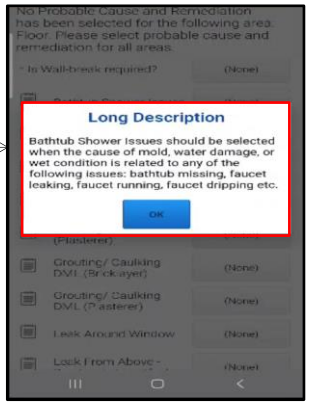
Probable Causes & Remediation

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



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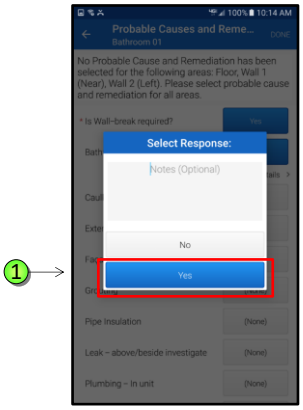
Probable Causes & Remediation

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

Tap **YES**



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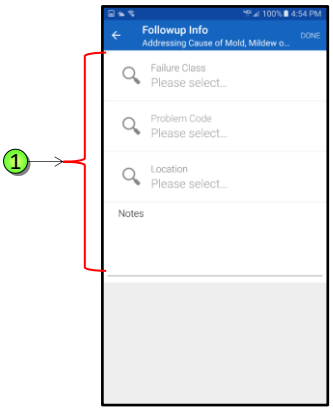
Probable Causes & Remediation

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

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

Tap **Failure Class**



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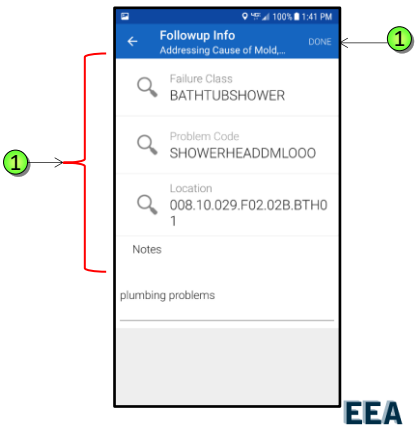
Probable Causes & Remediation

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

Tap **DONE**



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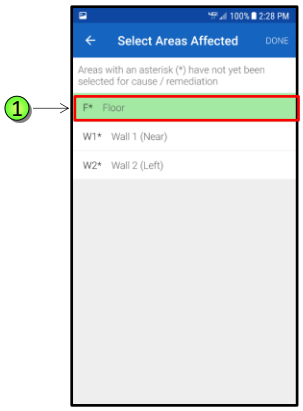
Probable Causes & Remediation

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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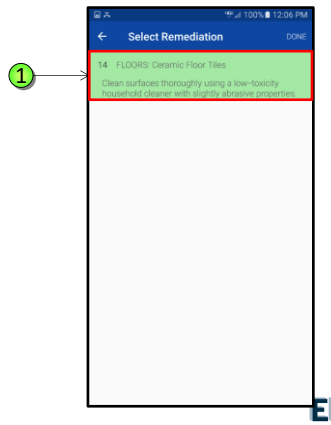
Probable Causes & Remediation

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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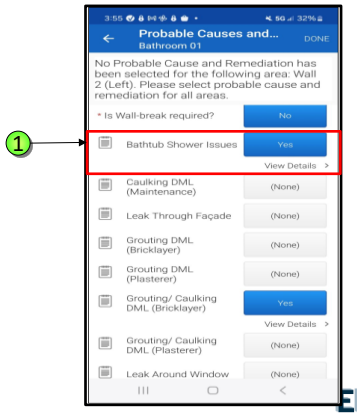
Probable Causes & Remediation

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



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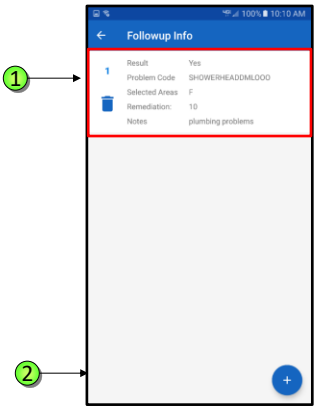
Probable Causes & Remediation

