

NYCHA MOLD TRAINING

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**Mold Building Sciences
for Maintenance
Training Presentation**



Welcome NYCHA Staff

- Registration & sign-in/out
- Training materials
- Training Agenda
- Training Goals
 - Understand importance of controlling mold & moisture
 - Be able to use the tools, practices & procedures
 - Be ready to get this done!

Link to
Training
Resources



Welcome NYCHA Staff

- This training is presented by EEA under contract to NYCHA
- EEA is an accredited asbestos, lead & mold training provider
- We look forward to working with you to provide this very important training
- It's critical to public housing in NYC
- NYCHA succeeds when YOU succeed!
- [General Manager's Intro](#)



Public (Housing) Enemy #1



Why Are We Here Today?

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



Photo Source: NY Daily News



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 file 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

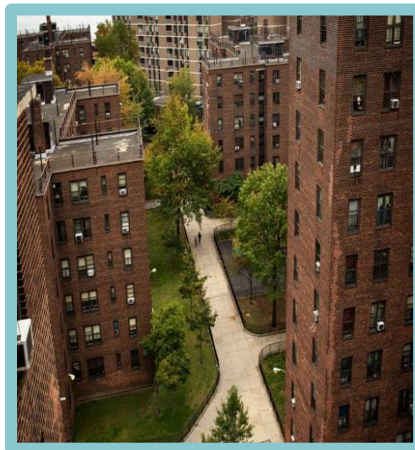
Health Inequity – Asthma in Low-Income Housing

Prevalence, Health Inequity, and Opportunity

Over 24 million Americans have current asthma (7.8% of US population)¹, CT 9.3%²

Over 6 million American children have asthma (8.4% of US population)^{1,2}

Wide health disparities in childhood asthma by housing type in NYC³



NYC Public Housing
22% asthma prevalence



Typical NYC Apartment
12% asthma prevalence



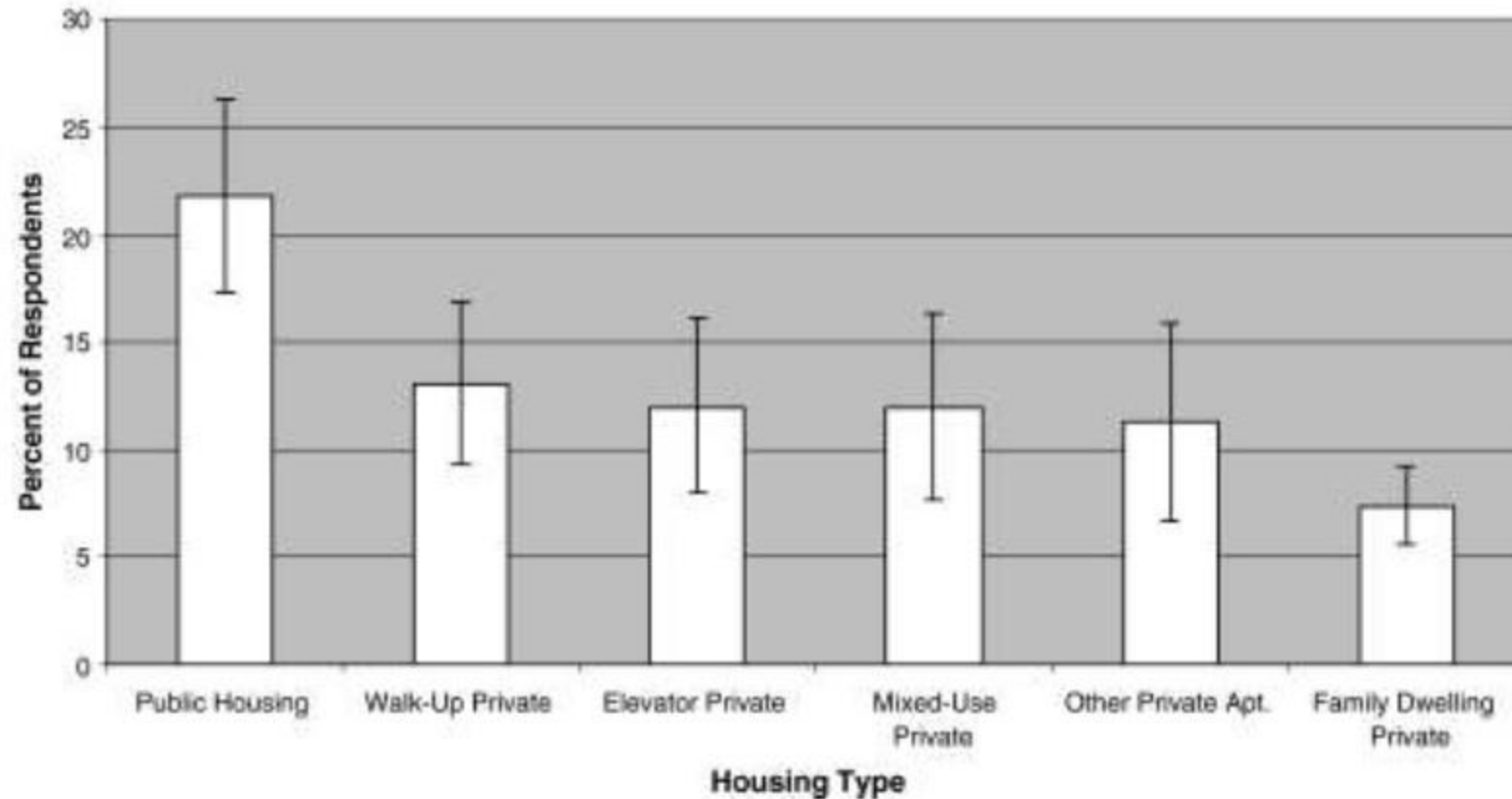
Private NYC Housing
7% asthma prevalence

¹ Center for Disease Control and Prevention. <https://www.cdc.gov/asthma/mostrecentdata.html>

² State of Connecticut Department of Public Health. *A Collaborative Approach for Addressing Asthma in Connecticut, 2009-2014*

³ Northridge, Jennifer et al. "The Role of Housing Type and Housing Quality in Urban Children with Asthma." *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 87.2 (2010): 211-224. PMC. Web. July 2016.

Asthma Prevalence Data



Northridge, et al. The role of housing type and housing quality in urban children with asthma.
Journal of Urban Health, 2010; vol 87, no. 2.

NYCHA Facilities

- 2,413 buildings in 325 developments over five boroughs; 769 facilities; 177,666 apartments; 404,000 residents
- 70 percent of NYCHA buildings built before 1969.
- [List of NYCHA Properties](#)
- Building materials that can be affected by mold & moisture include:
 - Plaster
 - Drywall
 - Wood Studs/Framing
 - Cabinets

NYCHA Sustainability Agenda

- NYCHA is committing to systemically eliminating the root causes of mold by fixing leaks in roofs, facades, pipes and modernizing ventilation systems by 2025
- [Next Generation NYCHA Sustainability Agenda](#)

Where Does Mold Grow in NYCHA?

- 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

Preventing Mold In NYCHA

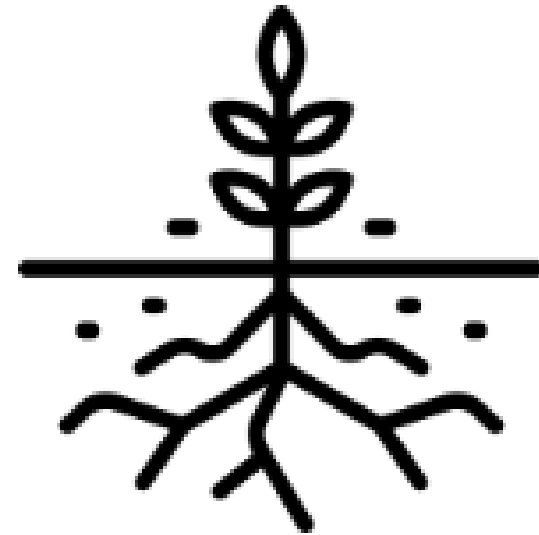


- Mold growth is always associated with excessive moisture problems.
- How do we **prevent** or **control** excessive moisture and what are the **Root-Causes** of excessive moisture?

Mold Root Causes

The fundamental reason(s) for the occurrence of mold, water damage or moisture.

- Identify and select the most correct root cause(s) to ensure the condition does not reoccur – up to four (4) can be selected.
- Root cause(s) might often be not visible at first and require a comprehensive investigation to identify.



Mold Root Causes

Twenty-nine (29) Root Causes are organized by five (5) general categories how the problem was caused.

- I. Sealant Related Issues – Issues that can be resolved by removing and replacing old caulking.
Example: Caulking around a bathtub.
- II. Leak Issues – Issues caused by a leak other than an sealant issue.
Example: Crack in exterior (façade) is causing a water enter the unit.
- III. Resident-Caused – Issues that can be prevented due to adjustments to resident education and behavior.
Example: Resident is not opening a window after a shower.
- IV. Ventilation – Issues that are a result of inoperable roof fans and/or lateral duct issues.
Example: A clog in the lateral duct is preventing air from flowing into the apartment.
- V. Other – Issue(s) are being caused due to reasons outside of the four categories previously listed.
Example: Condensation (sweating on the pipes) due to the damaged or missing insulation.

Root Cause Maintenance Work

- Toilet pulls
- Caulking
- Insulation/re-insulation
- Exhaust grill/duct/backflow damper cleaning
- Fan belt replacement
- Plumbing repairs,

Water Infiltration

- Major cause of mold growth
- Present in app. 75% of all properties
- Moisture is the leading cause of building problems costing more than \$9 billion dollars annually in the US.

How Long Has Mold Been A Problem?

From Leviticus Chapter 14, verses 33-57

On the seventh day the priest shall return to inspect the house. If the mold has spread on the walls. He is to order that the contaminated stones be torn out and thrown into an unclean place outside the town. He must have all the inside walls of the house scraped and the material that is scrapped off dumped into an unclean place outside the town. Then they are to take other stones to replace these and take new clay and plaster the house.

If the mold reappears in the house after the stones have been torn out and the house scrapped and plastered the priest is to go and examine it and if the mold has spread in the house, it is a destructive mold: the house is unclean. It must be torn down - its stones, timbers and all the plaster - and taken out of the town to an unclean place.

Anyone who goes into the house while it is closed up will be unclean till evening.

Anyone who sleeps or eats in the house must wash his clothes...

How Mold Grows

- Finds suitable conditions
 - Water
 - Food
 - Temp (hot or cold)
- Grows
- Spreads

Localized Mold Contamination



Major Mold Infestation



Efflorescence



- Efflorescence is the residue that's left behind when water seeps through concrete, stone, or brick.
- Salt deposits leave a white residue that resembles mold.
- Won't grow or spread, and isn't a fungus.

Exposures To Residential Dampness And Mold

Associated with increased risks of;

- Respiratory symptoms
- Asthma
- Hypersensitivity pneumonitis
- Rhinosinusitis
- Bronchitis
- Respiratory infections.

Preventing Mold Growth

Simple Steps

- keep exterior moisture out of the building
- control moisture from internal sources

Preventing Mold Growth

- It's important to establish a cooperative partnership between NYCHA staff and residents so that conditions that require attention are identified and dealt with promptly.
- NYCHA staff and residents should take action to detect and correct leaks, condensation problems, and floods as soon as they are discovered.
- The potential for building structural damage, mold growth, and increased adverse health effects can and should be reduced by limiting the buildup of indoor moisture.

UPDATED - Top Ten Things NYCHA Staff Should Know About Mold & Moisture

1. Potential health effects and symptoms associated with exposures to mold and excessive moisture include allergic reactions, asthma, and other respiratory complaints.
2. Mold can be found almost anywhere; it can grow on virtually any substance if moisture is present. For example, there are molds that can grow on sheetrock, painted plaster and concrete, wood, paper, carpet, foods, and even dusty inorganic building materials
3. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.
4. If mold is a problem in an apartment or building, we must clean up the mold and eliminate sources of moisture.
5. Fix the source of the water problem or leak to prevent mold growth, including repairing leaky roofs.

Top Ten Things NYCHA Staff Should Know About Mold & Moisture

6. Reduce indoor humidity (to 30-60%) to decrease mold growth by: venting bathrooms and kitchens; using air conditioners and de-humidifiers; and increasing ventilation. Staff shall ensure that mechanical ventilation is functioning (clear lateral ductwork and operable roof fans). Further, staff can use a hygrometer to check the relative humidity in a resident's apartment
7. Clean and dry any damp or wet building materials and furnishings within 24-48 hours to prevent mold growth.
8. Clean minor levels off off hard surfaces with water and detergent, and dry completely. Absorbent materials, such as sheetrock, that are moldy will need to be replaced.

Top Ten Things NYCHA Staff Should Know About Mold & Moisture

- 9. Prevent condensation: reduce the potential for condensation on cold surfaces by assuring that cold water pipes in wall cavities are properly insulated.**
10. If needed as a result of asthma, individuals with mold and/or excessive moisture in their apartments are entitled to reasonable accommodations from NYCHA.

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Health Effects



Why Is Mold A Problem Today?

- Recent discoveries linking the presence of mold with health problems
- Improved understanding of healthy housing

Help Yourself to a **Healthy Home**

Protect Your Children's Health



U.S. Department
of Housing and
Urban Development,
Mel Martinez, Secretary

- Indoor Air Quality
- Asthma & Allergies
- Mold & Moisture

- Carbon Monoxide
- Lead
- Drinking Water

- Hazardous Household Products
- Pesticides
- Home Safety

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CASE STUDY

IMPROVED ASTHMA CONTROL AFTER REMEDIATION OF ENVIRONMENTAL *STACHYBOTRYS* CONTAMINATION

Christopher D. Miller, MD; Susan M. Flappan, MS, CIH; Jay M. Portnoy, MD

INTRODUCTION

Fungal mycotoxins have been implicated in human and animal disease. In this case report, we propose that a non-IgE-mediated mechanism, and probably fungal mycotoxins, were responsible for a worsening of asthma symptoms in a toddler. We also demonstrate the importance of environmental assessment and the effects of environmental remediation.

CASE REPORT

A 2-year-old white male with a previous history of asthma was brought to our allergy clinic with asthma symptoms that were not well controlled by his current medical therapy of a β -agonist. The patient's symptoms of cough, rhinorrhea, sneezing, ocular

irritation, and wheezing first arose when he was 8 months old. His symptoms were perennial and more prevalent in the morning and evening. His family history was negative for atopic disease.

On physical examination, the patient appeared to be an active 2-year-old in no apparent distress. He was in the 20th percentile for height and weight and, according to his parents, his growth and development were normal. Physical examination was unremarkable except for pale nasal mucosa. Respiratory wheezing was documented during prior visits to his primary care physician.

Initial workup included prick skin testing, which yielded negative results for molds, cat, dog, dust, cockroach, and dust mite. The patient had appropriate positive and negative controls. His serum IgE was 27

Dr. Miller is an allergy fellow. Dr. Portnoy is Program Director/Chief, and Ms. Flappan is an indoor air quality specialist, all at The Children's Allergy Hospital, Section of Allergy, Asthma, and Immunology, Kansas City, Mo.



Figure 1. Walls contaminated with a black, slimy fungus later identified as *Stachybotrys*.



Figure 2. Photomicrographs of *Stachybotrys* isolated from a contaminated surface.

IU/mL, with normal being 0 to 99 IU/mL.

Daily anti-inflammatory treatment consisting of fluticasone delivered through a spacer and mask was started. Long- and short-acting β -agonists were also prescribed for worsening or breakthrough symptoms.

Despite these interventions, the patient's symptoms persisted. Because the initial history revealed water leakage in the basement of his home, it was decided to perform a home environmental assessment—some-

thing for which his parents expressed a great deal of enthusiasm.

The patient's home was a 12-year-old, detached, bi-level house in an upper-middle-class suburb. It had a wood-burning fireplace, a central gas forced-air heating system, central air conditioning, and a finished walkout basement with carpeting. Severe water leakage in the basement occurred on two occasions after heavy rainfall. After the first event, the wet carpet

pad was removed and the original carpet was reinstalled.

An inspection of the basement identified two areas of wallboard and wood structure with what appeared to be fungal contamination (Figure 1). Surface samples of these areas later revealed numerous fungal species, including *Stachybotrys*, *Chaetomium*, and *Cladosporium* (Figure 2). Air samples, collected with a volumetric grab sampler, revealed elevated spore counts throughout the house (Table 1). In particular, the spore counts were highest in the patient's bedroom and in the playroom located in the basement. *Stachybotrys* spores were also identified in the basement air samples.

It was therefore assumed that the patient's asthma symptoms might have been related to his exposure to fungi. However, further testing for *Stachybotrys* showed that the patient's IgG response to the organism was less than 3 μ g/mL, with normal being less than 34 μ g/mL. His IgE response to *Stachybotrys* was 279 counts, with normal being less than 3,600.

Nevertheless, his family arranged for environmental remediation in the home. This consisted of removing contaminated building materials, cleaning ductwork, steam-cleaning all carpets, using a vacuum cleaner with a high-efficiency particulate-arresting (HEPA) filter, and installing a pleated furnace filter.

The patient's quality of life, assessed with a tool described by Juniper et al.,¹ improved dramatically with home remediation (Figure 3). In addition, he was weaned from his anti-inflammatory medications and has remained asymptomatic, with no further wheezing exacerbations and a significant decrease in rhinitis symptoms. Follow-up visit

see CASE STUDY, page 32

TABLE 1

RESULTS OF AIR SAMPLE TESTS (SPORES/M³)*

	Sample Dates		
	11/13/97	12/11/97	2/12/98
Kitchen	10,000	800	0
Patient's room	11,200	1,600	100
Basement	12,200*	3,600	100

*Spores identified as *Stachybotrys*.

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says Ob-Gyn David Campbell Walters, author of "Just Take It Out!" He says the evolution of the human head has made it too big to fit comfortably into the birth canal. A 1997 study found that 31 percent of female British obstetricians would prefer to deliver their own babies by cesarean.

Vaginal delivery can have serious—and costly—medical consequences. Especially if doctors use mechanical interventions, such as forceps, vacuum extraction or episiotomy, vaginal delivery can increase the risk of lasting problems like gas and urinary incontinence. And long labors—particularly when followed by unplanned C-sections (and lawsuits)—can add thousands to the overall price tag.

Vaginal births after cesareans (VBAC) can be dangerous. Many women with prior cesareans don't want to risk rupturing the uterus during labor, so they often reject the medical establishment's encouragement to undergo a VBAC. "If a woman ruptures her uterus, you have about 17 minutes to have the baby out before you begin to have [brain] damage," says Dr. Roger Freeman, chair of the American College of Obstetricians and Gynecologists task force on cesarean-delivery rates. ACOG said in August of 1999 that a physician should be "immediately" available, not just "readily available," during VBACs. That's not always possible, especially in rural areas. If a clinic isn't equipped to perform VBAC safely, cesarean delivery isn't just a convenience but a practical necessity.

In the end, both sides are half right. Vaginal delivery is the cheaper method of childbirth—and, unlike a cesarean, is not major abdominal surgery. But from the perspective of some Ob-Gyns, restricting a woman's right to choose a form of childbirth makes no more sense than forcing her into the cheaper of two cancer therapies. "In natural childbirth," says Walters, "we don't even mention that there is an alternative. They're not told their bladder is likely to be negatively impacted. They're not told about the possibility of worse sexuality. We are keeping the advantages of cesarean delivery secret."

A cesarean isn't for everyone—and insurance may not cover it if you're doing it just for your own convenience. Talk to your doctor to decide whether a C-section is right for you. Wanting more peace of mind after a previous cesarean or being certain your own doctor is on hand may be reason enough. Just make sure you understand the risks as well as the benefits. ■

YOUR HOME

A Hidden Health Hazard

Sneezing and sniffing? Maybe the problem isn't a cold but mold. It's more dangerous than you think.



