Nothing Compares
NORTH CAROLINA

Managing Inquiries about Dampness and Mold Growth

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Outline

- Introduction
- Purpose
- Community Partners
- Why mold grows in buildings
- Potential health effects
- A systems approach to assess dampness and mold growth
- Cleanup recommendations
- Empowering citizens to address dampness and mold growth

Purpose

- Enable and prepare county environmental heath professionals to be a primary contact point for inquiries about dampness and mold growth
- Provide evidence-based tools to manage these inquiries
- Develop partnerships within the public system to address indoor air quality, dampness and mold growth in buildings
- Empowering options or action plans using the Principals of Healthy Homes

Principles of Healthy Housing
To promote health and well being keep homes

- Dry
- Clean
- Well Ventilated
- Properly Maintained
- Pest Free
- Contaminant Free
- Safe
- Thermally Controlled

8 steps to a healthier home
http://portal.hud.gov/hudportal/documents/huddoc?id=HH8Tips.pdf

Community Partners

Addressing indoor dampness & mold growth aligns with public health services

- First building codes were health based

- Addressing dampness and mold growth in homes is aligned with several of 10 Essential Public Health Services

  - ✓Diagnosing and investigating health problems and health hazards in the community
  - ✓Inform, educate and empower people about health issues
  - ✓Mobilize community partnerships to identify and solve health problems
  - ✓ Enforce laws and regulations that protect and ensure public health and safety (not necessarily public health law)

http://www.cdc.gov/nphpsp/essentialservices.html

Partners in the Public Health System

"All public, private, and voluntary entities that contribute to the delivery of essential public health services within a jurisdiction."

- Public health agencies at state and local levels
- Healthcare providers
- Public safety agencies
- Human service and charity organizations
- Economic and philanthropic organizations
- Environmental agencies and organizations

Why address dampness & mold growth?

Addressing dampness and mold growth

- Is a publish health issue -- associated health effects are society-wide
- Occurs in homes, schools, public and commercial buildings
- Is transferable to preparedness and response activities
- Has Health and economic consequences
- Economic and health burdens are increased among vulnerable populations
  - ✓Economically disadvantaged
  - ✓Children
  - ✓Elderly
  - ✓People with weakened immune systems

Lack of **evidence-based** information, awareness, education & interest

Economic Consequences

- Health care costs attributable to dampness and mold in North Carolina:
  - ✓Allergic Rhinitis $81 million*
  - ✓Bronchitis in North Carolina $ 13 million*
  - ✓Asthma $32 Million *
- Mold testing: $ 100-150 per sample for three samples
- Hourly rate: $ 80-100 for mold professionals
- Property insurance has limitations/exclusion on mold coverage

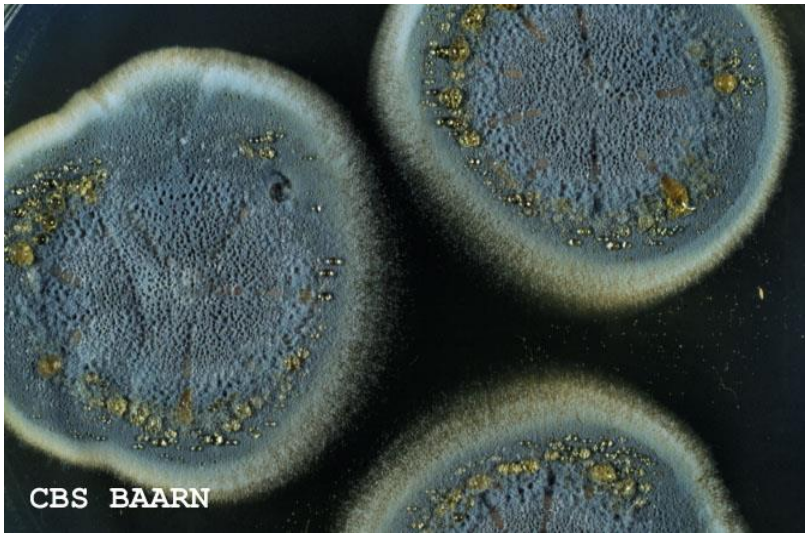
* Adapted from Valuing the Economic Costs of Allergic Rhinitis, Acute Bronchitis, and Asthma from Exposure to Indoor Dampness and Mold in the US, Journal of Environmental and Public Health Volume 2016, Article ID 2386596,

Environmental Assessment

Why does mold grow in buildings?