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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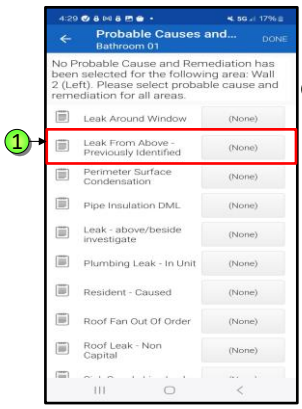
Note:
Leak From Above – Previously Identified

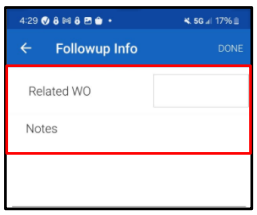
1. Leak From Above - Previously Identified will require staff member to enter a "Related WO" that is linked to this Probable Cause

   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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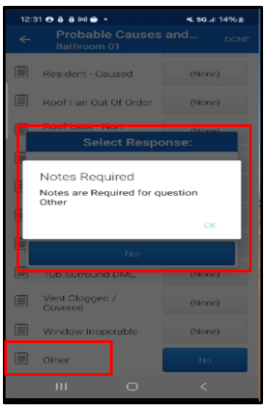
Note: Other

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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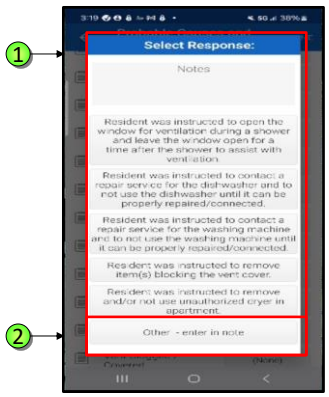
Note: Mold Root Causes – Resident Caused

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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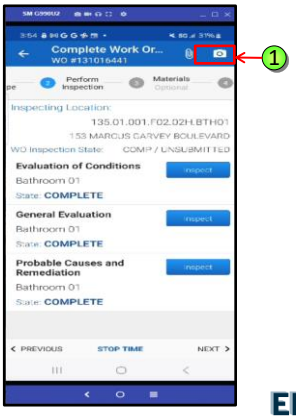
Taking Photos for Work Orders

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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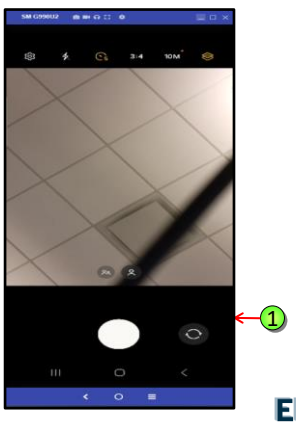
Taking Photos for Work Orders

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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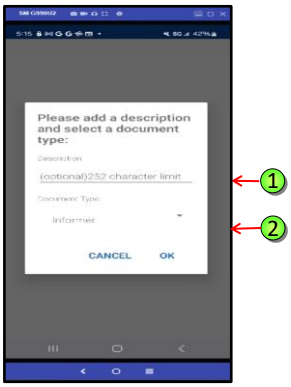
Taking Photos for Work Orders

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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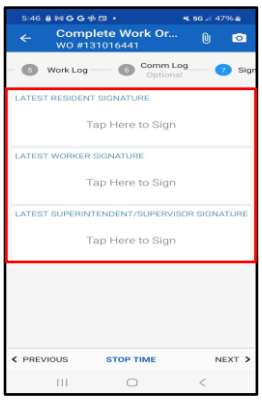
Obtaining Signatures