David Sherris at the Mayo Clinic performed a study of 210 patients with chronic sinus infections and found that most had allergic fungal sinusitis. "The prevailing medical opinion has been that mold accounted for 6 to 7 percent of all chronic sinusitis," says Sherris. "We found that it was 93 percent—the exact reverse."

More rarely, molds appear to cause problems like Karabell's. These aren't just allergies but reactions to toxins. Certain molds produce poisons in order to kill off competing fungi and bacteria. Risks of toxicity increase with the amount of mold—and flooding and leaks can supply the moisture that molds need to thrive.

If you believe you have a mold-related illness, consult an allergist or an environmental-health specialist. (If you can see or smell mold, that's a good clue.) They will at least be able to confirm the diagnosis and proceed accordingly. The best remedy of all is simply to get rid of the mold. Small blooms on the surface of walls can be removed with a weak solution of chlorine bleach. Wear rubber gloves, open the windows for ventilation and throw out the sponge afterward. A face mask could also be a good idea. "Dead or alive, mold still contains the proteins that provoke allergies," says J. David Miller, a mold specialist at Carleton University in Canada.

If your home has more extensive water damage, remediation may be the only answer. Seek professional help. You need to fix leaks, replace moldy drywall and improve ventilation. Beware of built-in humidifiers in forced-air heating systems. "Molds and slime build up there and never get cleaned out," says Jack Spengler of Harvard. New York City has guidelines on remediation at www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html. California state also has fact sheets at cal-iaq.org/iaqsheets.htm to help you to a healthier home environment. ■

BY ANNE UNDERWOOD

DEENA KARABELL HAD LIVED in her New York City apartment for 15 years, so when she fell ill in 1983, she never suspected that her apartment itself could be to blame. Over the next 15 years she grew progressively weaker. Finally, in the spring of 1998, she lost 30 pounds and went into anaphylactic shock three times. She literally lay dying in her bedroom when a hired nurse noticed a strong odor of mold in the closet. Suddenly things clicked. Karabell's family moved her out immediately. Today—at a safe distance from the mold—she is almost back to normal. "People are amazed at my recovery," she says.

Molds have been an underrecognized health problem, but that is changing. Health-care professionals now know that molds can cause allergies, trigger asthma attacks and increase susceptibility to colds and flu. Anyone with a genetic predisposition can become allergic if exposed repeatedly to high enough levels. Last year Dr.

Mold Exposure

- Inhalation – most common
 - Respiratory disease
 - Allergic reaction
 - CNS dysfunction
- Dermal – irritation/infection
- Ingestion – Infection

Mold Exposure Symptoms

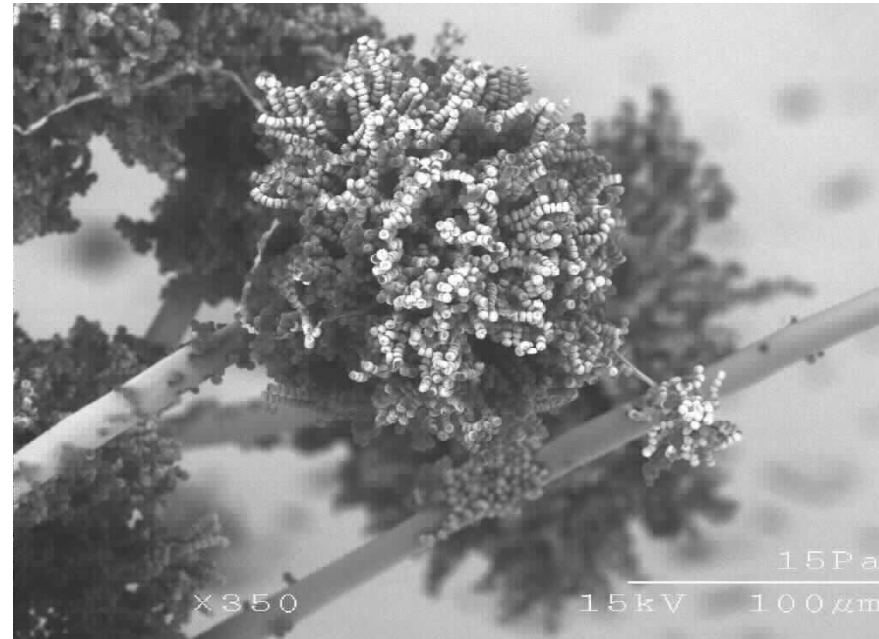
- sneezing
- runny nose
- coughing
- wheezing
- watery eyes
- redness of the eyes
- itchy eyes
- skin irritation, or rash

Health Effects

- [“Breathing Mold Can Cause Health Issues”](#) – IAQ TV

Potential Health Effects

- Allergic reactions/disease
- Irritant effects
- Infections
- Toxic effects



Allergic Responses

- Reactions can be immediate or delayed.
- Reactions can result from inhaling or touching mold or mold spores.
- Mold spores and fragments, whether dead or alive, can produce allergic reaction in sensitive individuals.
- Repeated or single exposure may cause previously non-sensitive individuals to become sensitive.
- Repeated exposure has the potential to increase sensitivity.

Allergic Responses

Hay fever-type symptoms

- Sneezing
- Runny nose
- Red eyes
- Skin rash (dermatitis)

Allergic Responses

Asthma

- Molds can trigger asthma attacks in persons allergic (sensitized) to molds.
- Asthma is a major problem in New York City. In some low-income parts of New York City, as many as one in four children have asthma



Asthma Prevalence Data

United States

- 20 million - 1 in 15 or 6.7% ¹

New York City

- 813,000 - 1 in 7.5 or 13.5% ²

East Harlem

- 20,000 - 1 in 5 or 19.6% ²

1. Asthma and Allergy Foundation of America
2. NYC DOHMH Community Health Survey

Allergic Responses

Hypersensitivity pneumonitis (HP)

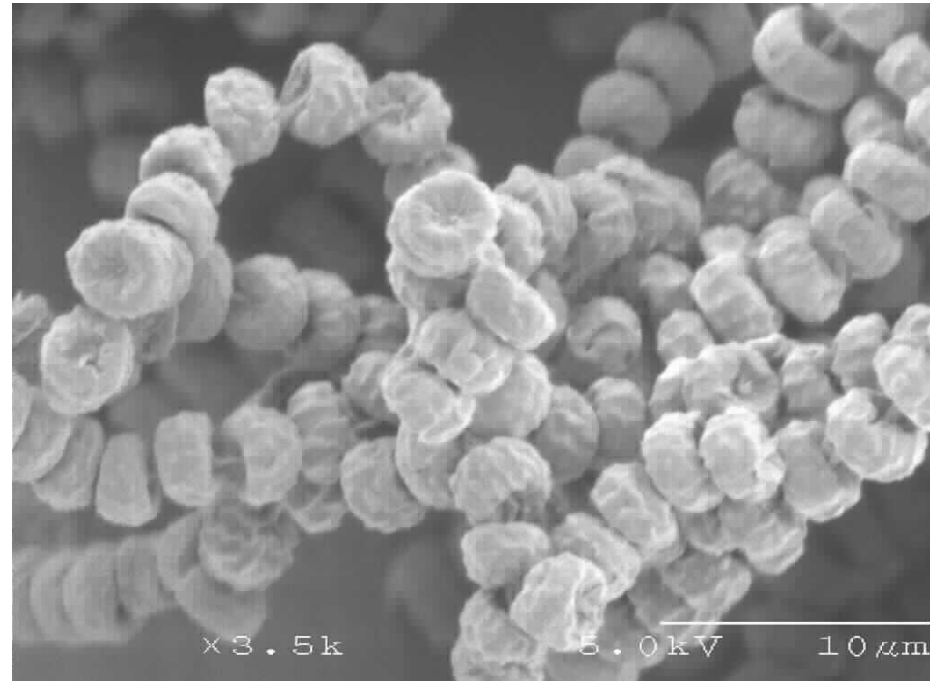
- Rare, but serious, immune-related condition resembling bacterial pneumonia
- May develop after either acute or chronic exposure (via inhalation) to molds
- Usually related to occupational exposure
- Can also be caused by bacteria

Uncommon Allergic Syndromes

- Allergic bronchopulmonary aspergillosis
- Allergic fungal sinusitis

Irritant Effects

- Irritation of:
 - Eyes
 - Skin
 - Nose
 - Throat
 - Lungs



Irritant Effects

Mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-allergic and non-allergic people.



Microbial Volatile Organic Compounds (mVOCs)¹

- Produced by molds and released into air
- Often have strong and/or unpleasant odors
- Exposure linked to symptoms such as headaches, nasal irritation, dizziness, fatigue, nausea
- Health effects research in early stages

Toxic Reactions

- Some molds can produce toxic substances called mycotoxins.
- Some mycotoxins are on the surface of mold spores; others are within the spore.
- Over 200 mycotoxins have been identified from common molds.

Mycotoxins

- Medical evidence of whether mold growing in homes or offices causes health effects in occupants due to mold toxins is lacking.
- * Research is needed.

Degrees of Exposure

- "The dose makes the poison" (in [Latin](#): *sola dosis facit venenum*) – Paracelsus (1538 AD)
- a substance can produce the harmful effect associated with its toxic properties only if it reaches a susceptible biological system within the body in a high enough concentration
- Occupants or remediation workers disturbing large areas of mold growth face greater exposure potential, and thus, greater potential for adverse health effects.



Common-Sense Approach

- **Small amounts of mold growth in homes and buildings are common occurrences, that for the majority of people present minimal health risks.**
 - The solution is to fix the moisture problem and clean up the mold quickly.
- **Large areas of mold growth present a more likely risk of exposure and adverse health effects for some people.**
 - Large areas of mold growth indicate more extensive water damage/moisture intrusion in the building.
 - Additional and more extensive measures should be used during remediation to protect both workers and occupants of the building.

Unknowns

- There are insufficient data to determine if molds cause other adverse health effects, such as pulmonary hemorrhage, memory loss, or lethargy.
- We do not know if the occurrence of mold-related illnesses is increasing.
- Other than surveillance for hospital-acquired infections, there is no system to track the public's exposure to and the possible health effects of mold.

Health Issues for Workers

- Mold assessment and remediation employees with persistent health problems that appear related to mold should see a physician.
- Referrals to physicians trained in occupational, environmental or allergy medicine may be needed.

Health Issues for Workers

- **During mold remediation projects, workers could be exposed to other substances or hazardous materials that could cause adverse health effects:**
 - Asbestos
 - Lead-based paint
 - High levels of particulates
 - Bacteria (associated with water-damaged materials, floods, sewage backups)
 - Cleaning products/biocides used as part of the projects

Golden Rule for Mold Exposure Safety

Minimizing mold-related exposures will reduce the possibility of health impacts on occupants and workers.

- As the potential for exposure increases, the need for protective measures increases.
- Workers can reduce exposure potential by proper use of personal protective equipment (PPE).
 - Respirators (Minimum N-95)
 - Gloves
 - Protective clothing
 - Goggles

Dealing with the Public

- Do not give medical advice to residents.
- Tell them to consult a health care provider regarding any health effects they might be experiencing.

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Guidelines & Requirements

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Public Awareness

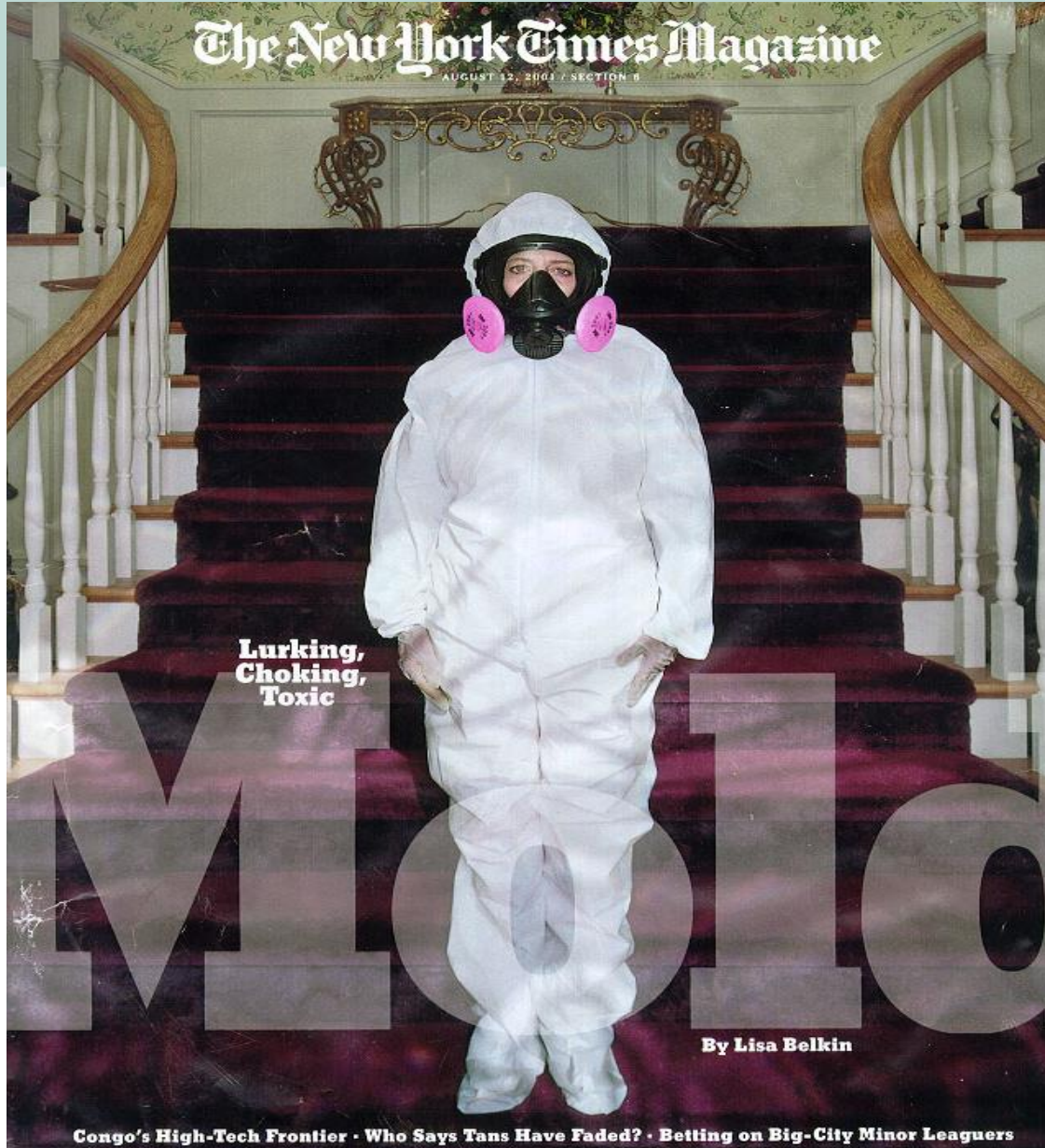
1 DAILY NEWS

NYC Housing Authority to come under judicial oversight over mold in apartments



A child in a NYCHA apartment with mold on the wall. The New York City Housing Authority will come under federal judicial oversight over mold in apartments, enabling residents to go directly to a federal judge if the agency does not resolve the problem. (Richard Harbus for New York Daily News)

- Receiving Attention
 - Media
 - Medical
 - Legal
- Baez Lawsuit



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Ohio chief justice speaks at seminar about fairness

Ohio Supreme Court Chief Justice Thomas Moyer acknowledges racial unfairness in Ohio's legal system during speech in Cuyahoga Falls.

D4

Local

Election panel allows secret group's TV ad

Ohio Elections Commission panel dismisses complaint against a TV ad opposing Ohio Supreme Court justice.

D3

The Beacon Journal

F

October 20,



www.ohio.com/bj

Mold cleanup starts at apartments

Akron housing authority spending \$800,000 to scrub Joy Park complex

By Bob Downing
Beacon Journal staff writer

The Akron Metropolitan Housing Authority will spend an estimated \$800,000 to check for and deal with a potentially dangerous greenish-black mold in Joy Park apartment buildings in southeast Akron.

The agency also is in the process of removing the same slimy mold - called stachybotrys

- from two of its empty apartments on Copley Road in southwest Akron.

Cleanup of the Copley Road apartments by Cardinal Environmental Services began yesterday, said AMHA Executive Director Tony O'Leary.

The cleanup involves removing carpeting, drywall and any wood that may have been contaminated by the mold, he said.

The mold was discovered in one Copley Road apartment by AMHA staffers after its tenants had moved out. It also was found in an area damaged by a leaky pipe in a second empty apartment in the same building.

No complaints were filed by the tenants, although the mold was "pretty obvious . . . and suspicious," O'Leary said.

The work at Joy Park, expect-

ed to begin Nov. 13, will include checking 23 empty buildings for the mold behind the walls and removing it, O'Leary said. In addition, new waterproof wall-board will be installed in the buildings to reduce the likelihood that the mold will come back.

"It's not yet resolved," he said of the mold problem. "It's something we're still working on very

actively."

AMHA officials met yesterday with contractors, and bids for the Joy Park mold abatement work will be opened Oct. 31, O'Leary said.

The housing authority owns 41 buildings with 200 apartments at Joy Park: the 23 where the mold work will be done, two empty buildings to be razed and 16 occupied buildings, said construction manager Tom Gilbert.

He said the agency is unaware of any mold problems or com-

plaints from tenants in the occupied and recently renovated buildings.

AMHA intends to check for mold in the occupied buildings after the agency gets a better idea of the scope of the problem in the empty buildings, O'Leary said.

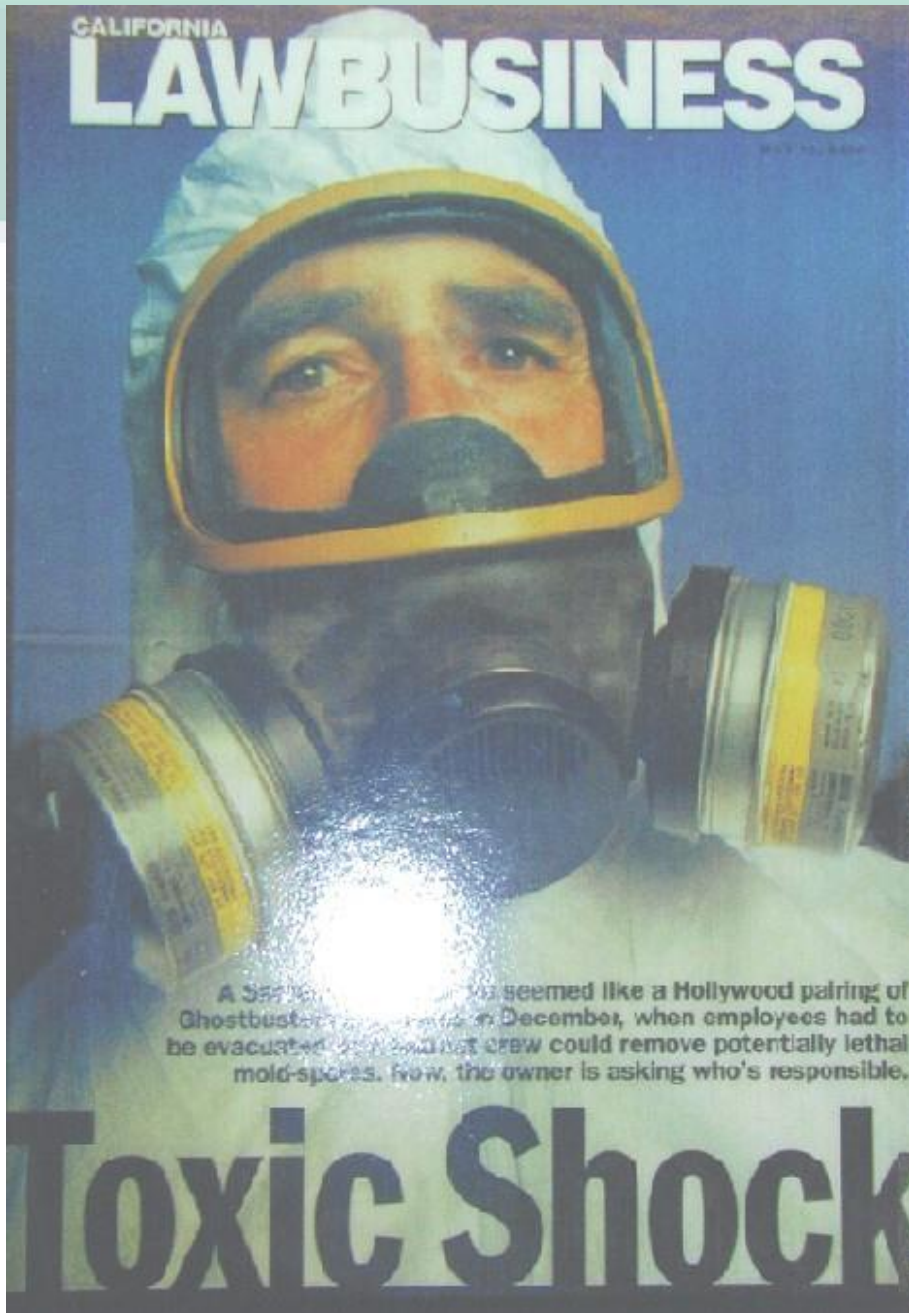
He said the AMHA has no knowledge that any Joy Park residents have been exposed to mold.