What is Mold?

Living and dead environmental microorganisms (fungi), and their spores, fragments, and metabolic products. Molds and Mildews belong to the Kingdom of Fungi



Environmental conditions that promote mold growth

- Presence of viable mold spores
- Food sources—organic matter
  - ✓Building materials and contents: gypsum board, ceiling tiles, wall paper, wood products, paints, glues, textiles
  - ✓Organic matter: dirt, dust, dead skin cells, biofilms and oily residues on inorganic surfaces or materials (concrete, fiberglass, metal and plastic)
- Proper temperature--optimum temperature range for many common indoor molds is 68˚F- 86˚F
- **Adequate amount of water in materials and contents**

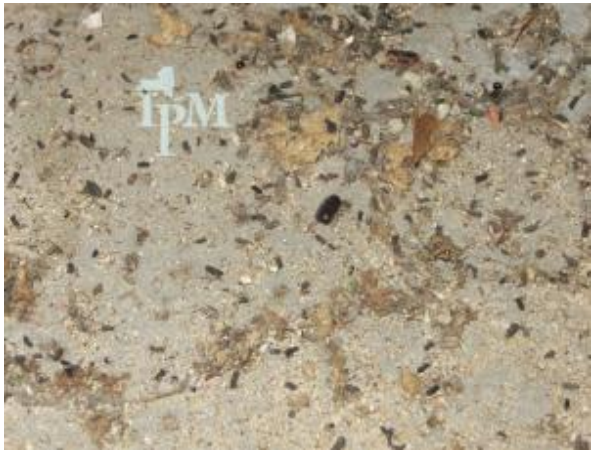
- *Other dampness-related contaminants*
  - ✓*Dust mites, other environmental bacteria and insect pests are also associated with damp environments*

Institute of Medicine, Damp Spaces and Health (2004)

Mold Growth on materials

Mold growth on contents

Roaches, Mites and Rodents



Case study
Structured interview

A telephone call is received from a tenant who is concerned about toxic black mold in the home.

- Tenant says landlord won't due anything
- Called Local Housing Code Enforcement– no help
- Called the Department of Environmental Quality and told to call Raleigh
- Says that children are sick (one has asthma and has missed school)

How can we help this person?

- Transform "mold" into dampness and mold growth
- Focus on reasons that materials and contents have become damp enough to support mold growth
- Consider other Indoor Environmental Quality (IEQ) issues

Sources of moisture in homes

- Rainwater and groundwater
- Infiltration of hot and humid air
- High relative humidity and condensation surfaces
- Plumbing or fixture leaks
- Water vapor generated by occupants
- Heating, Ventilation, and Air-Conditioning (HVAC) Systems

Moisture moves in homes

- In bulk form (liquid water) by gravity, wind, and pressure differences
- As air-transported moisture, wind and air pressure differences
- By capillary movement (wicking)
- By diffusion
- Between layers of materials

Questions to ask about dampness and mold growth

Why

- Describe sources of moisture (liquid or vapor) floods, roof leaks, plumbing leaks, water in basement/crawlspace, poor drainage, and condensation.

When/Where

- Are moldy odors present? Summer or winter? How long have conditions existed? Describe locations, of wet, water damaged or moldy materials. Has moisture moved or accumulated in materials and contents? Is heating and air-conditioning affected?