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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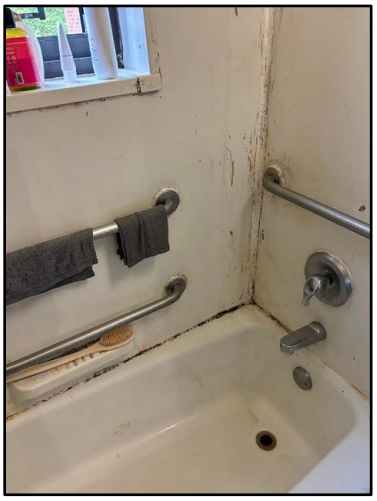
Root Cause Case Study



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.
- Results 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)

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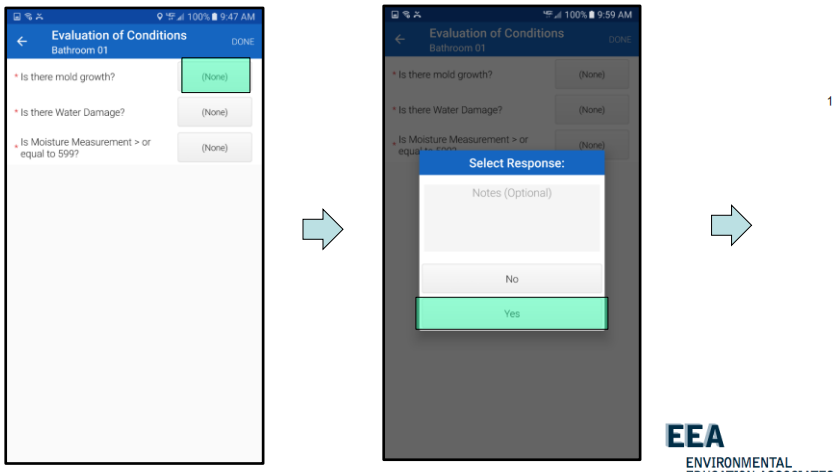
Root Cause Case Study - Mold on Caulking



1

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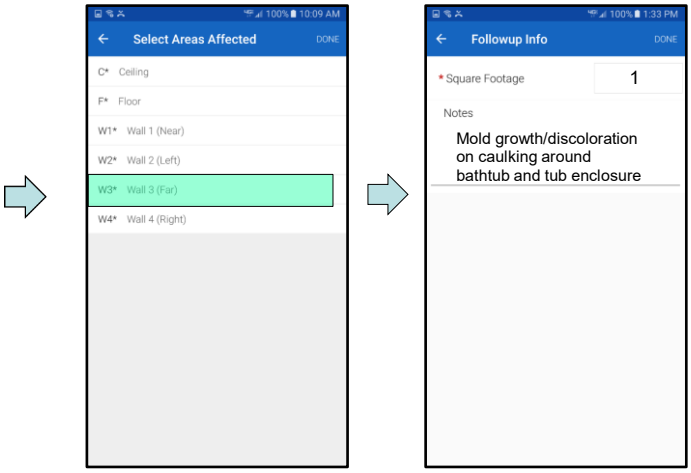
Root Cause Case Study - Mold on Caulking



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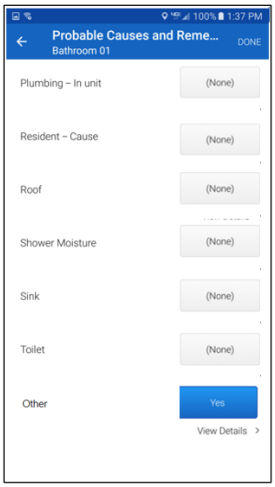
Root Cause Case Study - Mold on Caulking



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

Note: the probable root cause list contains several options for caulking and grout - these selections should be used only when damaged/missing caulking or tile grout is present, allowing for water from the shower/bathtub to migrate to adjacent areas.