Please see Mo

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CALIFORNIA
LAW BUSINESS

A San Francisco case seemed like a Hollywood pairing of Ghostbusters. In December, when employees had to be evacuated, a mold remediation crew could remove potentially lethal mold spores. Now, the owner is asking who's responsible.

Toxic Shock

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LAWYERS WEEKLY USA


THE NATIONAL NEWSPAPER FOR SMALL-FIRM LAWYERS

October 2, 2000

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Article of the week from *Lawyers Weekly USA*:

TOXIC MOLD ... the Next Asbestos?

By Sylvia Hsieh

Claims for personal injury and property damage caused by mold growing inside buildings are on the rise, plaintiffs' lawyers and insurance defense attorneys tell *Lawyers Weekly USA*, and some experts predict they will be the next big tort wave.

"It is a trend. It's one of the hottest areas in construction defect as well as toxic tort law. I view these mold claims as similar to asbestos 30 years ago," says Alexander Robertson, a Los Angeles plaintiffs' lawyer who is currently representing over a thousand plaintiffs against hundreds of building owners for mold contamination.

Injuries from mold range from respiratory problems, skin rashes and headaches to lung disease, cognitive memory loss and brain damage, experts say.

"Mold is everywhere. There are no specific government guidelines and not a whole lot of medical information on it. It's ripe for lawyers to get into and expand it," says Sara Thorpe, a San Francisco defense lawyer.

"Anytime you have some water penetration (in a building), you have potential for mold – and a lot of potential for litigation," says David Governo, a Boston toxic tort defense lawyer.

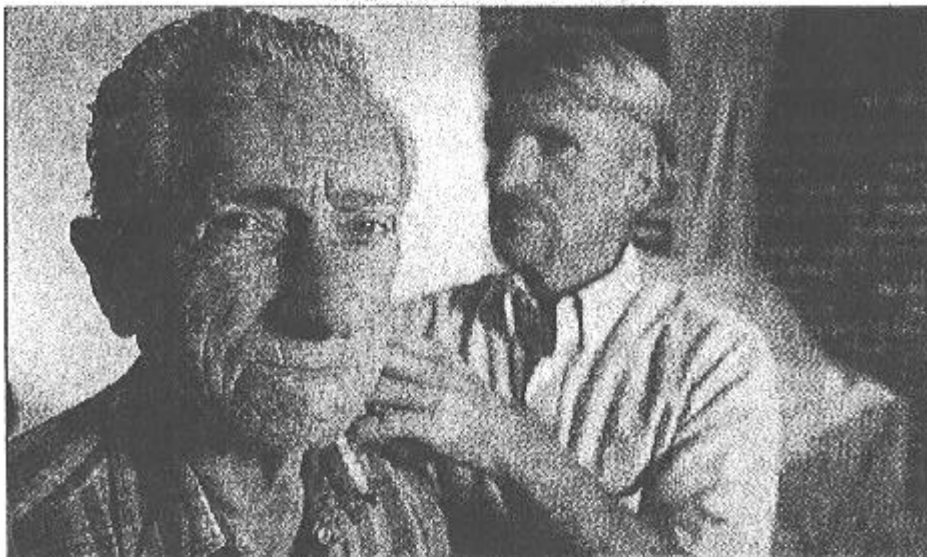
Claims include:

- property damage and personal injury claims against insurers;
- construction defect claims against builders, contractors and architects;

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DENNIS MCCOY / SACRAMENTO BUSINESS JOURNAL

Tom Anderson, with son Alan, said Allstate offered \$17,300 to do \$30,000 in home repairs

Mold verdict: \$18 million

KELLY JOHNSON / STAFF WRITER

A federal court jury in Sacramento on Tuesday awarded a 96-year-old Placerville man \$18 million in punitive damages in his bad-faith insurance claims-handling lawsuit against Allstate Insurance Co.

"Allstate could have repaired my house for a little over \$30,000 to start with," Tom Anderson said after the decision.

Allstate, the nation's second-largest home and car insurer, plans to appeal.

Anderson's house was damaged more than 3½ years ago when a water pipe burst and mold took hold throughout the modest structure. He rejected Allstate's offer of \$17,300 to repair the house and sued Allstate in July 1999.

"Thank God it's over," he said Tuesday.

Anderson won't collect any money while the case is on appeal. "Usually it's a two- to three-year process," said Ron Haven of the plaintiff's law firm, Shepard & Haven, in Sacramento. Anderson's lead attorney was Stan Parrish.

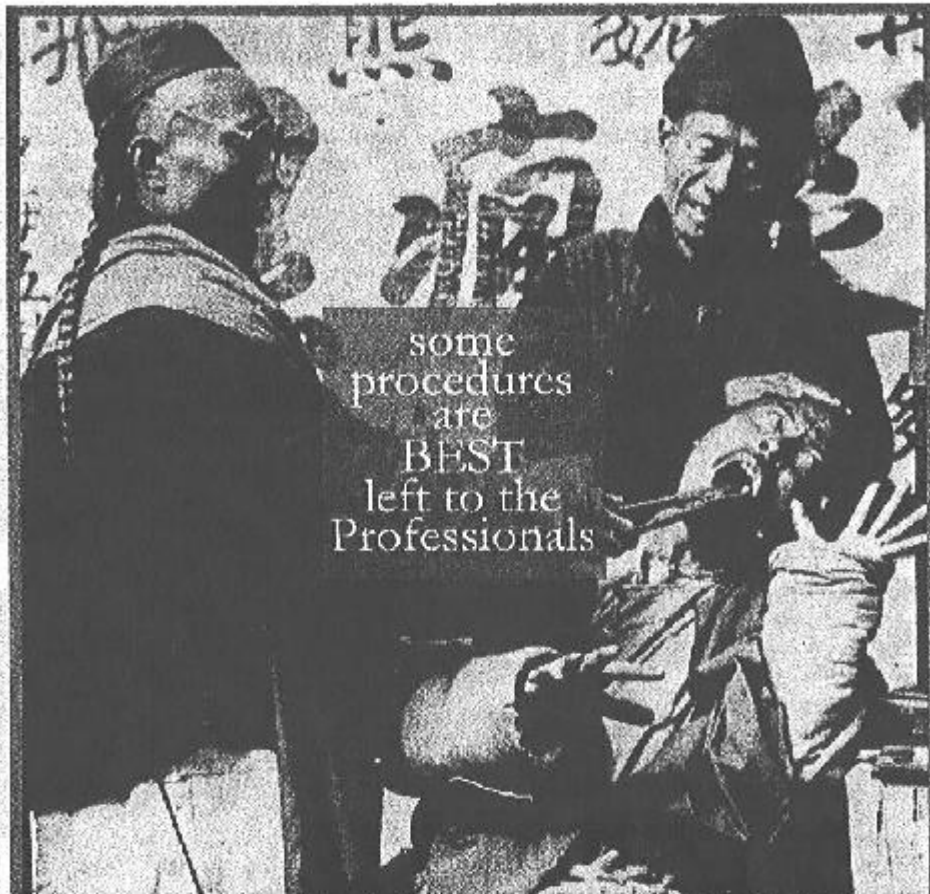
son said, he had killed down the mold, but didn't eliminate it. Now the house must be torn back down to the frame.

At trial, an Allstate expert disagreed.

Tom Anderson, who has been living with his son, misses his own home, yard and neighbors.

A year ago Alan Anderson figured that Allstate was waiting for his father to die because the bad-faith lawsuit would have died with him. Now, if Tom Anderson were to die before the appeal is decided, the economic and punitive damages would remain, while the non-economic damages would be lost, Haven said.

"It is a big victory," Alan Anderson said, "for the little guy."



some
procedures
are
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left to the
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CB  Richard Ellis

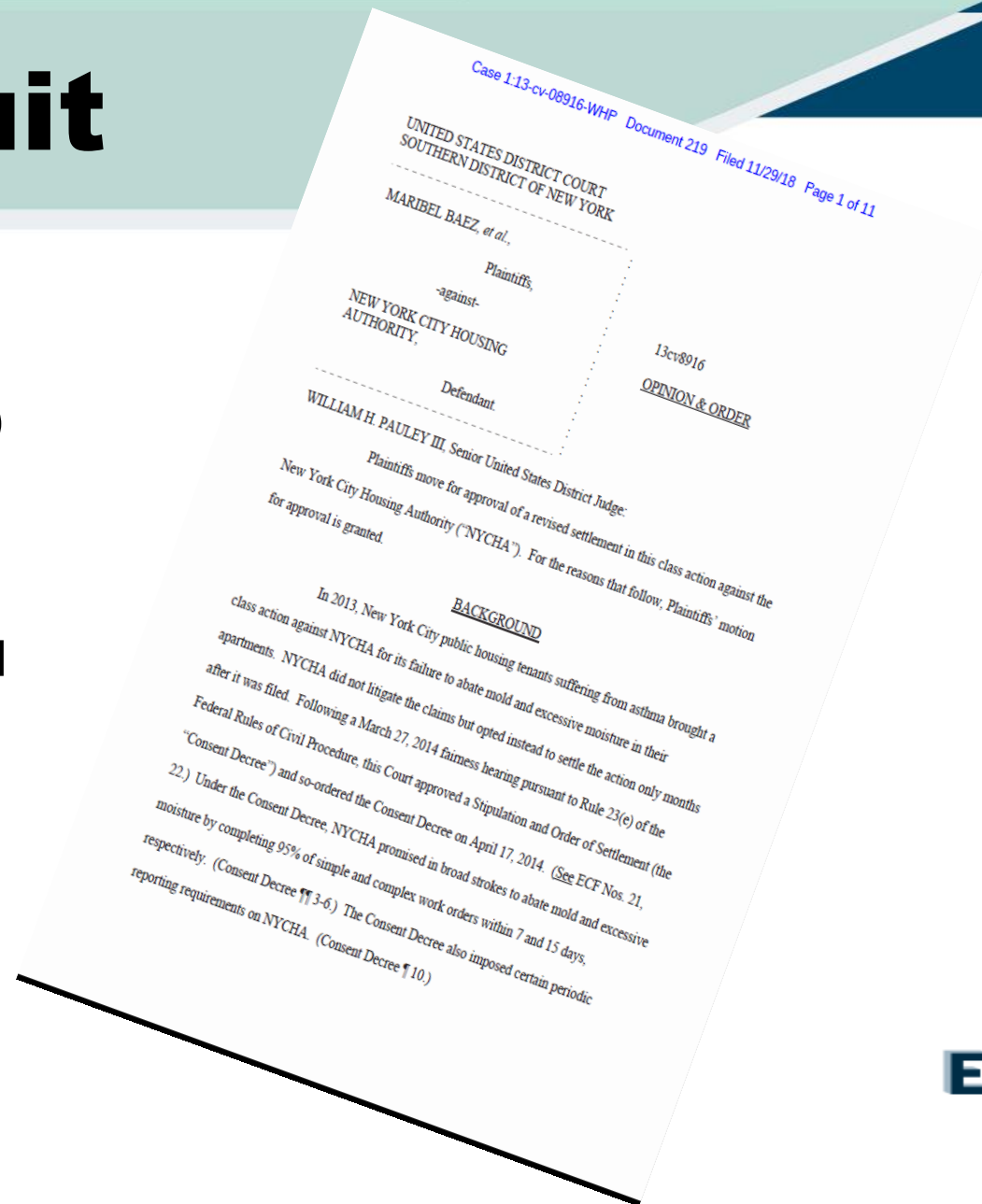
NAVIGATING A NEW WORLDSM

"Bringing
CB Richard Ellis in to help
plan and coordinate our
corporate can... project was

ITAL
SSOCIATES
r communities healthy

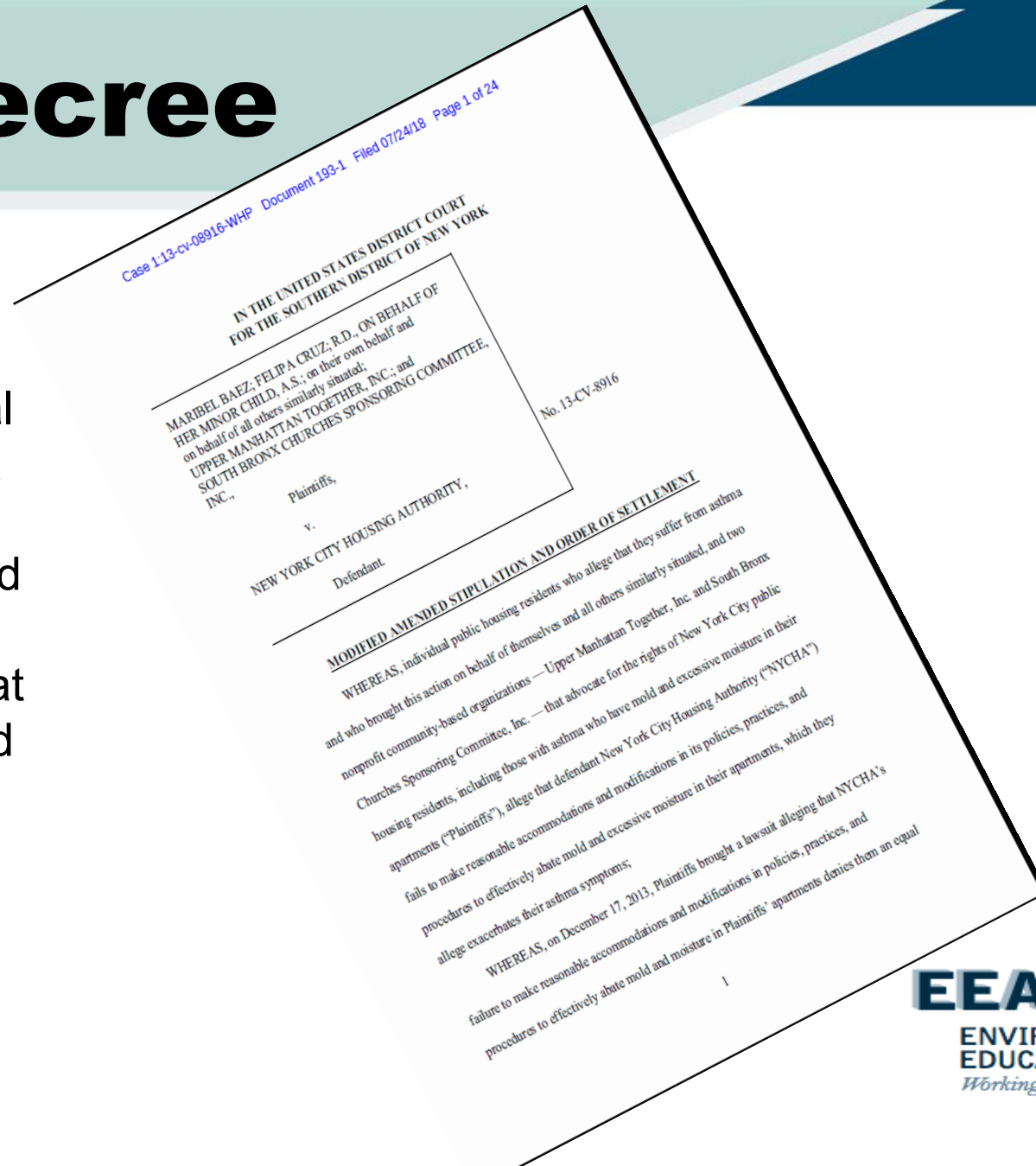
Baez Lawsuit

Maribel Baez vs NYCHA (“Baez”) is a class action lawsuit filed December 2013, as a violation the Americans with Disabilities Act for the conditions of mold and excessive moisture for residents suffering from asthma.



Consent Decree

- In partnership with the Special Master and Plaintiffs, NYCHA has revised its standard procedure for addressing mold complaints.
- These changes were piloted at 38 developments in 2017, and will be launching citywide in January 2019



NYCHA Mold Busters

- **Better Tools**
 - Staff will use new tools to find and fix the source of the problem, including moisture meters and new mold-fighting paint.
- **Enhanced Training**
 - Staff will receive additional hands-on training to become successful Mold Busters.
- **More Accountability**
 - A new inspection and recording process requires photos of the affected areas and guides the staff through the process of finding the cause of the mold or moisture problem. NYCHA will also inspect apartments after the work is completed to ensure that the staff has properly fixed the condition, and there is no mold.

NYCHA Tech Service Mold Unit

- Coordinate classroom training for over 2,500 operations staff, including property management and front line staff.
- Conduct field training to ensure adherence to Mold Standard Procedure and process.
- Facilitate distribution of all Mold Busters tools.
- Communicate with all NYCHA residents.
- Coordinate and prioritize mold work order scheduling to streamline repairs.

NYCHA Policies

- It is the policy of NYCHA to establish a cooperative partnership between staff and residents to quickly identify mold and its root causes.
- NYCHA will promptly remove mold from NYCHA locations and identify and correct the root cause of the mold growth; i.e., the moisture source and/or inadequate ventilation.

NYCHA Purpose

- Standard Procedures establish responsive measures to mold and its root causes in NYCHA public housing locations, and creates protocols to protect the health of residents and staff when remediating mold and identifying and correcting its root causes.

Standard Procedures

- Inspections

All inspection work must conform to the protocols in the following documents:

- GM 040:14:1, Mold/Mildew Control in NYCHA Residential Buildings
- NextGeneration NYCHA Informer Work Management (iWM) handheld application

Standard Procedures

- Remediation

All remediation & related maintenance work must conform to the protocols in the following documents:

- GM 040:14:1, Mold/Mildew Control in NYCHA Residential Buildings, including Appendix A – Remediation Methods
- GM-040:18:2 Revised, Maintenance Tasks – Dust Control and Clean Up in Apartments, which establishes Work Area Preparation/Performance Levels
- Interim Guidance on Wall Breaks
- Interim Guidance on Pipe Insulation

Training Requirements

- Inspector (32 hrs) - Training on inspection tools and methods as well as conducting and documenting inspections
 - Directors, Regional Asset Managers, Housing Managers, Resident Building Superintendents, and Assistant Resident Building Superintendents
- Building Sciences (16 hrs) - Training on identifying the root causes of mold and on the methods to correct the root causes to prevent the reoccurrence of mold.
 - Directors, Regional Asset Managers, Housing Managers, Resident Building Superintendents, Assistant Resident Building Superintendents, and Maintenance Workers
- Remediation Methods (8 hrs) - Training on how to safely and effectively remediate mold and its root causes.
 - Skilled Trades, Painters, and Caretaker (P)

Performance Metrics

- Average number of days to complete repairs and close mold work orders.
- Average number of days to complete initial inspections.
- Percent of mold work orders for reoccurring mold.