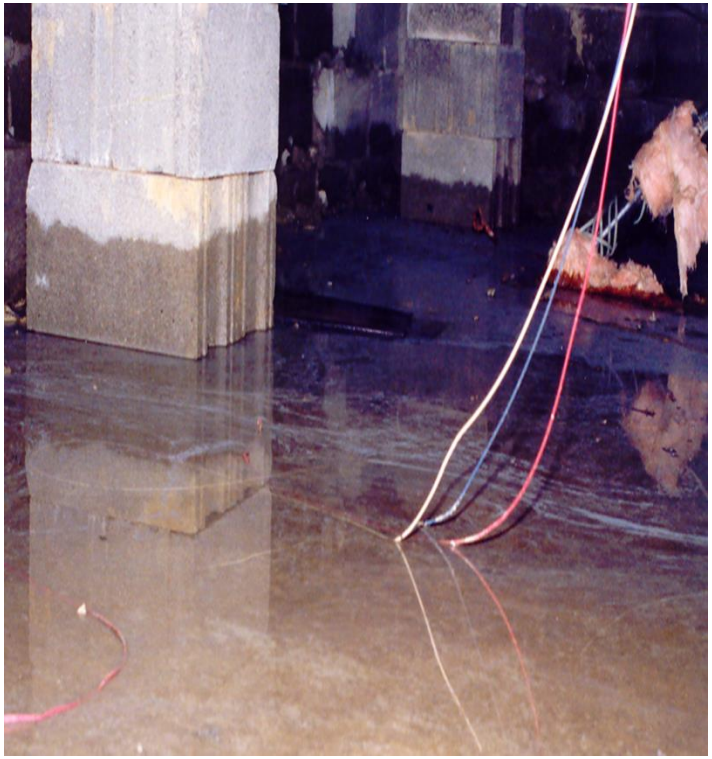
What

- Kinds of materials are water damaged or moldy? Describe the size of affected areas and the degree damage or the extent that damp materials are colonized by mold growth?

Who

- Has property owner been notified of maintenance or repair needs? Who has done work to prevent further damage or solve problem?
- Are occupants reporting health complaints or sought medical care? Are there sensitive or susceptible people exposed?

Flooding



Downspout management

Grading and landscaping

Vegetation against side of building

Roofs

Flat roof

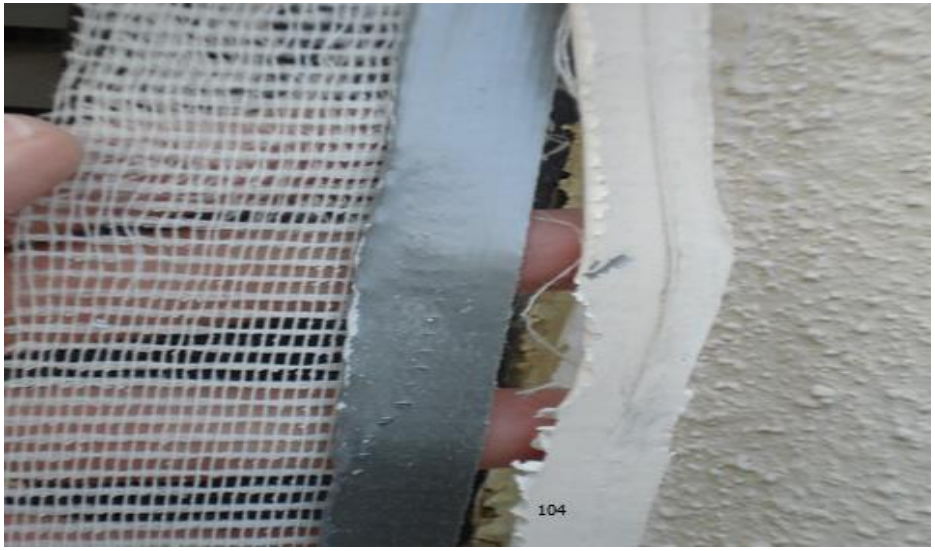
Crawlspaces

Crawl space design and construction

- Flow ventilation vents within 3 feet of corners
- 1 square foot of per 150 square feet of crawlspace
- Ground vapor retarder
  - 6 mil poly, lapped seams smooth
  - Ground is smooth and slight slope to drain to daylight
  - No debris
- Exterior grading/drainage
- Exterior foundation damp proofing
- Floor leakage control
- Air duct leakage control