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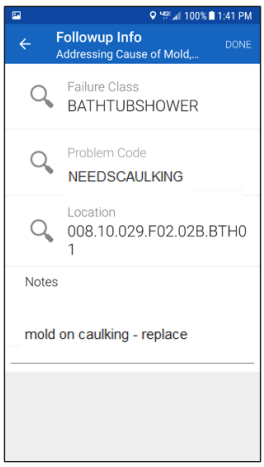
Root Cause Case Study - Mold on Caulking



- 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
- Indicate in notes: “mold on caulking - replace”

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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

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NYCHA MOLD TRAINING

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155

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 in order to minimize the exposure of remediators and building occupants to mold.
- The larger the contaminated area, and the greater the possibility that someone will be exposed to mold, 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 fro containing mold contamination

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NYCHA MOLD TRAINING

178

Wall Breaks

- When opening a wall to perform or prepare for repairs, staff must take the necessary precautions to protect residents and staff from mold, asbestos, and lead.
- This guidance details the steps staff must take before, during, and after the wall break. Instructions on temporary wall closures are also included in this guidance; temporary wall closures are an important customer service practice that must be implemented until permanent repairs can be completed.
- Maintenance workers, bricklayers, carpenters, plumbers, plasterers and roofers are responsible for performing repairs that require wall breaks and are responsible for following the below guidance.

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Wall Break Prep

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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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, and tape down edges as thoroughly as possible.

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Precautions while performing repairs; Temporary Wall Closure - Note!

- Staff are required to detail that a wall opening has been performed on a tub wall in the notes section of the work order. The subsequent permanent repairs must be expedited in order to prevent potential damage to apartments below. To do so, staff must also notify the development supervisor(s), who will inform the Planning Unit that the follow-up work order must be prioritized.

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Common Problems: Exhaust Grill

Dirty

Closed

Not sealed

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Common Problems: Duct Shaft

Blocked

Dirty

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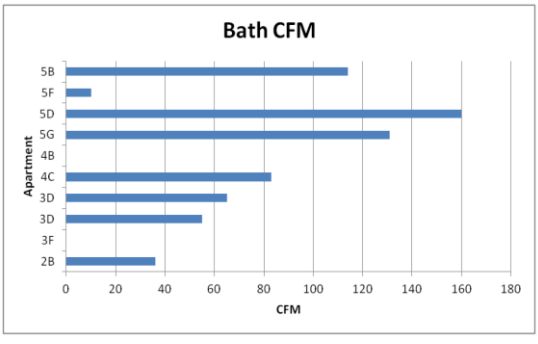
Common Problems: Imbalance

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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NYCHA MOLD TRAINING

191

Background

- When performing repairs that require a wall break and/or repairs to water/ fire system piping or heat supply lines, NYCHA has the opportunity to quickly and efficiently retrofit piping with insulation in accordance with New York City code.1
- This Interim Guidance provides information on how to inspect and install insulation when a wall break has been performed in the course of completing a repair.
- Maintenance workers, bricklayers, carpenters, plumbers, plasterers and roofers are responsible for conducting repairs that require wall breaks and/or repairs to water piping. Thus, maintenance workers and the aforementioned trades will be responsible for following the below guidance.

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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 exposed for the presence of insulation.