Non-compliance

- If unsatisfactory work is identified during a quality assurance inspection in Section VIII.H, or at any other time, supervisory staff must take one or more of the following actions:
 - Identify areas for follow up training for the employee and ensure training is scheduled and provided.
 - Reinforce with the employee(s) the job expectations, accountabilities, and the progressive discipline process.
- Failure to comply with the requirements of this Standard Procedure may result in disciplinary actions.

Other Agency Guidelines

New York City Department of Health and Mental Hygiene “Guidelines on Assessment and Remediation of Fungi in Indoor Environments” – 2008

- Environmental Assessment
 - Visual Inspection
 - Environmental Sampling
- Communication with Building Occupants

Other Agency Guidelines

New York City Department of Health and Mental Hygiene “Guidelines on Assessment and Remediation of Fungi in Indoor Environments” – 2008

- Remediation
 - Moisture Control and Building Repair
 - Worker Training
 - Cleaning Methods
 - Quality Assurance Indicators
 - Restoring Treated Spaces

Other Agency Guidelines

New York City Department of Health and Mental Hygiene “Guidelines on Assessment and Remediation of Fungi in Indoor Environments” – 2008

- Remediation Protocol
 - Small Isolated Areas (less than 10 square feet) – e.g. ceiling tiles, small areas on walls
 - Medium-Sized Isolated Areas (10 – 100 square feet)
 - Large Areas (greater than 100 square feet in a contiguous area) – e.g. on separate walls in a single room

Other Agency Guidelines

New York City Department of Health and Mental Hygiene
“Guidelines on Assessment and Remediation of Fungi in Indoor Environments” – 2008

- Remediation of HVAC Systems
 - Small Isolated Area of Mold Growth in the HVAC System (<10 square feet) – e.g. box filter, small area on insulation
 - Large Area of Mold Growth in the HVAC System (>10 square feet)

Other Agency Guidelines

EPA Mold Remediation in Schools and Commercial Buildings – 2008

- Mold Remediation – Key Steps
- Plan the Remediation Before Starting Work
- Remediation Planning
- HVAC System

Other Agency Guidelines

EPA Mold Remediation in Schools and Commercial Buildings – 2008

- **Remediation**

- Table 1: Water Damage – Cleanup and Mold Prevention
- Table 2: Mold Remediation Guidelines
- Cleanup Methods
- Personal Protective Equipment (PPE)
- Containment
- Equipment

Other Agency Guidelines

OSHA “Brief Guide to Mold in the Workplace” – 2013

- Skin and Eye Protection -
- Respiratory Protection
- Protective Clothing
- Remediation methods – per EPA/NYC
- Sampling – Not Recommended for visible mold
- Equipment for Assessment & Remediation

Trade Organization Protocols

IICRC S520 - a procedural standard and reference guide for the remediation of mold damaged structures and contents and is based on reliable remediation and restoration principles, research and practical experience, and attempts to combine essential academic principles with practical elements of water damage restoration for technicians facing “real-life” mold remediation challenges.

NYS Article 32

- Signed by Governor January, 2015
- Establishes certification and licensing program with fees
- Provides for accreditation of training providers
- Establishes standards for assessment & remediation
- Defines practices & procedures
- Serves as the basis for this training

NYS Article 32

- Enforced by NYS Dept of Labor Division of Safety & Health
- Assigns Roles & Responsibilities
 - Mold Assessors
 - Mold Remediation Contractors
 - Mold Abatement Supervisors
 - Mold Abatement Workers

NYS Article 32

Establishes Standards for:

- Mold Remediation Plans by Assessors
- Mold Remediation Work Plans by Contractors
- Post-remediation Assessment by Assessors

NYS Article 32

EXEMPTIONS

- A residential property owner who performs mold inspection, assessment, remediation, or abatement on his or her own property;
- A non-residential property owner, or the employee of such owner, who performs mold assessment, remediation, or abatement on an apartment building owned by that person where the property has four or less dwelling units;
- An owner or a managing agent or a full-time employee of an owner or managing agent who performs mold assessment, remediation, or abatement on commercial property or a residential apartment building of more than four dwelling units owned by the owner. This exemption will not apply if the managing agent or employee engages in the business of performing mold assessment, remediation, or abatement for the public; and
- **A federal, state or local governmental unit or public authority and employees thereof that perform mold assessment, remediation, or abatement on any property owned, managed or remediated by such governmental unit or authority.**

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NYCHA MOLD TRAINING

Mold Evaluation Practices

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CHRIS WENZEL FOR TIME LLC



HOUSE CALL: Clockwise from top, Brennan finds fumes in the crawl space; bottled smoke detects air flow; equipment used to track fumes; and "house doctors" ask questions

MOLD BUSTERS



They come and give your house an environmental physical, often revealing all manner of bugs and fumes and gunk that can make your home—and everyone in it—sick

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Mold Evaluation & Testing Practices

- The goals for a Mold Assessment is to find the mold and determine its extent so that it can be removed in a safe manner.
- However the differences as to how to properly perform mold assessment can be substantial.
- Some, such as EPA, focus on finding the moisture and you find the mold.
- Others, such as IICRC, focus mostly on sampling to develop remediation procedures.
- We look at these differences and discuss approaches to mold assessments that are most often used by mold remediation professionals.
- We also look at NYSDOL requirements for the compiling of information for use in a Mold Remediation Plan

Mold Evaluation & Testing Practices

Should:

- Focus on **presence** and **location** of mold.
- Determine the **extent** (of hidden mold), and **origin** (cause) of mold.



Mold Evaluation & Testing Practices

Sometimes Includes:

- Pictures of the problems / problem areas.
- Determination of Hidden Mold in Walls.



Step 1 - Walk-Through Inspection

- Step A involves:
 - Visual, non-destructive inspection
 - A careful walk-through inspection will include close observation of accessible interior surfaces using common inspection tools, notes and photographs.



Step 1 - Walk-Through Inspection

- Investigate any noticeable odors or visible evidence of fungal growth, and any blisters, stains, corrosion, deterioration, or discoloration that might indicate water intrusion or condensation problems



Step 1 - Walk-through Inspection: Where to Look

All surfaces should be closely inspected, especially:

- seams and crevices along the base of walls
- edges of carpets
- seams of wall fabrics
- the base of all window and door jambs
- tops of walls
- joints in ceiling materials
- airstream surfaces of accessible air conditioning or humidification equipment



Step 1 - Walk-through Inspection: Where to Look

- Organic substrates wetted by water are the most common amplification sites, but even elevated relative humidity or dust on hard surfaces might support growth.
- The inspector should first look for any evidence of liquid water from leaks or condensation.



Step 2 - Invasive Inspection and Investigation

- Locations for invasive inspection are chosen where mold colonization is most likely
- Based on visual evaluation of exposed surfaces, experience with similar construction.
- Review of building plans.
 - Other locations should be selected to view representative conditions where mold is not expected, to confirm its absence or identify the unexpected.



Step 2 - Invasive Inspection and Investigation : Ventilation

Inspection should include ventilation systems where present.

- Dirty ventilation grills & ducts might be the source of contamination, or the means of its distribution between spaces, or might indirectly contribute to the concentration of indoor air contaminants by providing inadequate ventilation.



Procedure for Inspection of Wall Cavities

- The goal is to inspect every wall cavity in the area under investigation, identify the location and extent of mold growth in each wall cavity, and delineate areas requiring remediation.
- Destructive investigation will likely result in release of contamination, so containment, safe work practices and personal protective equipment is necessary

Procedure for Inspection of Wall Cavities

- Where visible contamination extends up into the wall cavity above, and where leaks from overhead roofs, decks, windows, or pipes are suspected, smaller openings should be made high on walls or ceilings, so that the leak source and extent of contamination can be identified.



Procedure for Inspection of Wall Cavities

- Mold growth is likely to be present on the paper covering on the back side of sheetrock in areas that
 - measure wet,
 - display water damage
 - have a reported history of water damage

The cellulose content of this paper covering provides ideal nutrient for the development of *Stachybotrys* type mold growth

Mold Root Causes

Twenty-nine (29) Root Causes are organized by five (5) general categories how the problem was caused.

- I. Sealant Related Issues – Issues that can be resolved by removing and replacing old caulking.
Example: Caulking around a bathtub.
- II. Leak Issues – Issues caused by a leak other than an sealant issue.
Example: Crack in exterior (façade) is causing a water enter the unit.
- III. Resident-Caused – Issues that can be prevented due to adjustments to resident education and behavior.
Example: Resident is not opening a window after a shower.
- IV. Ventilation – Issues that are a result of inoperable roof fans and/or lateral duct issues.
Example: A clog in the lateral duct is preventing air from flowing into the apartment.
- V. Other – Issue(s) are being caused due to reasons outside of the four categories previously listed.
Example: Condensation (sweating on the pipes) due to the damaged or missing insulation.

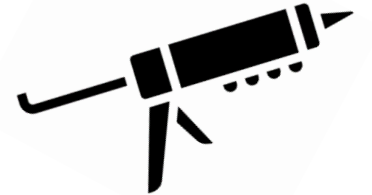
I. Mold Root Causes – Sealant Related Issues

Issues that can be resolved by removing and replacing old caulking or grouting.

Example: Caulking around a bathtub.

Caulking - Is a material used to seal joints or seams against leakage in various structures and piping. Maintenance and Plaster.

Grouting – A dense fluid which is used to fill gaps or used as reinforcement in existing structures. Grout is generally a mixture of water, cement, and sand. Grout is thin so it flows readily into gaps. Bricklayer.



I. Mold Root Causes – Sealant Related Issues

- Caulking DML (Maintenance)
The maintenance worker will follow-up on this work order and do the caulking.
- Grouting DML (Bricklayer)
A bricklayer, craft, will follow-up on this work order and do the grouting.
- Grouting DML (Plasterer)
A plasterer, craft, will follow-up on this work order and do the grouting.
- Grouting/ Caulking DML (Plasterer)
A plasterer, craft, will follow-up on this work order and do the grouting / caulking work.
- Grouting/ Caulking DML (Bricklayer)
A bricklayer, craft, will follow-up on this work order and do the grouting/ caulking.

II. Mold Root Causes – Leak Issues

Issues caused by a leak other than a sealant issue.

- Leak Around Window
Lack of sealant around the window that causes water to penetrate.
- Leak Through Façade
A crack or damaged/missing mortar affecting the exterior wall.
- Leak From Above/Beside - Investigate
There is an active leak from a unit above or beside the unit with a mold condition.
- Leak From Above * – Previously Identified
There was a leak that was abated but mold/ water damage remain present.
- Plumbing Leak - In Unit
A pipe leaking within the wall cavity requiring a wall break.

Plumbing Leaks/Flooding



Perimeter Wall Condensation



II. Mold Root Causes – Leak Issues (continued)

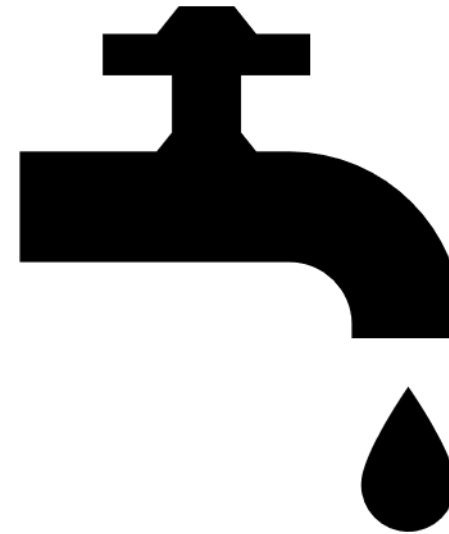
Leak From Above - Previously Identified

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.

A note and pictures are required for this root cause.

II. Mold Root Causes – Leak Issues (*continued*)

- Roof Leak - Non Capital
Roof replacement or repair is required.
- Sink Supply Line Leak
Caused by a leak(s) in the supply line.
- Sink Waste Line Leak
Caused by a leak(s) in the waste line.
- Toilet Leak
Active leak coming from the toilet.



II. Mold Root Causes – **Leak Issues** (*continued*)

Leak From Above - Previously Identified *

- 1) Pre-inspection to look-up leak history for the specific unit.
- 2) Does not cancel or duplicate previous generated tickets.
- 3) Escalates the matter if root cause is being caused by something else if it keeps reoccurring.

Façade Leaks



Roof Leaks



Toilet Condensation - From Above



III. Mold Root Causes – Resident-Caused

Issues that can be prevented due to adjustments to resident education and behavior.

Examples:

- Not opening the window for ventilation during, or after, a shower.
- Covering the roof fan vent.
- Improper installation of a dishwasher or washing machine.
- Improper installation of a clothing dryer in the apartment.



III. Mold Root Causes – Resident-Caused

- Resident-Caused (Code 1)
Resident doesn't open the window or door after taking a shower
- Resident-Caused (Code 2)
Dishwasher was installed improperly.
- Resident-Caused (Code 3)
Washing machine was installed improperly.
- Resident-Caused (Code 4)
Vent is blocked or covered.



- Resident-Caused (Code 5)
Clothing dryer was installed improperly.
- Resident-Caused (Code 6) *
Other – the option was not listed.

III. Mold Root Causes – Resident-Caused. (continued)

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.

III. Mold Root Causes – Resident-Caused. (continued)

Resident-Caused by Other Actions (Code 6) *

Examples:

- Excessive boiling of pots.
- Unbalanced hot/cold temperatures in the unit and/or units above, below, or adjunct.

A picture and an explanation is needed for the reader to understand the reasoning for selecting this root cause.

V. Mold Root Causes – Other

- **Toilet Bowl/ Tank Needs Barrier**
Toilet tank is in direct contact with the surface of the wall, allowing condensation to transfer across surfaces.
- **Tub Surround DML**
Water is penetrating through missing or damaged areas of the tub surround.
- **Bathtub Shower Issues**
Bathtub is missing, faucet is leaking, faucet is running, and/or faucet is dripping.
- **Pipe Insulation DML**
Damaged or missing pipe insulation resulting in condensation (or sweating) on pipe surfaces. A wall-break is required to diagnose this problem.
- **Other *** This option should be selected if the root cause is not listed or not evident through the standard assessment practices.

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 t

Shower Vapor Condensation



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

Warm Weather Condensation



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

Toilet Condensation - In Apartment



Measurement Equipment

- On-site testing equipment that indicates if moisture or ventilation problems may be present
- Used to help identify root causes
- Provides immediate information
- Inspector must be able to operate and understand data

Inspection Equipment

- Moisture Meter
- Hygrometer
- Anemometer
- Boroscope



Field Measurements

- Moisture meter – for moisture content in building materials
- Hygrometer – measures humidity levels
- Anemometer – provides air flow in CFM
- Boroscope – allows view behind walls and other cavities

Moisture Meters

Protimeter Survey Master

Pin-probe Mode

Measurements given as %
moisture

Note: Pin-probe readings can
provide additional information, but
are not used during the root-cause
assessment.



Hygrometer

- A hygrometer is used to measure moisture content in the atmosphere.
- Humidity measurement instruments usually rely on measurements of some other quantity such as temperature, pressure, mass or a mechanical or electrical change in a substance as moisture is absorbed.



Anemometers

- Used for measuring the speed of air
- Vane Anemometers use a remote fan (vane) that freely rotates in response to air flow



Hands-on Demonstration

Evaluation Equipment & Calibration

- Utilize boroscope to identify cavity contents
- Determine Relative Humidity (RH%) - Testo
- Measure Ventilation Rate (CFM) - Testo

Anemometers

- NYCHA uses **Testo Vane** instrument
- Must be set to Cubic Feet per Minute (CFM) - unit for Air Volume measurements.
- **NEW - Must be calibrated to 55% free air**



Boroscope

- A boroscope is a hand-held tool that allows users to see potential mold problems inside walls, ceiling plenums, crawl spaces, and other tight areas.
- It consists of a video camera on the end of a flexible "snake."
- No major drilling or cutting of dry wall is required.



Precautions

- Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth.
- Safe work practices & personal protective equipment should be used if mold contamination is present that may be disturbed

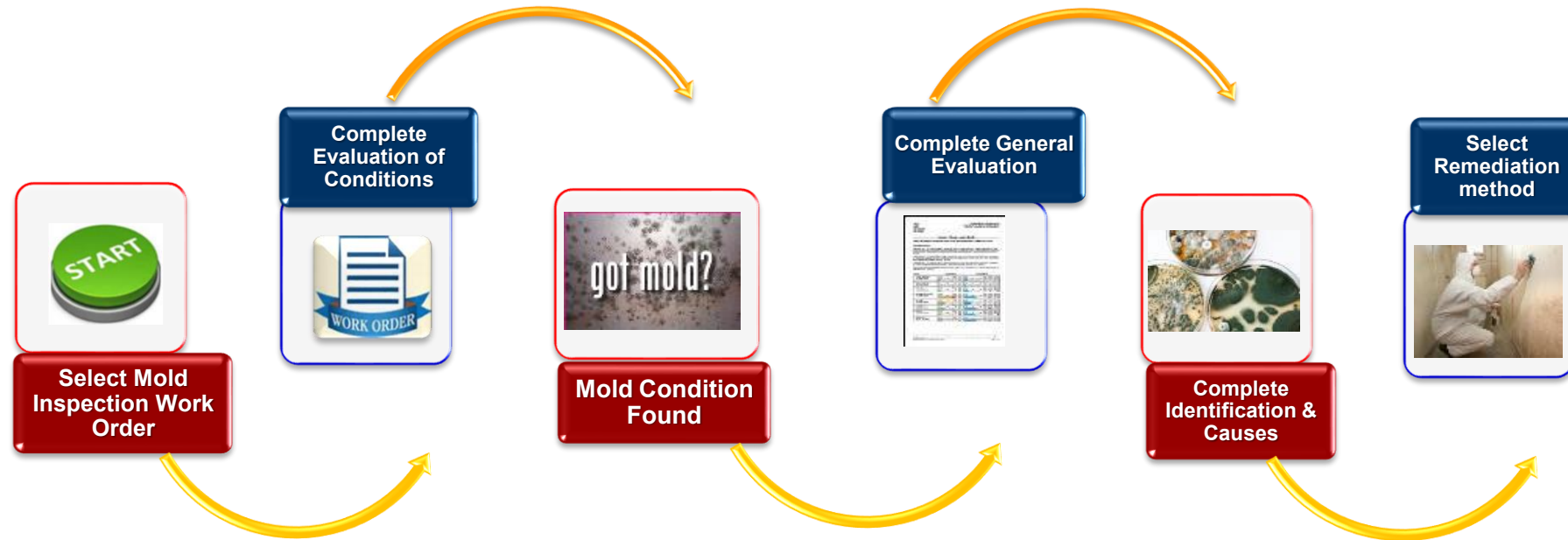


Mold Busters App

- Mold Inspection Procedures
- Designed by & for NYCHA Housing
- Critical for recording results of inspection
- Used to determine remediation work orders
- Integrated into Maximo

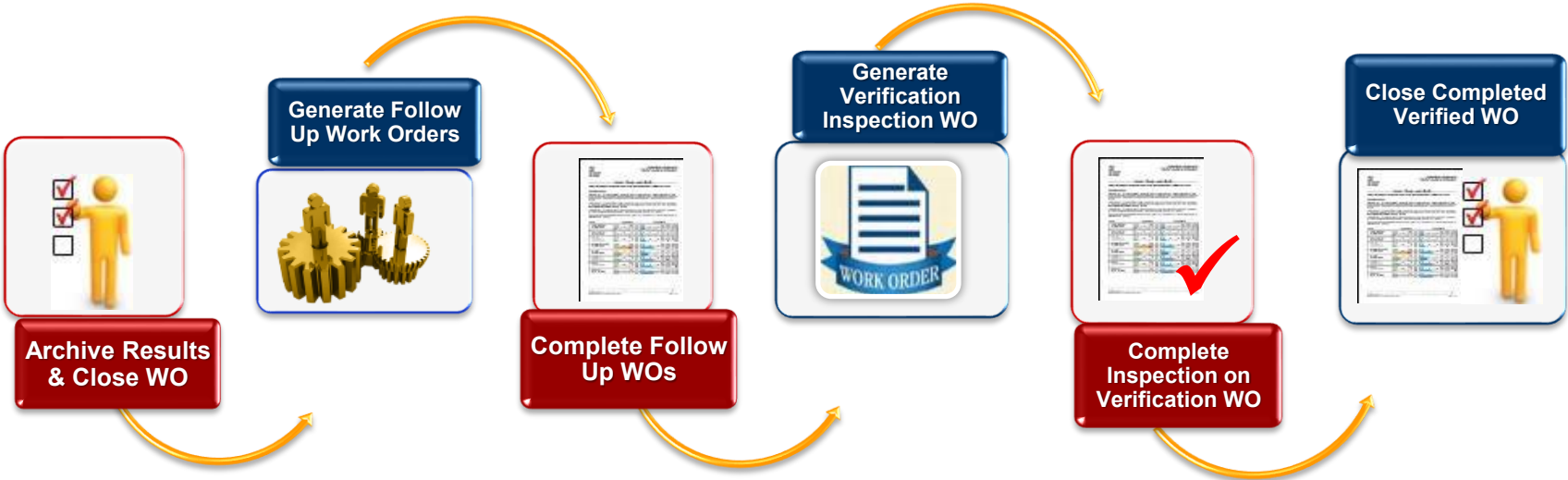
MOLD/MILDEW WO Workflow - (Continued)

Mold is Found ...Doing the Work (Part 1)...