Section R408 and R409 of NC 2012 Residential Building Code

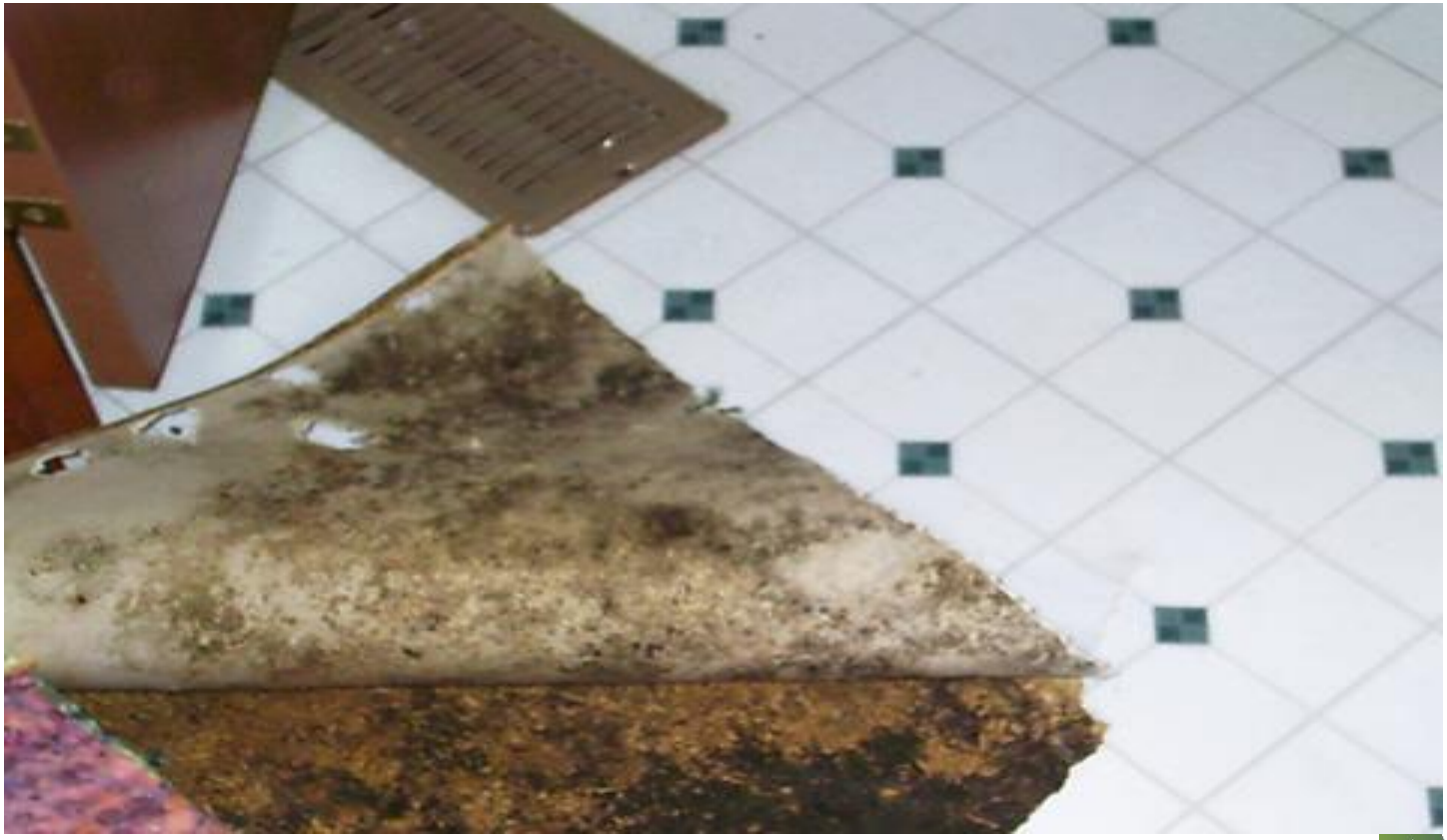
Air infiltration



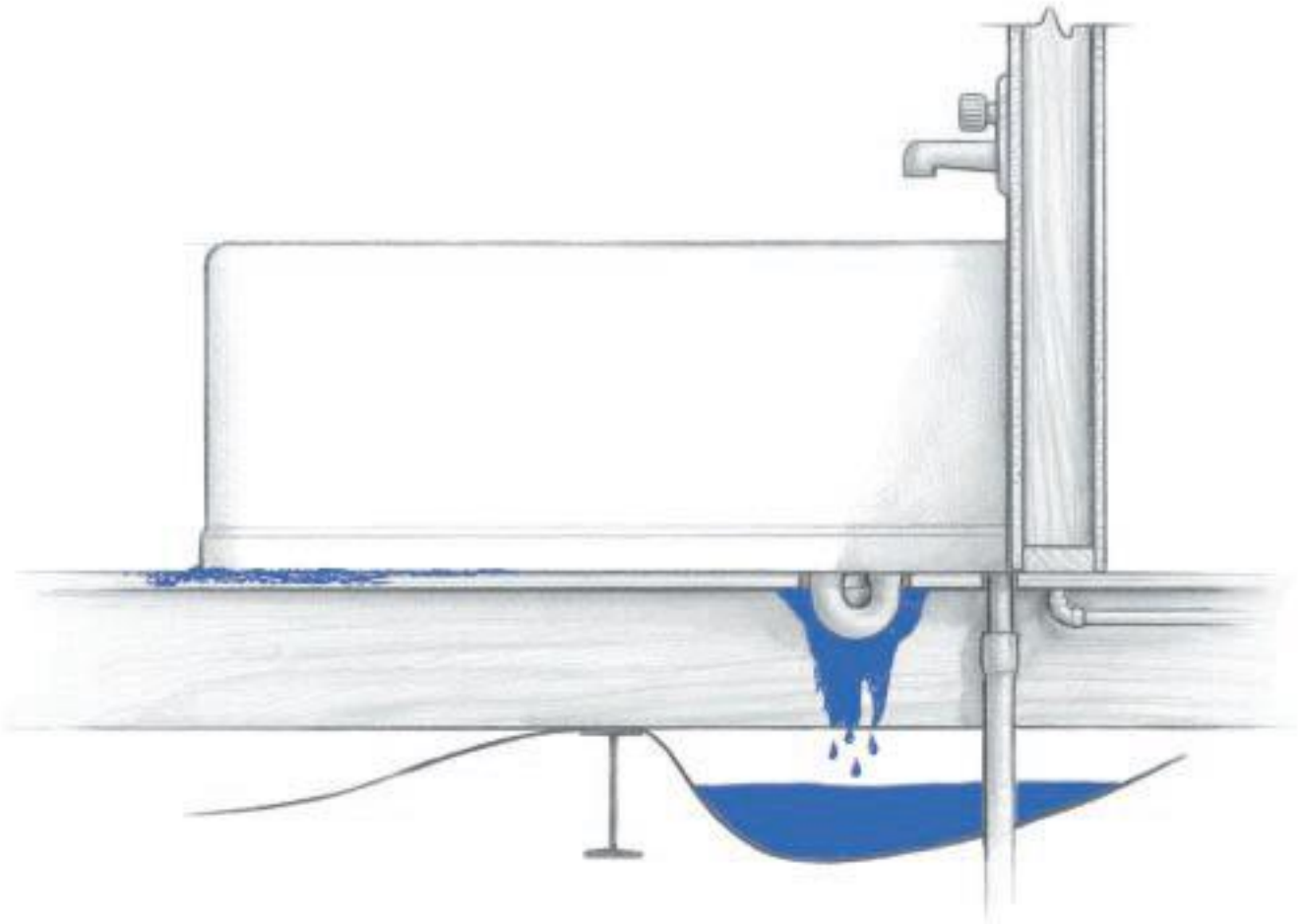
Wind driven water

Air infiltration, vapor diffusion and condensation

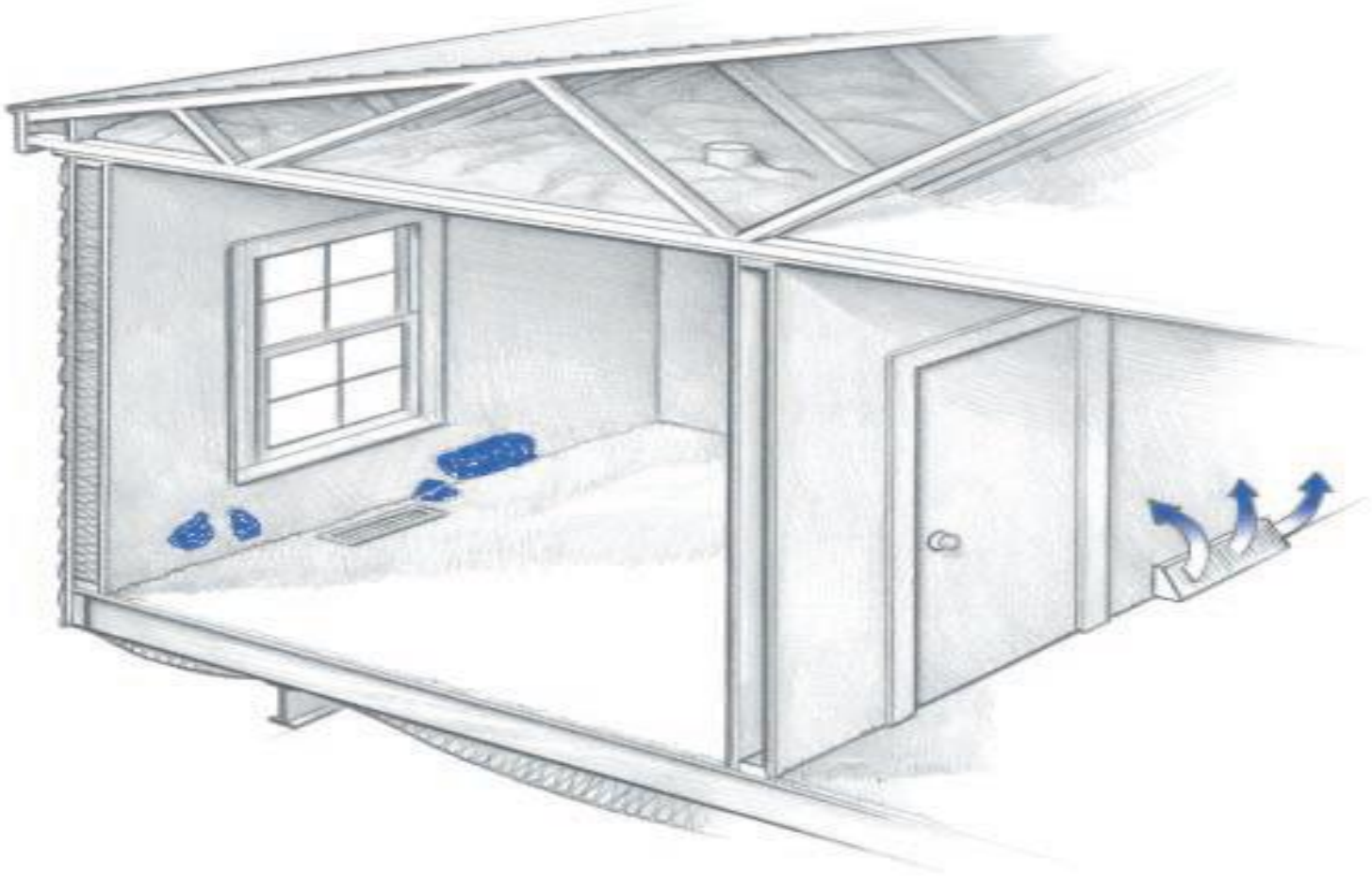
Moisture Problems in Manufactured Homes



Bathtub Leak



Mold growth in unused bedroom



Thermal Comfort

- Thermal comfort is a balance heat generated by a person and gains/loses to environment

- Narrow band
  - ✓**Summer 74-80°F and 30-60% relative humidity**
  - ✓**Winter 65-76°F and 30-60% relative humidity**

- Assume light sedentary activity with appropriate clothing for the season

- Does not account for heat sinks, radiant sources or air drafts

- Comfort is subjective and variable- ideal comfort criteria satisfy 80-95% of people