- apartment repairs - staff must inspect all domestic water pipes for insulation
- public space - 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 exposed and accessible as a result 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 exposed and accessible after the wall is opened.
- Should they find these pipes lack insulation, they must install the insulation during the course of 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 and 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 insulation around all pipes, valves and fittings that are exposed and accessible as a result 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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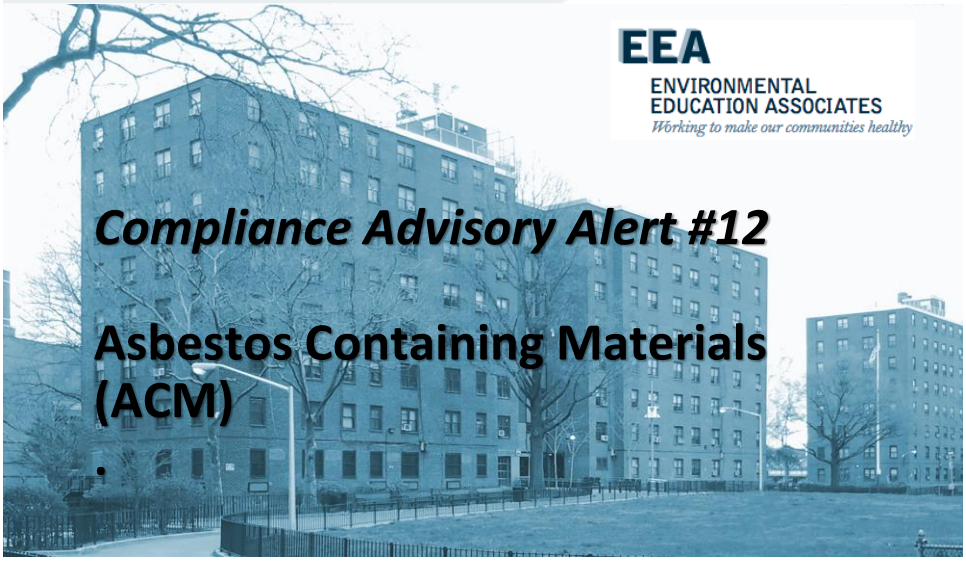

Compliance Alert #1
ACM

- While conducting oversight at a development, ERH&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 make 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.
- Inspector should inspect all risers, t's and fittings both in the area and distal from the wall opening

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Toilet Supply Line

- Condensation on uninsulated toilet supply line can lead to moisture on walls and floors

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NYCHA MOLD TRAINING

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

HEPA vacuum surfaces

Apply Cleaner

Damp-wipe & Dry

Apply Disinfectant & Dry

HEPA vacuum entire work area

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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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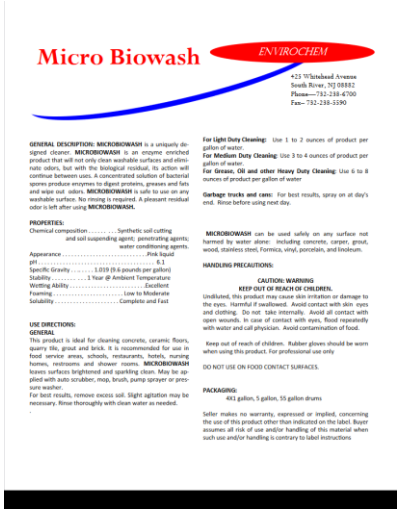
NYCHA Product - Cleaner



Micro Biowash

ENVIROCHEM

425 Whitehead Avenue
South River, NJ 08882
Phone—732-238-4700
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 agents; penetrating agents; water conditioning agents.
Appearance ..... Pink liquid
pH 6.1
Specific Gravity ..... 1.039 (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, carpet, 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 panelling. Use as supplied, saturate affected materials with enough product to remain wet for at least 10 minutes. Use proper ventilation.

DISINFECT/CLEAN/DEODORIZE: Precleanall 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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211

212

213

214

215

216

217

Cleaning Methods

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

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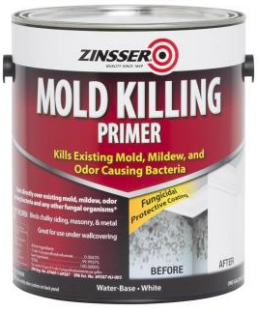
Mold Resistant Paint



- Applied after surfaces are cleaned, disinfected & dry

  Apply per manufacturers instructions

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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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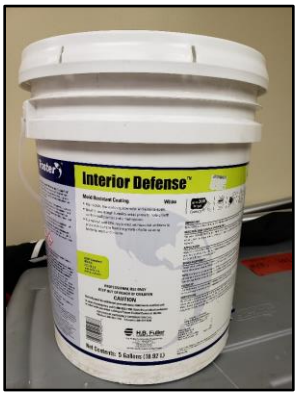
NYCHA Products

- Fosters 40-50 Anti-Microbial Coating



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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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Quality Assurance Inspections

- Maximo automatically generates a quality assurance inspection work order twenty-five (25) days after the last child work order is closed for all apartments where a mold, water damage, or moisture (i.e. a wet measurement) condition was identified during the inspection. The target start date is automatically populated as 30 days after the last child work order closed and the target end date is populated as 45 days after the last child work order closed.
- Once the quality assurance inspection work order is generated, property management staff contacts the resident and schedules the quality assurance inspection to take place between 30-45 days after the last child work order is closed. See Section VIII.A.3 for the process to schedule appointments.