MOLD/MILDEW WO Workflow - (Continued)

Mold is Found ...Doing the Work (Part 2)...



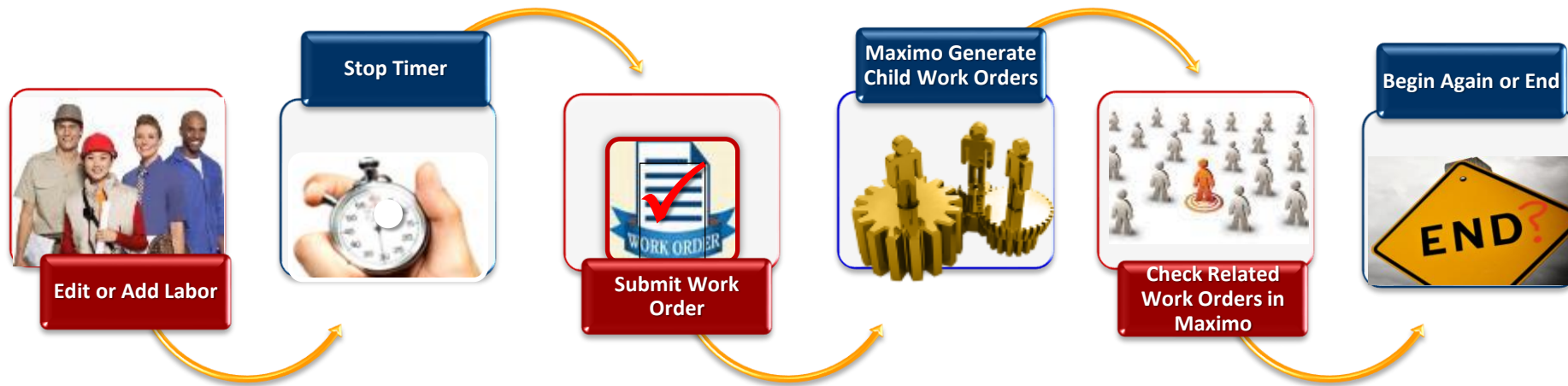
Work Order Workflow

Doing the work...



Work Order Workflow

Ending the work...



Samsung Galaxy S8 Device

Display:
5.8 inches

Cameras:
Rear 12MP w/Flash
Front 8MP

Storage:
64GB Device
4GB RAM

Software:
Android 8.x

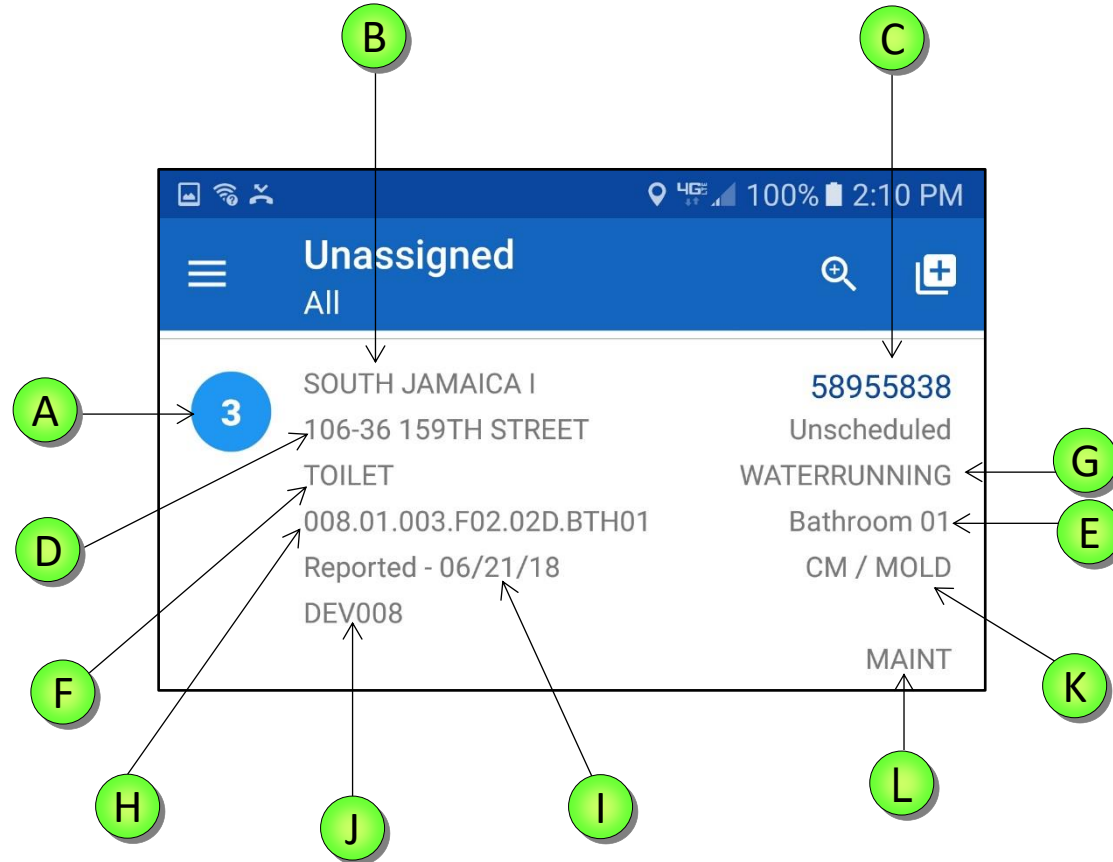
Talk Time:
Up to 20 hours



View Work Order Details

The **WO** List screen shows a detailed summary about each WO.

- A** Priority
- B** Development
- C** WO Number
- D** Address
- E** Room/Location
- F** Failure Class
- G** Problem Code
- H** Location String
- I** Reported By Date
- J** Owner Group
- K** WO Type
- L** Craft



NYCHA Locations Explained

Examples of NYCHA Locations:

- Developments
- Buildings
- Stair Halls
- Floors
- Apartments
- Rooms (bedroom, bathroom, etc.)
- Heating Plumbing Line
- Grounds
- Elevators
- Community Centers

005.01.001.F02.02C.KIT01

Development #/ Building / Stair Hall / Floor / Apartment / Room
005. 01. 001. F02. 02C. KIT01

View Work Order Details

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

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

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

WO# 58956270

DETAILS WORK LOGS COMM LOGS MATERIALS A

Address
107-25 159TH STREET

Work Type	Job Plan#	Sub-Work Type
CM	INSMOLDPCM	MOLD
Failure Class	Problem Code	
MILDEWCONDITION	MILDEW	

Craft	Responsible Scheduler
SUPT	MAXIMO
Priority	Status
4	APPR
Scheduled Start	Owner Group
Jun 22, 2018 10:01 AM	DEV008
Actual Reported Date	Message Code
Jun 22, 2018 9:47 AM	

Residence Info

VIEW WORK ORDER

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.

The screenshot shows a mobile application interface for 'Complete Work Order' (WO #58957603). The top navigation bar includes a back arrow, the title 'Complete Work Order', and icons for attachments and camera. Below the title, there are four tabs: 'Perform Inspection' (highlighted with a green circle 2), 'Materials Optional' (highlighted with a green circle 3), and 'Ad hoc Option'. The main content area displays the 'Inspecting Location' as '008.01.003.F03.03A.KIT01' and '106-36 159TH STREET'. The 'WO Inspection State' is shown as 'PARTIAL' (highlighted with a red box and a green circle 4). Below this, there are three sections: 'Evaluation of Conditions', 'General Evaluation', and 'Probable Causes and Remediation'. Each section has a red box around the 'Kitchen 01' entry and its state: 'COMPLETE' (green circle 1), 'PARTIAL' (green circle 2), and 'NONE' (green circle 3). Each entry also has an 'Inspect' button. At the bottom, there are navigation options: '< PREVIOUS', 'STOP TIME', and 'NEXT >'.

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**

The screenshot shows a mobile application interface for a 'Complete Work Order' (WO #58956270). The top navigation bar is blue with a back arrow, a paperclip icon, and a camera icon. Below the bar, there are four task steps: '2 Perform Inspection' (highlighted in blue), '3 Materials Optional', and '4 Ad hoc Optional'. The 'Inspecting Location' is listed as '008.10.028.F02.02D.BTH01' and '107-25 159TH STREET'. A red box highlights the 'WO Inspection State: NONE' field, with a green circle '1' pointing to it. Below this, the 'Evaluation of Conditions' section shows 'Bathroom 01' and 'State: NONE'. A blue 'Inspect' button is highlighted with a red box, with a green circle '2' pointing to it. At the bottom, there are navigation buttons: '< PREVIOUS', 'STOP TIME', and 'NEXT >'.

Evaluation of Mold Growth – (Continued)

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 \geq 599** (Yes/No)

2 Tap **NONE** next to **Is there mold growth?**

The screenshot shows the 'Evaluation of Conditions' screen for 'Bathroom 01'. The screen is titled 'Evaluation of Conditions' with a 'DONE' button in the top right. Below the title, there are three mandatory questions, each marked with a red asterisk (*):

- * Is there mold growth? (None)
- * Is there Water Damage? (None)
- * Is Moisture Measurement > or equal to 599? (None)

A green circle '1' points to the list of questions, and a green circle '2' points to the '(None)' button for the mold growth question.

Evaluation of Mold Growth – (Continued)

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**

The screenshot shows a mobile application interface for 'Evaluation of Conditions' in 'Bathroom 01'. The background is dimmed, showing a list of questions: '* Is there mold growth?' (None), '* Is there Water Damage?' (None), and '* Is Moisture Measurement > or equal to 500?' (None). A 'Select Response:' dialog box is overlaid on the screen. The dialog box has a blue header and contains three options: 'Notes (Optional)' (with a text input field), 'No', and 'Yes'. A green circle with the number '1' points to the 'Notes (Optional)' field, and another green circle with the number '2' points to the 'Yes' button.

Evaluation of Mold Growth – (Continued)

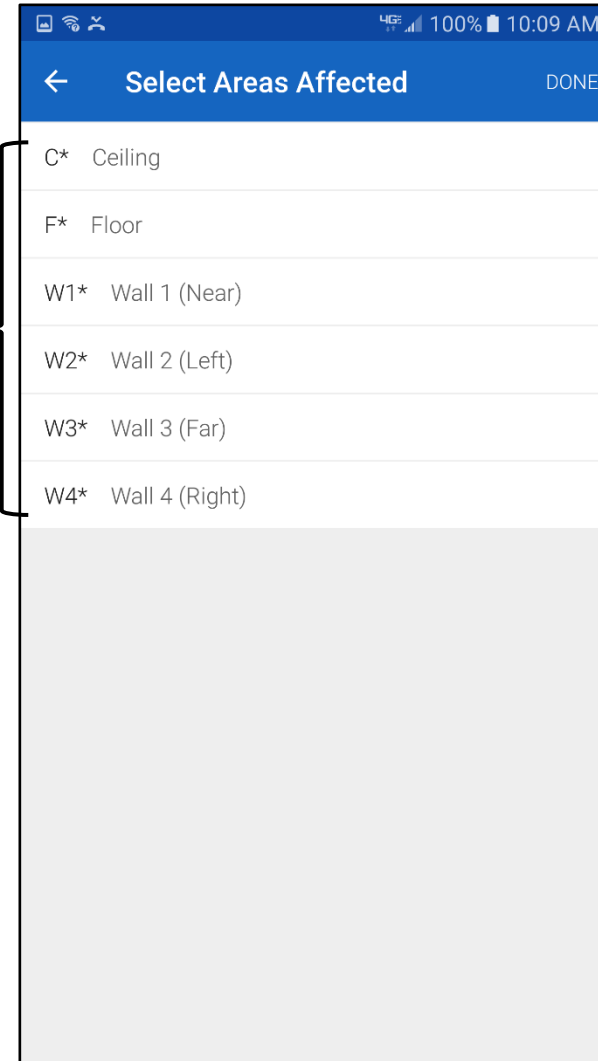
1

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.

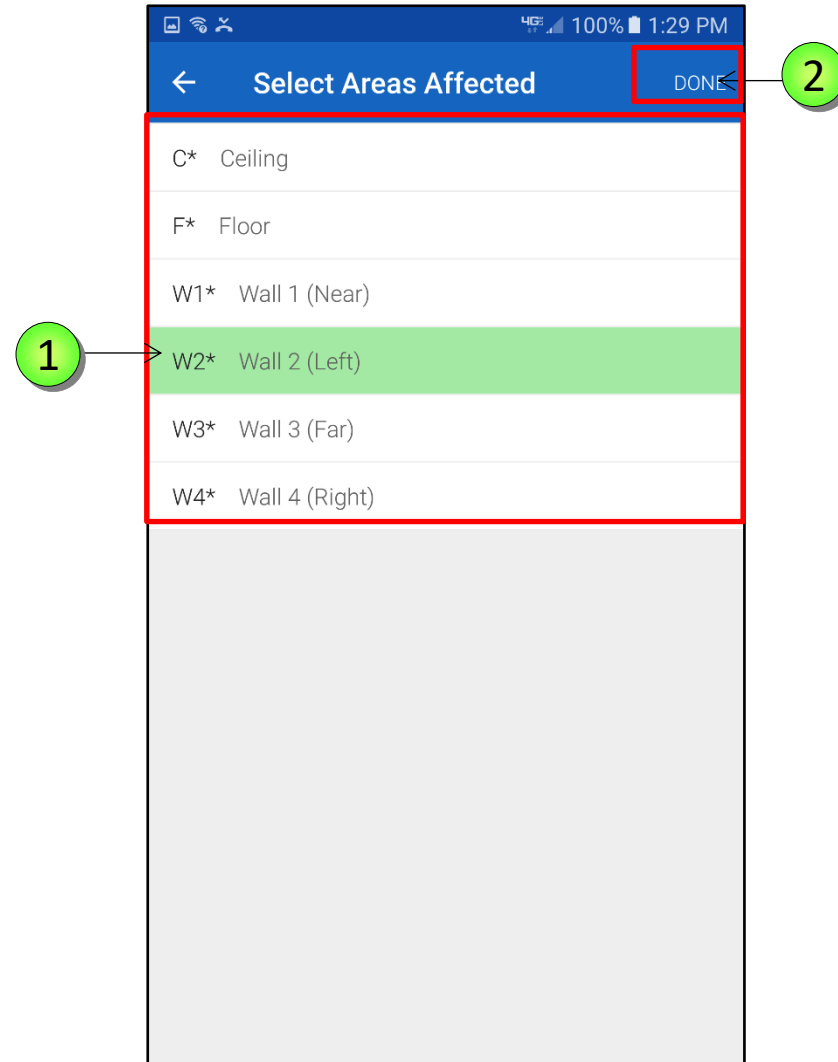
To unselect an area tap on it again and the **Green** bar disappears.

1



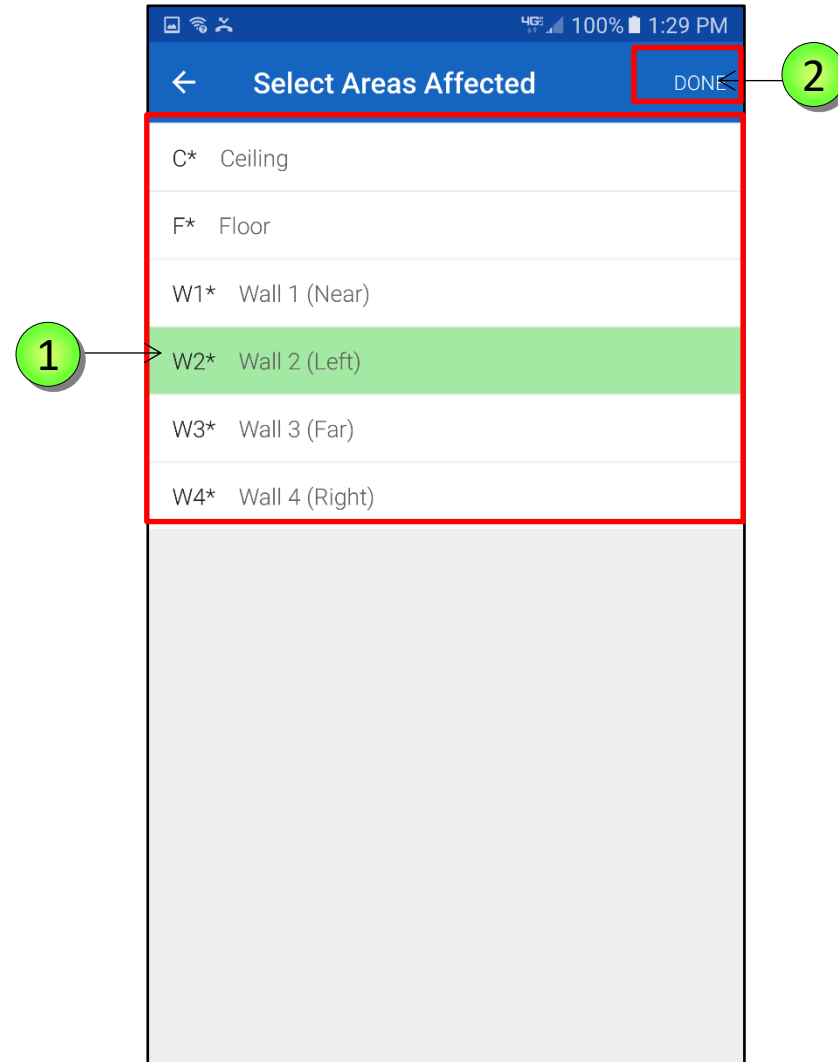
Evaluation of Mold Growth – (Continued)

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



Evaluation of Mold Growth – (Continued)

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



Evaluation of Water Damage

The second Mandatory question on the **Evaluation of Conditions** screen is: **“is there Water Damage?”**

1 Tap **NONE** next to **is there Water Damage?**

The screenshot shows the 'Evaluation of Conditions' app interface for 'Bathroom 01'. The status bar at the top indicates 4G, 100% battery, and 3:36 PM. The app title is 'Evaluation of Conditions' with a back arrow and a 'DONE' button. The first question is '* Is there mold growth?' with a blue 'Yes' button and a 'View Details >' link. The second question, '* Is there Water Damage?', is highlighted with a red box and has '(None)' selected. The third question is '* Is Moisture Measurement > or equal to 599?' with '(None)' selected.

Evaluate Moisture Measurement Level

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

Evaluate the moisture measurement level (greater than) \geq 599

1 Tap **NONE**

The screenshot shows a mobile application interface for 'Evaluation of Conditions' in 'Bathroom 01'. The status bar at the top indicates 4G, 100% battery, and 8:48 AM. The app header includes a back arrow, the title 'Evaluation of Conditions', and a 'DONE' button. The main content area lists three questions, each with a 'Yes' button and a 'View Details' link. The third question, '* Is Moisture Measurement > or equal to 599?', is highlighted with a red border and has a '(None)' button next to it. A green circle with the number '1' and an arrow points to this question.