American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE) Standard 55

Humidity Control

- Ideal relative humidity is between 30% and 60%
- **<30%**
  - Drying and irritation of skin and mucous membranes, including eyes and nasal passages
  - Increased survival Influenza and Corona Viruses
- **>60%**
  - Increased potential for mold and microbial growth, dust mites and insect infestations
  - Increased risk for chemical emissions
  - Increased risk for condensation surfaces (warm moist air contacting cool surfaces)
  - “Free moisture” content of wood, paper and other hydrophilic (water loving) materials depends on temperature and relative humidity of surrounding air

Relative Humidity and Dew Point

- Relative Humidity (RH) – shortened to Humidity
  - ✓Ratio (%) of amount of moisture in air compared to amount air could hold if saturated *at a given temperature*
  - ✓Warm air holds more moisture than cool air.
  - ✓When moisture content is constant, warming air lowers RH and cooling air raises RH
  - ✓*Always measure both temperature and relative humidity*

- Dew Point (DP)
  - ✓Used as a measure of absolute humidity
  - ✓Temperature at which the RH equals 100%;
  - ✓Total amount of moisture air doubles when dew point temperature increases by 20°F

- *Persistent dew point temperature > 60°F in mechanically cooled buildings increases risk of condensation and moisture absorption*

Condensation

- Occurs when a surface temperature is lower than the dew point of surrounding air

  ✓Phase change from vapor to liquid

- Driven by

  ✓Surface temperature

  ✓Absolute moisture content in air (dew point)

Condensation driven by surface temperature

Control condensation by raising surface temperature

Condensation driven by moisture content of air

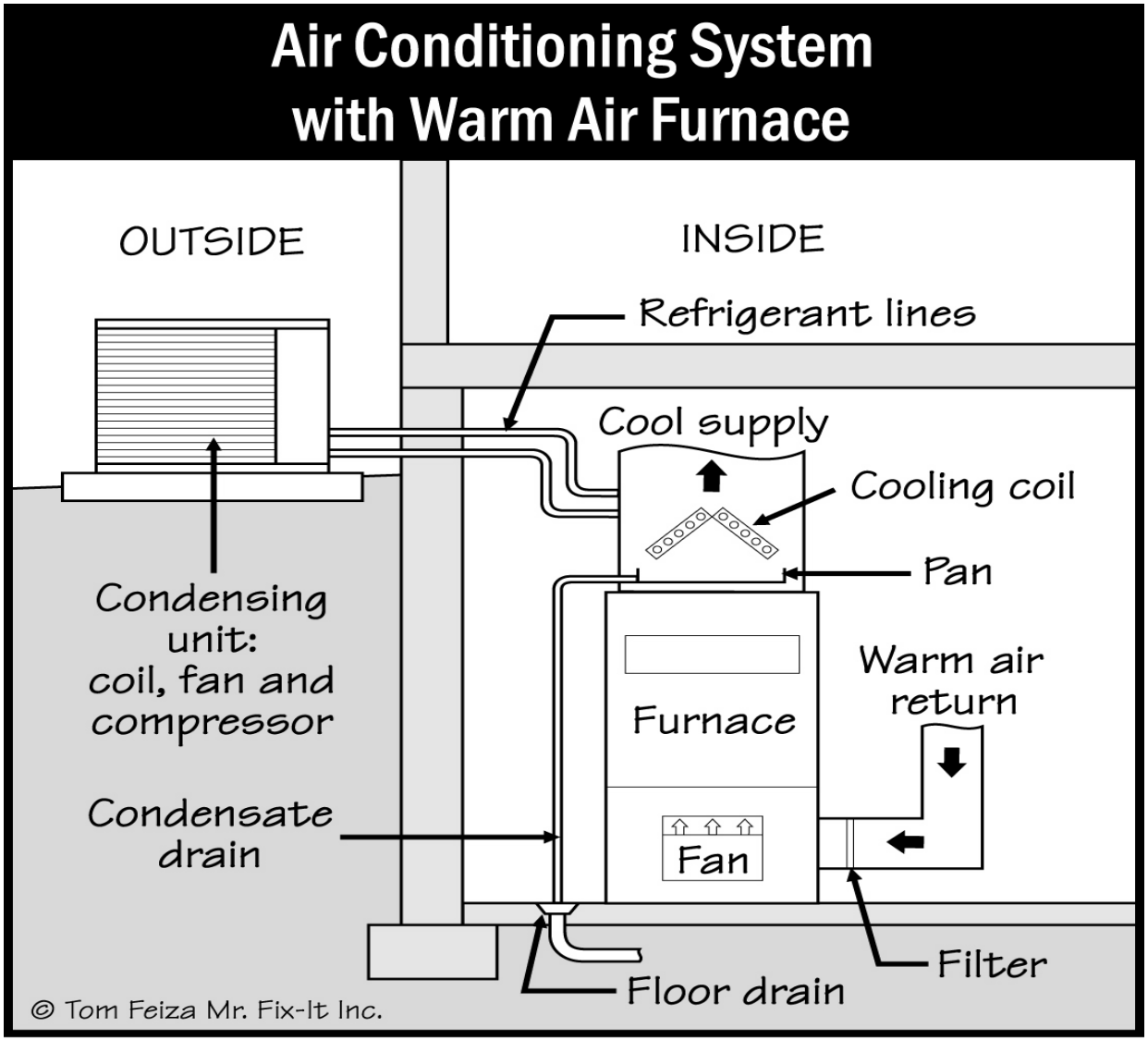
Moisture Movement by Capillary Action --Wicking