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Quality Assurance Inspections

Inspecting for Mold, Water Damage, and Moisture

The Inspector:

- Visually inspects for mold any wall, floor, ceiling, or component identified in the initial inspection as having mold and records the results in the handheld device.
- Visually inspects for water damage any wall, floor, ceiling, or component identified in the initial inspection as having water damage and records the results in the handheld device.
- Uses the moisture meter to measure for subsurface moisture any, wall, floor, ceiling, or component that measured wet during the initial inspection and records the results in the handheld device.

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Quality Assurance Inspections

If all work was satisfactorily completed:

- The inspector completes the quality assurance inspection by taking photo(s) of the inspection area free of mold, water damage, and/or moisture and uploading the photo(s) into Maximo.

If any work was not satisfactorily completed:

The inspector:

- Immediately creates a child work order in Maximo.
- Takes and uploads a photograph of the unsatisfactory work into Maximo if the work is visible in the apartment.
- Closes the existing quality assurance inspection work order.
- Follows up with supervisor of the staff person(s) who performed the work to report the unsatisfactory work and ensure the work is completed.

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Quality Assurance Inspections

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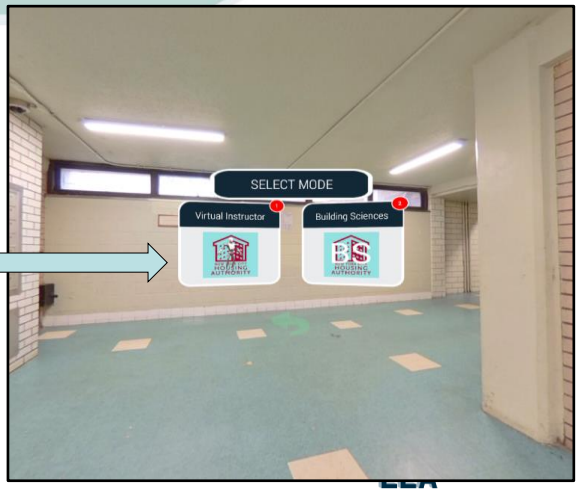
VR Simulation

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



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227

NYCHA MOLD TRAINING

228

Outputs

- Mold in NYCHA apartments is remediated and the root causes are identified and corrected within the allowable timeframes.
- Mold recurrence is reduced

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Performance Reporting

NYCHA shall centrally assign:

Staff to review reports to identify developments with:

- High parent mold work order completion time frames.
- High rates of unfounded mold work orders.
- High reoccurrence rates for mold work orders.

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Performance Reporting

NYCHA shall centrally assign:

Supervisory staff trained in mold inspections to:

- Visit developments and inspect randomly selected apartments with high rates of unfounded or reoccurring (as applicable) mold work orders.
- Report findings on the underlying issue, i.e. a building system and/or mold inspection and remediation process issue.
- Provide follow up recommendations to the neighborhood administrator.

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Performance Reporting

- For building system issues, the supervisory staff may, for example, recommend additional repairs.
- For process issues, the neighborhood administrator follows up with the property manager and property maintenance supervisor to address the process issue which could include providing additional training, reviewing key accountabilities, or providing progressive discipline.

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Reports

- Operations reports to be developed with the independent data analyst

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Record Keeping

- The IT Business Solutions Technology Department's Maximo Team retains electronically created and stored completed work orders for at least seven (7) years

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Building Sciences

- Questions, Comments & Discussion

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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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