Perform General Evaluation Inspection

The second task in a series of tasks is

Task 2: General Evaluation

1 Tap **INSPECT**

The screenshot shows a mobile application interface for a 'Complete Work Order' (WO #58956270). The interface is divided into several sections. At the top, there is a navigation bar with a back arrow, the title 'Complete Work Order', and icons for attachments and a camera. Below the navigation bar, there are three numbered steps: '2 Perform Inspection', '3 Materials Optional', and '4 Ad hoc Optional'. The 'Perform Inspection' step is currently active. The main content area displays the 'Inspecting Location' as '008.10.028.F02.02D.BTH01' and '107-25 159TH STREET'. Below this, the 'WO Inspection State' is 'PARTIAL'. There are three main evaluation sections, each with an 'Inspect' button: 'Evaluation of Conditions' (Bathroom 01, State: COMPLETE), 'General Evaluation' (Bathroom 01, State: NONE), and 'Probable Causes and Remediation' (Bathroom 01, State: NONE). A red box highlights the 'General Evaluation' section, and a green circle with the number '1' points to the 'Inspect' button in this section. At the bottom of the screen, there are three buttons: '< PREVIOUS', 'STOP TIME', and 'NEXT >'.

Perform General Evaluation Inspection – (Continued)

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

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

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

General Evaluation
Bathroom 01

1 * Interior Wall Finish (None)

* Framing Type (None)

* Ceiling Type (None)

* Floor Finish (None)

* Cockroaches (None)

* Rodent Droppings (None)

* Relative Humidity

* Is there an exhaust fan? (None)

Is Window Operable? (None)

Is sealant/ caulking present around toilet bowl base?

* (None)

Perform General Evaluation Inspection – (Continued)

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

- 1 Type **58**
- 2 Tap **DONE** on the device to remove the keyboard.

General Evaluation
Bathroom 01

* Framing Type Wood

* Ceiling Type Sheetrock

* Floor Finish Ceramic

* Cockroaches Yes

View Details >

* Rodent Droppings Yes

View Details >

* Relative Humidity 58

1 →

2 ←

Perform General Evaluation Inspection – (Continued)

The Supervisor shall enter the **CFMs (Cubic Feet Measurement)** at the exhaust vent in the appropriate field.

The CFM's measurement is a mandatory field.

- 1 Type **24** on the device keyboard.
- 2 Tap **DONE** on the device keyboard.
- 3 The **Notes** field is optional.

NOTE: If **CFM** is less than (**<25**), **Maximo** will **auto-generate** a Work Order to check the roof fan, upon submission of the inspection results.

- 4 Tap **DONE**

The screenshot shows a mobile application interface titled "Followup Info". At the top right, there is a blue button labeled "DONE" with a left-pointing arrow, highlighted by a red box and a green circle with the number 4. Below this, a text input field contains the number "24" and is highlighted by a red box and a green circle with the number 1. Underneath the input field is a "Notes" field, highlighted by a red box and a green circle with the number 3. At the bottom of the screen, a numeric keypad is visible, with the "Done" button highlighted by a red box and a green circle with the number 2. The status bar at the top shows "4G", "100%", and "1:32 PM".

Perform General Evaluation Inspection – (Continued)

If there was **NO** Exhaust Fan, the Supervisor shall answer “**Is Window Operable?**” question as **YES** or **NO**.

1

Tap on **View Details** below the **Window Operable** field to review information entered.

NOTE: If the Supervisor answers **NO** for **Window Operable** question, **Maximo** will auto-generate a Work Order to fix the window, upon submission of inspection results.

General Evaluation
Bathroom 01

* Framing Type Wood

* Ceiling Type Sheetrock

* Floor Finish Ceramic

* Cockroaches Yes View Details >

* Rodent Droppings Yes View Details >

* Relative Humidity 58

* Is there an exhaust fan? Yes View Details >

Is Window Operable? No View Details >

Is sealant/ caulking present around toilet bowl base?

* (None)

1

Perform General Evaluation Inspection – (Continued)

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

1 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.

2 Tap **DONE**

General Evaluation
Bathroom 01

Training Type [None]

* Ceiling Type [Sheetrock]

* Floor Finish [Ceramic]

* Cockroaches [Yes]

View Details >

* Rodent Droppings [Yes]

View Details >

* Relative Humidity [58]

* Is there an exhaust fan? [Yes]

View Details >

Is Window Operable? [No]

View Details >

Is sealant/ caulking present around toilet bowl base?

* [No]

View Details >

DONE

Probable Causes And Remediation

The third task in a series of tasks is

Task 3: Probable Causes and Remediation

1 Tap **INSPECT**

The screenshot shows a mobile application interface for a 'Complete Work Order' (WO #58956270). The interface is divided into four numbered steps: 1. Perform Inspection, 2. Materials Optional, 3. Ad hoc Optional, and 4. Ad hoc Optional. The current step is 'Perform Inspection'. The 'Inspecting Location' is 008.10.028.F02.02D.BTH01, 107-25 159TH STREET. The 'WO Inspection State' is PARTIAL. There are three inspection items listed: 'Evaluation of Conditions' (Bathroom 01, State: COMPLETE), 'General Evaluation' (Bathroom 01, State: COMPLETE), and 'Probable Causes and Remediation' (Bathroom 01, State: NONE). The 'Probable Causes and Remediation' section is highlighted with a red box, and a green circle with the number '1' points to the 'Inspect' button next to it. At the bottom, there are navigation buttons: '< PREVIOUS', 'STOP TIME', and 'NEXT >'. The top status bar shows 4G, 100% battery, and 2:28 PM.

Probable Causes And Remediation – (Continued)

1 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**.

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

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

4G 100% 3:01 PM

← Probable Causes and Reme... DONE

Bathroom 01

No Probable Cause and Remediation has been selected for the following areas: Floor, Wall 1 (Near), Wall 2 (Left). Please select probable cause and remediation for all areas.

* Is Wall-break required? (None)

Bathtub/Shower	(None)
Caulking	(None)
Exterior Wall (Winter)	(None)
Façade	(None)
Grouting	(None)
Pipe Insulation	(None)
Leak – above/beside investigate	(None)
Plumbing – In unit	(None)
Resident – Cause	(None)

Probable Causes And Remediation – (Continued)

1 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**.

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

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

Probable Causes and Reme...
Bathroom 01

1 No Probable Cause and Remediation has been selected for the following areas: Floor, Wall 1 (Near), Wall 2 (Left). Please select probable cause and remediation for all areas.

2 * Is Wall-break required? (None)

Bathtub/Shower	(None)
Caulking	(None)
Exterior Wall (Winter)	(None)
Façade	(None)
Grouting	(None)
Pipe Insulation	(None)
Leak - above/beside investigate	(None)
Plumbing - In unit	(None)
Resident - Cause	(None)

Probable Causes And Remediation – (Continued)

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

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

1 Tap Failure Class

Followup Info
Addressing Cause of Mold, Mildew o... DONE

Failure Class
Please select...

Problem Code
Please select...

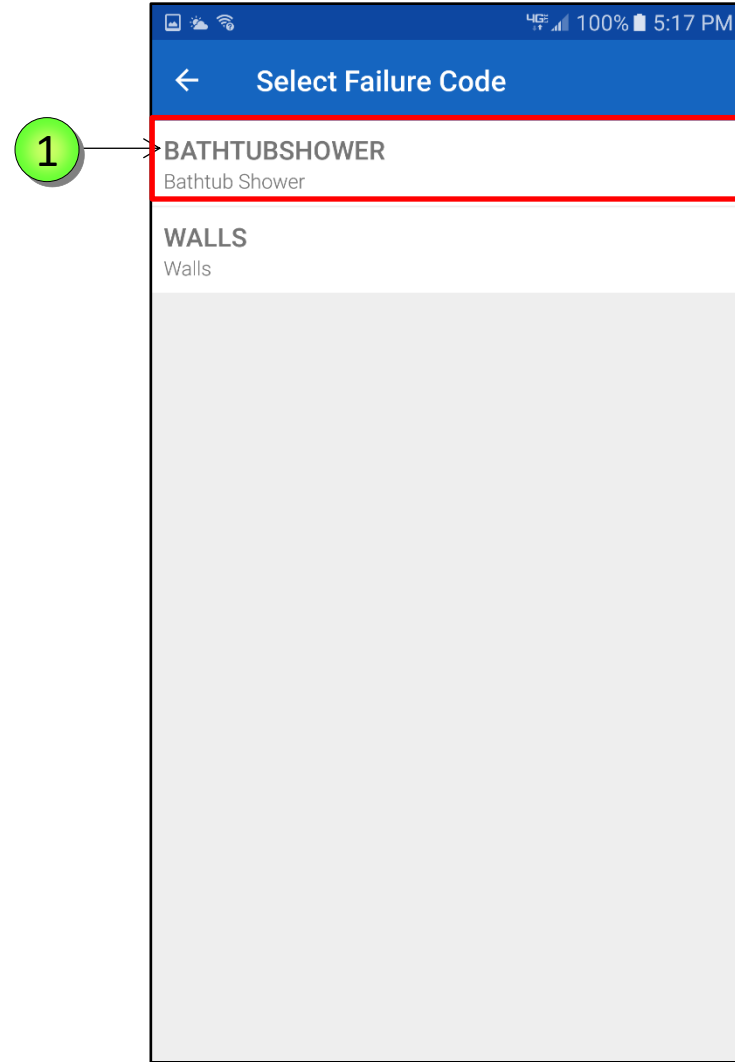
Location
Please select...

Notes

Probable Causes And Remediation – (Continued)

The **Failure Class** is a very limited list.

1 Tap **BATHTUBSHOWER**



Probable Causes And Remediation – (Continued)

The **FollowUp Info** screen reappears, select a **Problem Code** appropriate to the **Failure Class**.

1 Tap **Problem Code**

Followup Info
Addressing Cause of Mold, Mildew o... DONE

Failure Class
BATHTUBSHOWER

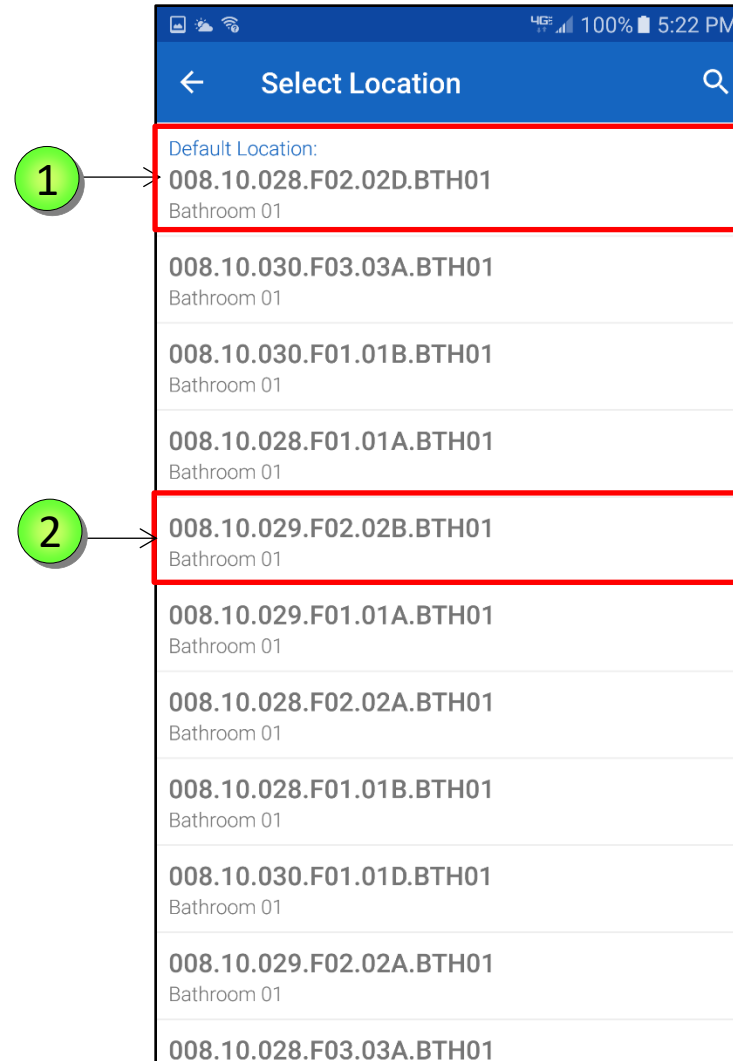
Problem Code
Please select...

Location
Please select...

Notes

Probable Causes And Remediation – (Continued)

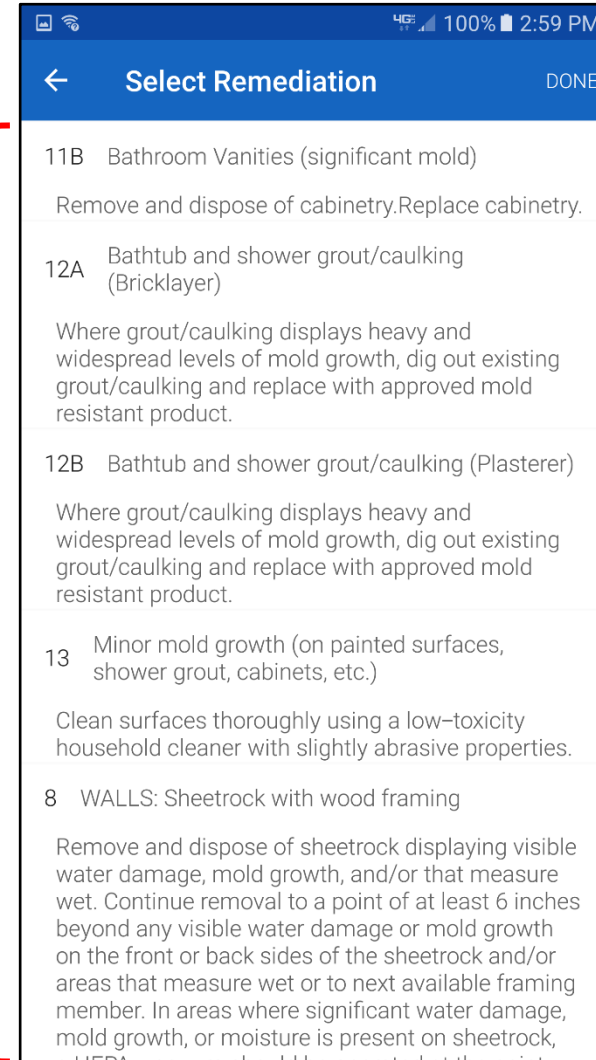
- 1 The **Default Location** is where the inspection is happening.
- 2 Search for the other **Location** where it is the suspect of the problem.



Probable Causes And Remediation – (Continued)

Depending on the wall type the **Remediation** methods can vary.

- 1 Choose what's the appropriate remedy by tapping on the different **Remediation** method.



1

Conclusion

- Responsible and effective problem evaluation will depend on the skill and experience of the inspector, but will also benefit from consistent use of standard protocols that can be adapted to individual project needs. Various steps of inspection and investigation may be required, depending on the complexity and extent of the problem.
- All inspection efforts require identification of the extent and location of mold growth and determination of root cause(s).

NYCHA MOLD TRAINING

Remediation Overview

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Remediation Overview

- Remediation Planning



Remediation Basics

- Get rid of the water!
- Get rid of the food!
- Kill, then control!
- Don't forget the air!
- Vac! Wash! Vac!



Containment

- Containment
 - plastic sheeting, duct tape
 - exhaust fan with HEPA filter
 - allow for decontamination, staging areas
- Control of Exposure
 - vacate adjacent areas as appropriate

Containment



Remediation Basics

- Restrict access to work area
- Construct containment & install engineering controls
- Remove contaminated and water damaged porous building materials
- Clean & decontaminate non-porous materials
- Clean & seal exposed surfaces
- Evaluate for completeness of work

Remediation Procedures

1. All remediation work must conform to the protocols in the following documents:

- SP 040:18:2 Revised, Maintenance Tasks – Dust Control and Clean Up in Apartments, which establishes Work Area Preparation/Performance Levels
- Appendix A, Remediation Methods
- Interim Guidance on Wall Breaks
- Interim Guidance on Pipe Insulation

Correcting Root Causes

Employees must ensure that all repairs to correct root causes:

- Are completed to industry standards.
- Conform to the protocols in the following documents:
 - SP 040:18:02 Revised, Maintenance Tasks – Dust Control and Clean Up in Apartments, which establishes Work Area Preparation/Performance Levels.
 - Interim Guidance on Wall Breaks
 - Interim Guidance on Pipe Insulation
 - Interim Guidance on Roof Fan Inspections
- Are documented with photographs

Remediation Procedures

2. All work must be documented with photographs, including at least one close-up photo of the condition(s) and at least one photo of the larger area.

- Employees must take and upload photos into Maximo using the handheld device of:
 - The condition before work is performed.
 - The condition after work is completed.
 - Other photos as needed to demonstrate that work behind a surface was completed to standard, e.g. photos of insulated pipes, mold free areas.

Remediation Procedures – Note!

If cracked or crumbling tile is present, staff must:

- cover the exposed area of floor with plastic
- tape all edges securely with duct tape
- instruct the resident not to disturb the covered area
- contact the Technical Services Department's Asbestos Unit for further instructions.

Remediation Procedures – Note!

Any work that would disturb more than 2 square feet per room in a unit which could contain lead-based paint must use lead-safe work practices and RRP certified workers.

SP 040:18:2 – Performing Work

- For painted surfaces, if a component is to be removed from an underlying surface, score the perimeter/edge of the component with a utility knife to minimize the quantity of painted surface that is impacted.

SP 040:18:2 – Preforming Work

- Using the spray water bottle, spray the surfaces that will be disturbed to limit the creation and dispersal of dust. Periodically rewet the area while working

SP 040:18:2 – Performing Work

- If power tools are used that impact lead-based paint, only those equipped with a vacuum attachment connected to a HEPA vacuum are allowed to be used.

SP 040:18:2 – Performing Work

Observe safety precautions in contained work areas:

- Do not eat or drink in the work area.
- Keep polyethylene sheeting away from open flames, e.g. stoves and blowtorches.
- Exercise caution when spraying in the vicinity of electrical outlets.
- Prevent children and pets from entering the work area.

SP 040:18:2 – Performing Work

- Immediately repair torn sheeting using duct tape for minor tears. Total sheet replacement may be necessary for major tears.

SP 040:18:2 – Performing Work

The following work practices are prohibited:

- Open flame burning or torching of painted surfaces.
- Use of machines that remove paint or other surface coatings through high-speed operation, unless they have shrouds or containment systems and are equipped with a HEPA vacuum attachment.
- Operating a heat gun on painted surfaces above 1100 degrees Fahrenheit or charring the paint.
- Paint stripping using a volatile stripper in poorly ventilated space.
- Dry sanding or scraping, except within one (1) foot of electrical fixtures (e.g. switches, outlets, light fixtures, breaker boxes).

HEPA Filtration

- Vacuums



HEPA Filtration

- 99.97% efficient to 0.3 microns



HEPA Exhaust Containment



Cleaners & Disinfectants

- Specialized chemicals for mold remediation
- Anti-microbial cleaners used first
- Disinfectants used AFTER cleaning is complete
- NYCHA Products



Sodium Hypochlorite (Bleach)



- **Disadvantages**
 - Not compatible with all surfaces
 - Safety issues
 - Not a cleaner
 - Inactivated by heavy organic soil
 - Unstable

Follow Manufacturer's Directions

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

Remediation Basics

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



Points to Remember

- Eliminating water is the best way to eliminate fungi
- You cannot disinfect and kill fungi without cleaning first
- Choose the right chemicals &/or equipment for the job and follow manufacturer's directions
- Healthy employees are the best

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Work Place Hazards



Work Site Hazards

- **Physical**
 - Confined Space
 - Electrical
 - Slips, Trips & Falls
 - Heat-related disorders
- **Chemicals**
 - Asbestos containing materials
 - Lead based paint
 - Cleaners, disinfectants & sealers



Work Site Safety Hazards

- Sharp objects
- Slippery surfaces
- Falling objects
- Terrain
- Unstable surfaces
- Burns
- Improper lifting
Ergonomic hazards
- Pinch points
- Environmental (weather, animals, poisonous plants)
- Struck-by / Roll Over
- Public/Other Contractors
- Dehydration

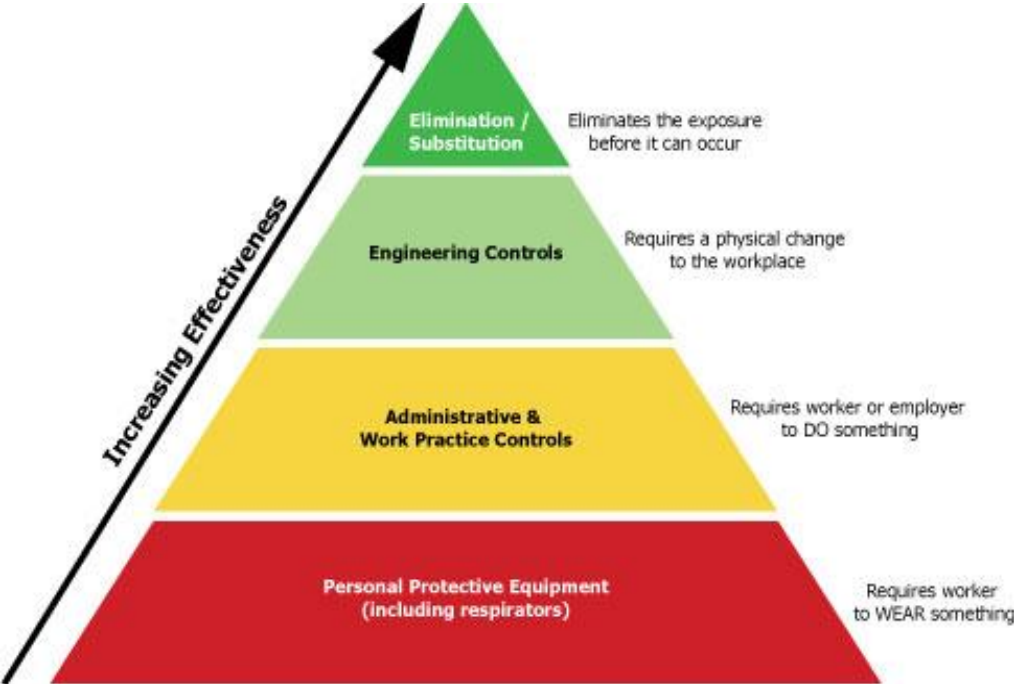
Chemical Work Site Safety Hazards

- Asbestos Containing Materials (ACM)
- Lead (LBP)
- Chemicals
 - Cleaners
 - Disinfectants
 - Sealers



Work Place Hazards

OSHA's Hierarchy of Controls



Personal Protective Equipment

- 29 CFR 1910.132

“Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices...shall be provided, used and maintained whenever it is necessary by reason of hazards of processes or environment... capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.” - OSHA

Protective Clothing

- Protective Clothing
- Hoods and boots
- Respirator inside of hood
- Oversize suits for ease of movement
- Reinforce suits with duct tape
- Tape wrists to gloves, ankles

Respiratory Protection

- Respirators are the last option after:
 - engineering controls
 - administrative controls
 - work practices
 - alternative materials
 - other methods

Personal Protective Equipment

Mold Remediation of Less than 100 Square Feet

Employees must wear the following:

- An N95 disposable respirator (i.e., a dust mask) in accordance with the OSHA respiratory protection standard (29 CFR 1910.134)
- Disposable protective clothing covering both head and shoes
- Gloves
- Eye protection

Personal Protective Equipment – Note!

Employees using respirators must follow the requirements in SP 001:17:2, Respiratory Protection Safety Program.

Types of Respirators

- Three levels of particulate filter efficiency are 95%, 99%, and 99.97%. The three categories of resistance to filter efficiency degradation are labeled N, R, and P. The class of filter will be clearly marked on the filter, filter package, or respirator box.

Types of Respirators

- **Filter Efficiency** - selection of filter efficiency (i.e., 95%, 99%, or 99.97%) depends on how much filter leakage can be accepted. Higher filter efficiency means lower filter leakage.
- **Oil Resistance** - selection of N-, R-, and P-series filters depends on the presence or absence of oil particles, as follows: If no oil particles are present in the work environment, use a filter of any series (i.e., N-, R-, or P-series).
 - If oil particles (e.g., lubricants, cutting fluids, glycerine, etc.) are present, use an R- or P-series filter.
 - Note:** N-series filters cannot be used if oil particles are present.
 - If oil particles are present and the filter is to be used for more than one work shift, use only a P-series filter.

Types of Respirators

- Half Face Negative Pressure
- N100 Fitted Facepiece
- N95 Fitted Facepiece
(i.e. dust mask)



Types of Respirators

- [NIOSH Video](#)

“A Particle is a Particle”

Respiratory Program

- **Minimum Requirements:**
 - *written SOP*
 - *MSHA/NIOSH certified respirators*
 - *appropriate for hazard*
 - *training of wearer*
 - *individual respirators*
 - *cleaning & disinfection*
 - *respirator storage*
 - *inspection & repair*
 - *work area monitoring*
 - *medical review*
 - *annual evaluation of respiratory program*

Other Important Issues

- Medical fitness to wear a respirator
- Facial hair & respiratory protection
- Care & cleaning of respirators
- Inspection of respirators
- Cleaning & disinfection
- Repairs
- Storage

Asbestos: What Is It?

- Asbestos minerals share some common characteristics:
 - Naturally occurring from Ores rich in Magnesium, Calcium, Silica, and Iron
 - High tensile strength along the axis of the fiber
 - Chemically inert
 - Non-combustible

Definitions

ACM= Asbestos Containing Materials

- This is any material that contains **greater** than 1% asbestos fibers

PACM=Presumed Asbestos Containing Materials

- This is any TSI, Surfacing, or Misc vinyl/asphalt flooring or roofing installed before 1980

Mold on ACM



**ACM- Pipe insulation
(T.S.I)**



**ACM- Spackle/Joint
compound**

ACM at NYCHA



**ACM- Pipe insulation
(T.S.I)**

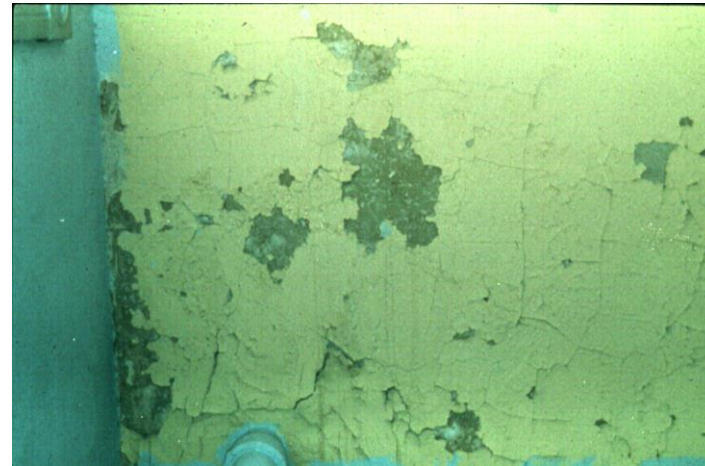


ACM - Flooring

Lead Based Paint

On mold remediation projects lead based paint can also be impacted.

- It will typically be in the paint on or near the areas with mold growth
- Demolition or removal of these painted surfaces can create potentially dangerous exposures to lead dust and lead contaminated debris



Why are Dust and Debris a Problem?

- Remediation activities that disturb lead-containing materials create dust and debris
- Lead-contaminated dust is poisonous
- Very small amounts of lead-contaminated dust can poison children and adults
 - **Children swallow dust during ordinary play activities.**
 - **Adults swallow or breathe dust during work activities.**
- Workers can bring lead-contaminated dust home and poison their families

Lead Renovations

- EPA requires that those conducting renovation, repair & painting obtain RRP certification and use Lead Safe Work Practices (LSWP)
- HUD requires LSWP for activities that disturb more than 2 sq. ft of painted surface in any one room

Hazard Communication

Mold remediation involves use of :

- Cleaners
- Disinfectants
- Anti-microbials
- Biocides

Chemicals in these substances require that an employer have a hazard communication programs in place

Hazard Communication

The basic goal of a Hazard Communication Program is to be sure employers and employees know about work hazards and how to protect themselves; this should help to reduce the incidence of chemical source illness and injuries.

HAZCOM is RIGHT TO KNOW

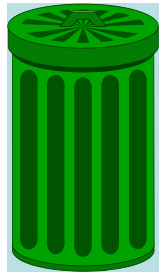
OSHA has estimated that more than 32 million workers are exposed to 650,000 hazardous chemical products in more than 3 million American workplaces.*

Does this pose a serious problem for exposed workers and their employers ...

What do you think?

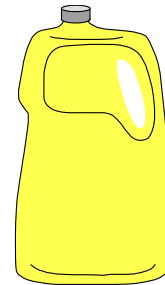
Case Studies

New York City Sanitation, November 1996



Michael Hanly, trash collector, killed while standing behind his truck as 70% hydrofluoric acid gas escaped from containers under compaction

City workers in another location find six plastic jugs of hydrofluoric acid placed curbside with recyclables



What Does This Standard Do?

- The HCS provides workers the right-to-know concerning the hazards and the identities of the chemicals they are, or may have the potential to be, exposed to in the workplace.

Steps to an Effective HAZ-COM program

- Hazard Assessment
- Develop a written HAZCOM Plan
- Appointment of a HAZCOM Coordinator
- Conduct the chemical inventory
- Initiate labeling requirements
- Maintain the SDS library
- Establish employee training

Hazard Determination

- The standard requires that employers inventory all hazardous chemicals in the workplace and include that inventory as a part of the written hazard communication program.
- This inventory will eventually serve as a master list for which a SDS must be obtained and maintained.

Establish Employee Training

- Each employee who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes.

Employee Responsibilities

- Know where to get information about hazardous substances used, stored, or handled at your inspection sites.
- Learn to read labels and understand SDSs.
- Identify hazards before you begin a task.
- Do not be afraid to ask questions.
- Use personal protective equipment.

Confined Spaces

NYCHA staff may encounter the following confined spaces during mold remediation:

- Roof fan housing
- Chimneys
- Interstitial spaces
- Elevator shafts
- Others?

Confined Spaces

- Definition of a confined space is any space that
 - A person can enter
 - Has a limited opening for entry or exit
 - Is not designed for continuous occupancy
- A confined space that has any associated hazard is considered a permit-required confined space
- Hazards can include oxygen deficient or enriched atmospheres, toxic or flammable atmospheres, mechanical or electrical hazards, falls, engulfment, etc.

NYCHA Mold Inspector

Confined Spaces

60% of confined space deaths are among would-be rescuers.

Don't become a statistic!

Electrical Hazards

- Electrocution and electric shocks are among the most common hazards.
- Incorrect wiring, improper grounding, and lack of proper insulation result in over 1,000 people being electrocuted each year

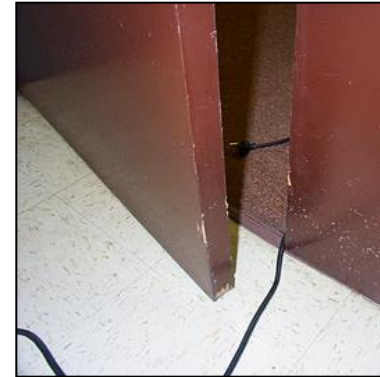
Worker Responsibilities

- Being aware of potential hazards
- Knowing how hazards should be treated
- Knowing what to do to protect themselves from electrical shock while working in a regulated abatement work area.



Hazard – Damaged Cords

- Cords can be damaged by:
 - Aging
 - Door or window edges
 - Staples or fastenings
 - Abrasion from adjacent materials
 - Activity in the area
 - Improper use can cause shocks, burns or fire



Hazard – Defective Cords & Wires

- Plastic or rubber covering is missing
- Damaged extension cords & tools



Hazard - Improper Grounding

- Tools plugged into improperly grounded circuits may become energized
- Broken wire or plug on extension cord
- Some of the most frequently violated OSHA standards



Clues that Electrical Hazards Exist

- Tripped circuit breakers or blown fuses
- Warm tools, wires, cords, connections, or junction boxes
- GFCI that shuts off a circuit
- Worn or frayed insulation around wire or connection



Slips, Trips and Falls

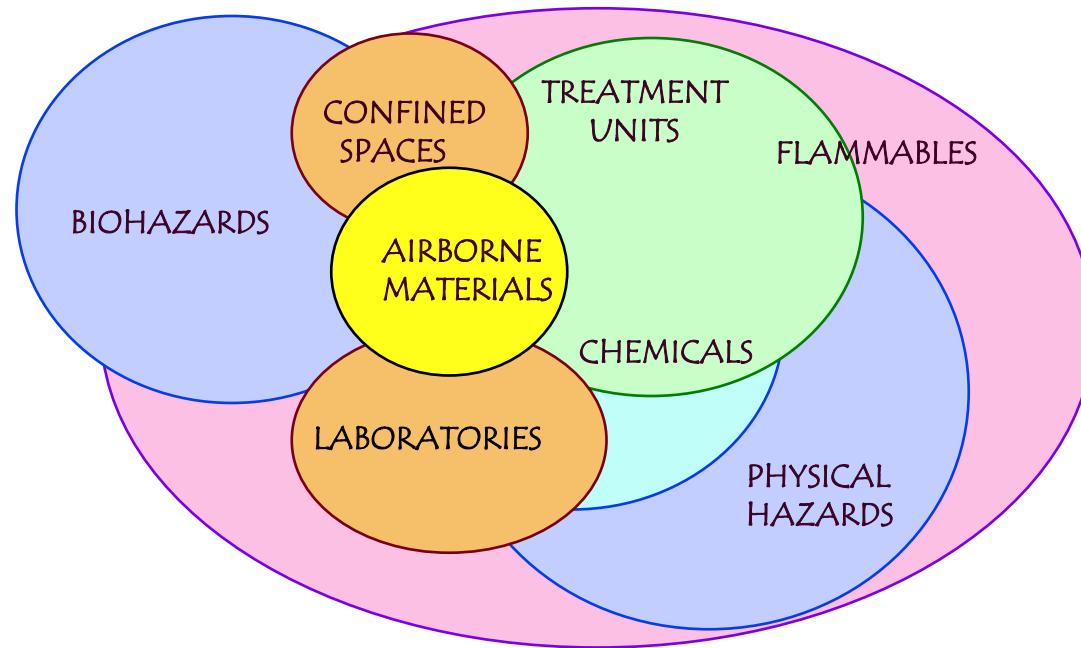
- Mold remediation sites present some significant risks for slips, trips and falls.
- Non-slip rubber boots or shoes with non skid soles can greatly reduce slips and falls when working on wet polyethylene
- No running, jumping, or “horseplay” should be allowed in the work area

Problems With Heat

- The body naturally tries to cool itself by sweating
- If you are wearing an impermeable suit, your body heat cannot escape
- Your lungs are already in overdrive due to the added stress of the respirator
- The Air Conditioning has been shut off for the summer, and the air in the work area is much warmer than the air outside
- Perfect conditions for the onset of **HEAT STRESS** or **HEAT STROKE**

Hazard Recognition

Look at the BIG picture!



Hurt at Work

- You've carefully thought out all the angles.
- You've done it a thousand times.
- It comes naturally to you.
- You know what you're doing, its what you've been trained to do your whole life.
- Nothing could possibly go wrong, right ?

Think Again!



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**Building Science
for Maintenance
Part 2- In Person**



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**Work Area
Preparation**



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.



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

Limited Containment

- A single layer of 6-mil fire-retardant polyethylene sheeting enclosing the moldy 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.

Limited Containment

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



Work Area Prep

- 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 ml fire-retardant poly sealed with duct tape

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

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.



Non-Movable Items



- Items which can't be moved must be cleaned, covered and sealed with two layers of 6 ml poly to protect them from damage and contamination

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

- Cover the floor of the work area with one layer of six-mil disposable polyethylene sheeting, and tape the sheeting down to prevent movement.
- The floor sheeting must extend six (6) feet in all directions from the work area where practical, unless vertical containment is installed. Use two layers of sheeting to cover wall-to-wall carpeting, overlapping the seams by at least six (6) inches.

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

- If vertical containment is used, the floor covering may stop at the vertical barrier, if it is impermeable, extends from the floor to the ceiling, and is tightly sealed at all floors, ceiling, and walls.





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

- Cover the work area entrance or vertical containment doorway with one layer of sheeting.
- Tape the sheeting to the top of the door frame or vertical containment high point and weigh down the bottom to create a seal.
- Create a door flap on the sheeting that allows access into the work area.



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

- Close and cover all forced air systems (HVAC) in the work area with one layer of disposable polyethylene sheeting, including bathroom vents, common area vents, exhaust vents, and hall vents.
- 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.



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

- Close windows, and where applicable, cover the windows with one layer of sheeting to prevent dust and debris from settling on windowsills.
- Close windows, and where applicable, cover the windows with one layer of sheeting to prevent dust and debris from settling on windowsills.

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

- In kitchens and bathrooms, cover counter tops, cabinets, sink base cabinets, and all other horizontal surfaces with sheeting, to ensure that all doors and drawers are sealed.
- Cover the stove with sheeting and seal. Ensure that the stove is off and cool to the touch before covering.
- Cover and seal the refrigerator with sheeting. Prior to covering, cut slits in the sheeting to allow for ventilation.

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

Other items:

- Cover any items that cannot be relocated out of the work area.
- Tape the protective sheeting to the wall of the building or use a 2x4 wrapped in protective sheeting to hold the material next to the wall. Use heavy objects to weigh the other edges of the protective sheeting to the ground to secure.



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

- When using ladders on plastic sheeting, place a sturdy piece of plywood on the plastic and then set the ladder on the plywood to prevent the ladder from puncturing the plastic and to provide a stable surface for the ladder. If plywood is used, take special care to secure it to the ground so that it does not move.

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.

Work Area Prep Reminder!

- Work area must be cleaned (HEPA vac and/or wet methods)
 - Methods that raise dust are prohibited
- Pre-cleaning intended for preparation work only!
 - No disturbance of visible mold until containment is established

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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Wall Breaks



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 (which supplements the wall break procedures detailed in SP 040:18:02) 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.

Asbestos Pipe Insulation



ACM Pipe insulation

- Asbestos containing thermal system insulation (TSI) may be present in wall cavities.
- Avoid disturbing and contact Tech Services if TSI is disturbed or must be disturbed

Work Area Prep

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

Work Area 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

Work Area Prep

- Lay polyethylene sheets on all horizontal surfaces in the immediate vicinity of the wall opening and secure them with duct tape.
- **Just prior** to starting work, mist with water the surface area to be opened to reduce the amount of dust produced from the wall break.

Work Area Prep

- If you are working in a development with known lead-based paint or lead components (listed in Appendix A and B of SP 1040:18:02), polyethylene sheets 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.
- In these developments, you should make every effort to keep the wall opening under two (2) square feet to limit the amount of dust produced.

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.

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.

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.

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.

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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**Cleaning
Exhaust Vents**



Common Problems: Exhaust Grill



Dirty



Closed



Not sealed

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Common Problems: Duct Shaft



Blocked



Dirty



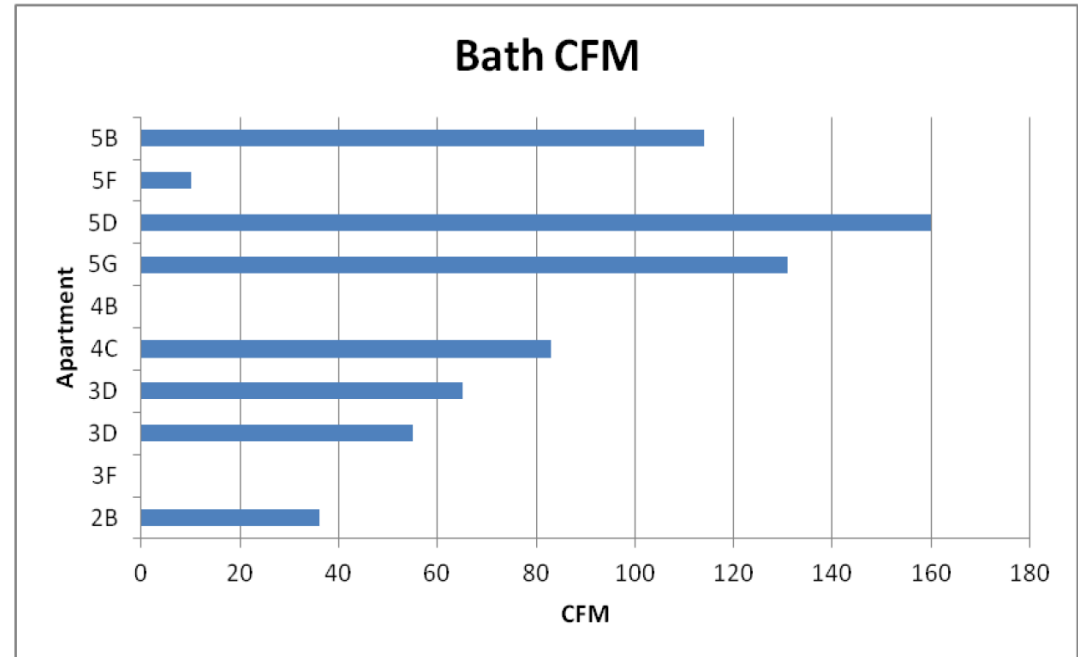
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Common Problems

Imbalance

- **Over-ventilation**
 - Wastes energy
- **Under-ventilation**
 - Leads to poor IAQ and possible mold



Solutions: Ventilation

- 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:

- (1) 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.
- (2) Must use caution when cleaning the fire damper inside the ductwork.



Anemometers

- Used for measuring the speed of air flow
- Maintenance staff will measure air flow after vent cleaning



Anemometers

- NYCHA uses **Testo Vane** instrument
- Must be set to Cubic Feet per Minute (CFM) - unit for Air Volume measurements.
- Must be calibrated to 15% free air



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Pipe Insulation



Background

- When performing repairs that require a wall break and/or repairs to water/ fire system piping or heat supply lines, NYCHA 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.

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

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

Toilet Supply Line



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

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.

Fiberglass Insulation

- Use the charts below to determine what size fiberglass pipe insulation to order.
- There are two charts each for different types of piping. The Copper Pipe chart is for copper piping only and the Iron Pipe chart is for most non-copper piping (Iron, Black, PVC, CPVC, Sch 40/80 etc).
- The charts list the pipe size, the outside diameter measurements of the pipe, the circumferences around the pipe, and the size to order.



Fiberglass Insulation

FIBERGLASS PIPE INSULATION E-Z SIZE CHART FOR IRON PIPES

IRON PIPE SIZE	OUTSIDE DIAMETER	PIPE CIRCUMFERENCE	ORDER THIS SIZE
1/2"	7/8"	2-5/8"	1/2 x
3/4"	1-1/8"	3-1/4"	3/4 x
1"	1-3/8"	4-1/8"	1 x
1-1/4"	1-5/8"	5-1/4"	1-1/4 x
1-1/2"	1-7/8"	6"	1-1/2 x
2"	2-3/8"	7-1/2"	2 x
2-1/2"	2-7/8"	9"	2-1/2 x
3"	3-3/8"	11"	3 x
4"	4-3/8"	14-1/8"	4 x
5"	5-3/8"	17-1/2"	5 x
6"	6-5/8"	20-3/4"	6 x
7"	7-5/8"	24"	7 x
8"	8-5/8"	27-1/8"	8 x
9"	9-5/8"	30-1/4"	9 x
10"	10-3/4"	33-3/4"	10 x
11"	11-3/4"	36-7/8"	11 x
12"	12-3/4"	40"	12 x

FIBERGLASS PIPE INSULATION E-Z SIZE CHART FOR COPPER PIPES

COPPER PIPE SIZE	OUTSIDE DIAMETER	PIPE CIRCUMFERENCE	ORDER THIS SIZE
1/2"	5/8"	2"	5/8 x
3/4"	7/8"	2-5/8"	1/2 x
1"	1-1/8"	3-1/4"	3/4 x
1-1/4"	1-3/8"	4-1/8"	1 x
1-1/2"	1-5/8"	5-1/4"	1-1/4 x
2"	2-1/8"	6-5/8"	2-1/8 x
2-1/2"	2-5/8"	8-1/4"	2-5/8 x
3"	3-1/8"	9-3/4"	3-1/8 x
4"	4-1/8"	13"	4-1/8 x
5"	5-1/8"	16-1/8"	5-1/8 x
6"	6-1/8"	19-1/4"	6-1/8 x

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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. **(Please follow Interim Guidance for Wall Breaks)**

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.

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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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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**Cleanup & Quality
Assurance**



Cleanup Method

- **Method 1:** Wet vacuum (in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried). Steam cleaning may be an alternative for carpets and some upholstered furniture.
- **Method 2:** Damp-wipe surfaces with plain water or with water and detergent solution (except wood – use wood floor cleaner); scrub as needed.
- **Method 3:** High-efficiency particulate air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.
- **Method 4:** Discard – Remove water-damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste. HEPA vacuum area after it is dried.

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Cleaning Methods

- HEPA vacuum surfaces
- Damp-wipe & dry
- HEPA vacuum surfaces again
- Discard in plastic as C&D waste
- HEPA vacuum entire work area

THE PERIODIC TABLE

H ¹	
Li ³	
Na ¹¹	
K ¹⁹	
Rb ³⁷	
Cs ⁵⁵	
Fr ⁸⁷	



B	C	N	O	F	Ne
Si	P	S	Cl	Ar	
Al	Fe	Co	Ni	Cu	Zn
Mg	Ca	Sc	Ti	V	Cr
Na	K	Ca	Sc	Ti	V
Li	Na	Mg	Al	Si	P
H	He	Li	Be	B	C

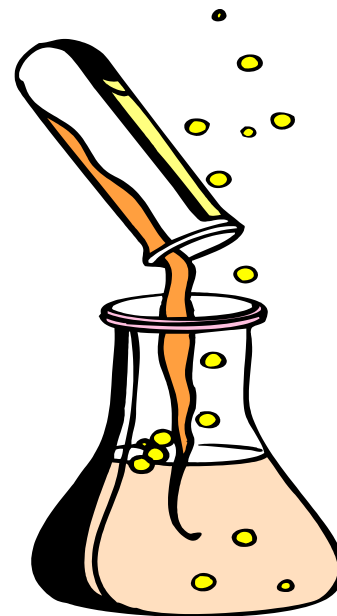
Cleaners & Disinfectants

- Specialized chemicals for mold remediation
- Anti-microbial cleaners used first
- Disinfectants used **AFTER** cleaning is complete
- NYCHA Products

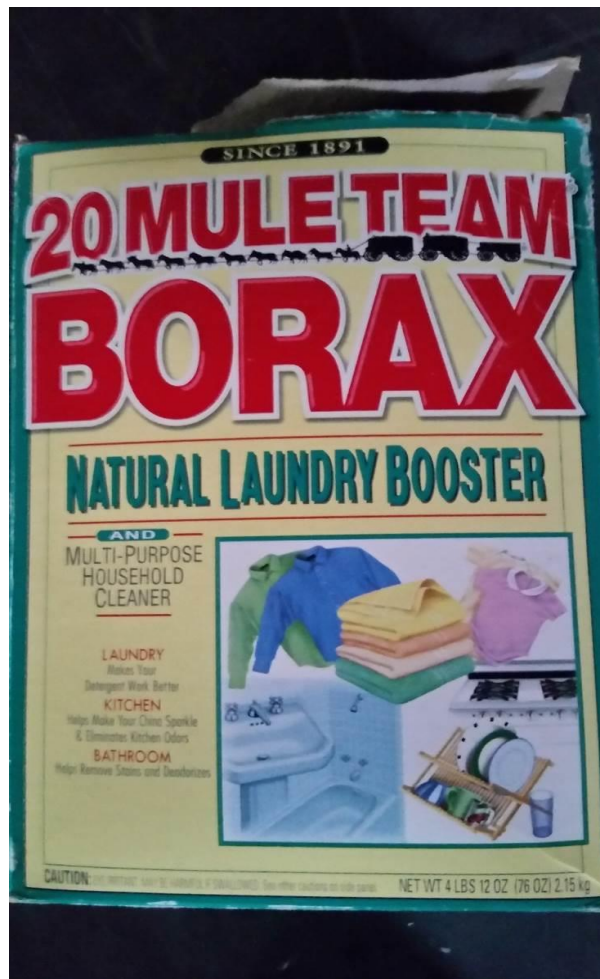


Fungicides/ Fungistats

- Sodium Tetraborate
- Quaternary Ammonium Compounds
- Other Disinfectants
- NYCHA Products



Sodium Tetraborate:



- Advantages
 - Cheap
 - Effective
 - All natural
 - Readily available

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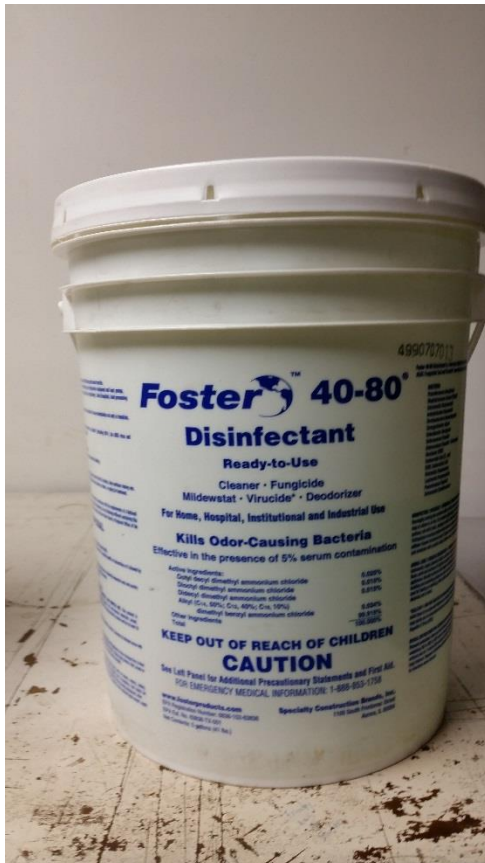
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Quaternary Ammonium Compounds



- Advantages
 - Excellent Cleaner
 - Effective in organic soil
 - Mildewstatic properties
 - Safe
- Disadvantages
 - Need to keep using until the mold's food source or water is eliminated

Fosters 40-80



- Use as a disinfectant, sanitizer, cleaner, fungicide, deodorizer, virucide and germicide.
- Kills a large variety of microbes within minutes.
- Contains surfactants to help clean and remove residue.
- Designed for use in water damage restoration situations.

NYCHA Products

- Micro Bio- Wash Cleaner



Follow Manufacturer's Directions

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







Make Your
Cleaning
Count:
**Wash
Lead
Out!**







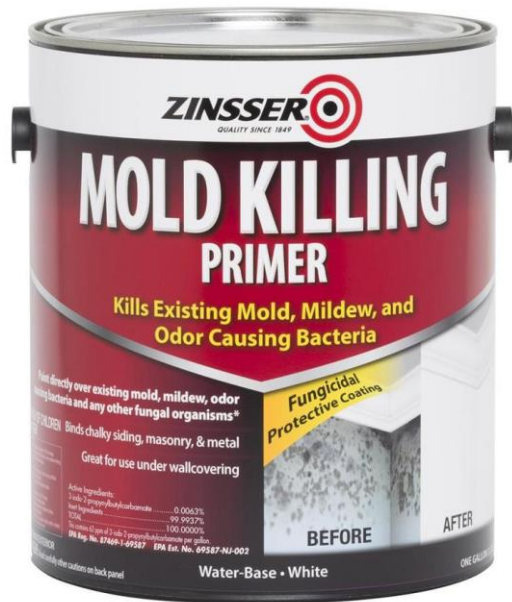


Cleaning Methods

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



Mold Resistant Paint



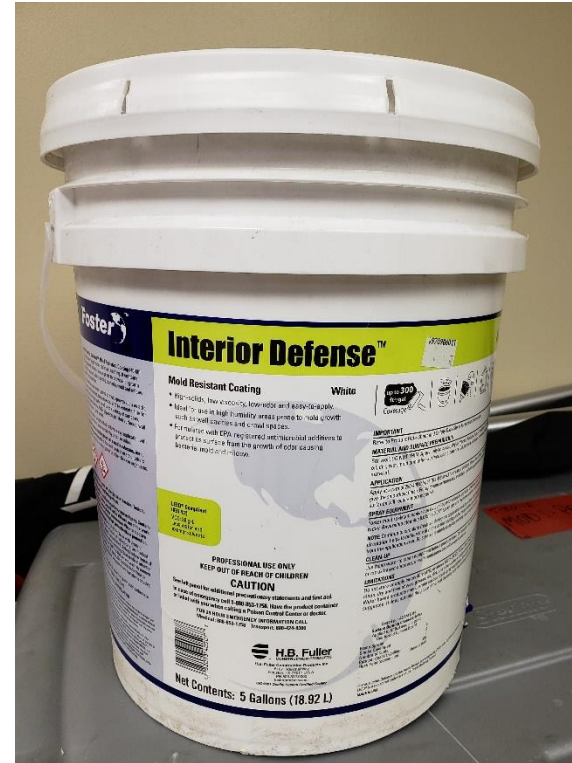
- Applied after surfaces are cleaned, disinfected & dry
- Apply per manufacturers instructions

Anti-microbial coatings

- 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.

NYCHA Products

- Fosters 40-50 Anti-Microbial Coating



New Developments

- Plast-tec waterproof barrier
- Ready to use for an interior or exterior floor
 - Mold and mildew resistant



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New Developments

- **Mold-resistant caulking**
securely bonds to a variety of substrates and finishes, including glass, ceramic, porcelain, tiles, stainless steel, plastics, glazed surfaces, imitation marble, aluminum, and many composite materials.



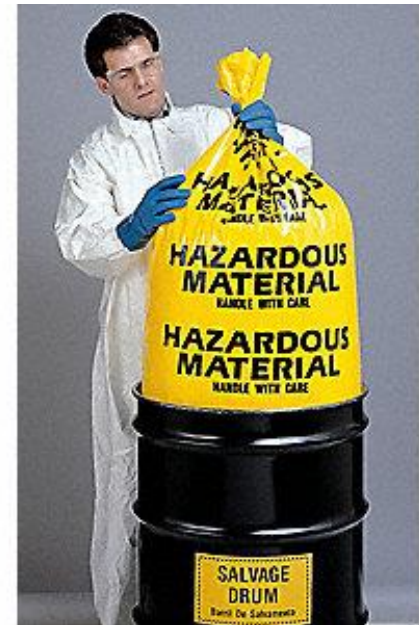
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Disposal

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



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Goose-necking

- [How to goose-neck a waste bag](#)

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.

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.

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.

Quality Assurance Inspections

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The inspector:

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Simulation & Practical Scenario

- Virtual Reality
- COVID Rules
 - Don't participate if you think you might not feel well
 - Use a clean headset
 - Segregate after use so that the headsets can be decontaminated
 - Wash you hands after use.

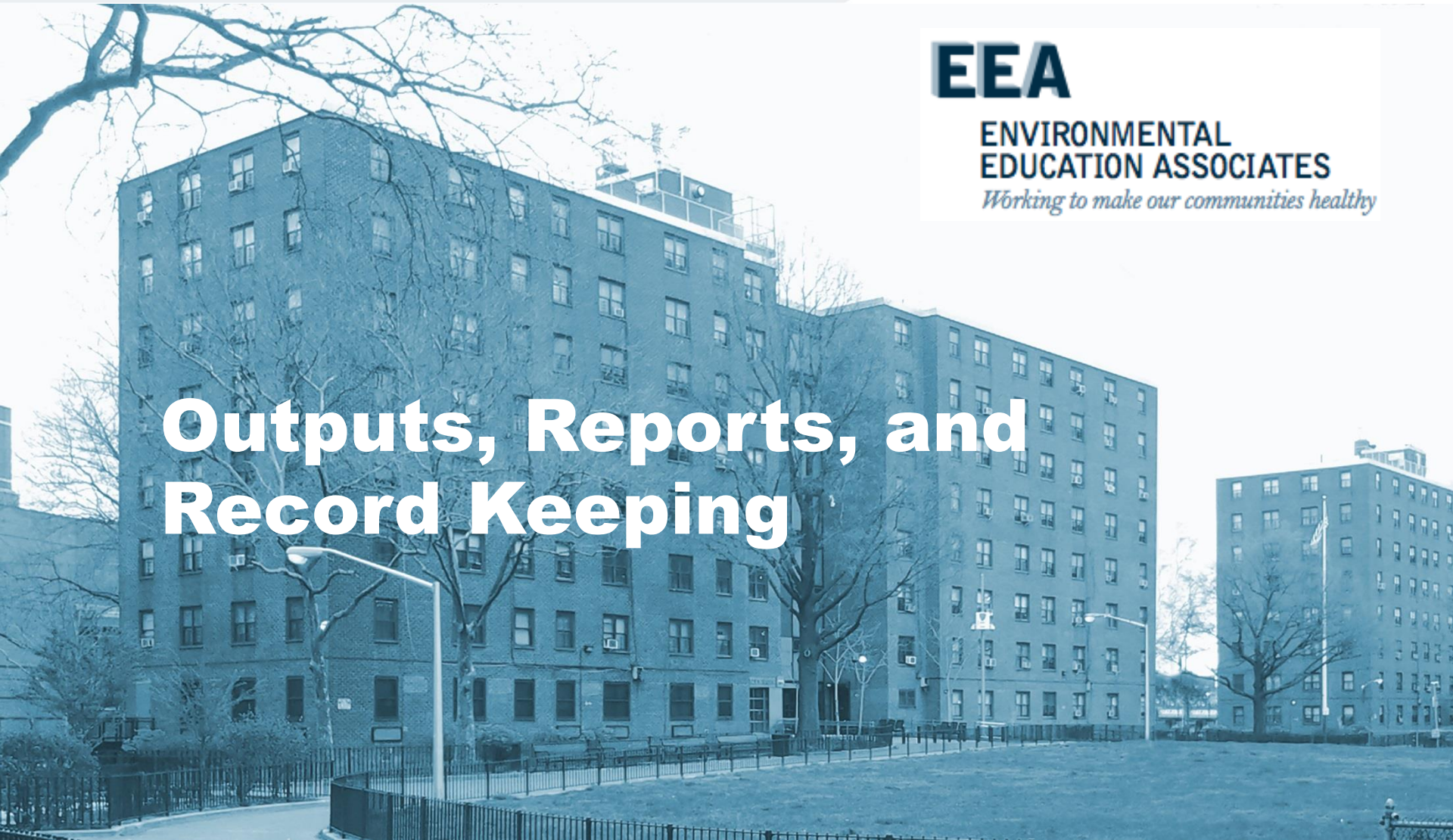
NYCHA MOLD TRAINING

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**Outputs, Reports, and
Record Keeping**



Outputs

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

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.

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 regional asset manager.

Performance Reporting

- For building system issues, the supervisory staff may, for example, recommend additional repairs.
- For process issues, the regional asset manager 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.

Reports

- Operations reports to be developed with the independent data analyst

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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Course Review



- 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?

Knowledge Assessment

- 20 question quiz