Moisture Movement by Capillary Action --Wicking

Heating Ventilation and Air-conditioning

- Location of outdoor air intakes (if present)
- HVAC design – proper size for heat loads to prevent short cycling
- HVAC operation – raising temperature during unoccupied periods (setback) can increase humidity and reduce air for dilution ventilation
- Mold growth on insulation downstream from coils
- Maintenance and condensate drainage

Split system forced air HVAC



Packaged Through-the-Wall Heat Pump (PTWHP)

Baseboard heat and Window Unit

Location of outdoor intakes

Installation error

Air-conditioning condensate drainage

Air-conditioning coils

Filtration

Medium efficiency pleated filter

Best capture efficiency for small particles

Least resistance to air flow

Lowest cost

Rated by Minimum Efficiency Rating Value (MERV)

Use MERV 8-11

Poorly vented clothes dryer

Dampness and mold growth impacts to health

Health concerns
A common scenario

A telephone call is received from a tenant who is concerned about toxic black mold in the home.

Tenant says that children are sick (one has asthma and has missed school)

- What tenant is saying is they think there an association mold in the home and health symptoms
- What the owner hears is that actions or inactions caused the tenant's illness with the implication of liability or financial responsibility

Basic information on dampness mold and health

- Most healthy adults can inhale large numbers of mold spores without ill effects
- Mold growth consists of spores, fragments, volatile organic compounds (the musty smell), waste products and other substances.
- Usually associated with other dampness-related contaminants
- Sensitive populations and people with certain conditions may be at greater risk

Susceptible populations and conditions

- Children and elderly
- People with allergies/hypersensitivity or pulmonary disease
- People with compromised immune systems:
  - Pre-existing disease
  - People taking certain medications
  - Post-operative patients
  - HIV/AIDS
  - People being treated for cancer

*Health effects associated with dampness and mold growth-- NIOSH Alert (2012)**

Evidence of an association between damp and moldy buildings and:

- Upper and lower respiratory tract symptoms - cough and wheeze
- Respiratory infections
- Asthma, and exacerbation of asthma,
- Shortness of breath (dyspnea)
- Allergic rhinitis

Limited evidence of an association between damp and moldy buildings and bronchitis

Clinical evidence that exposure to mold and other microbial agents in damp buildings increases the risk of hypersensitivity pneumonitis, chronic rhinosinusitis, and allergic fungal sinusitis

Association is not causation !

Reference: National Institute for Occupational Safety and Health (NIOSH) Preventing Occupational Respiratory Disease from Exposures Caused by Dampness in Office Buildings, Schools, and Other Nonindustrial Buildings

Allergies (type I hypersensitivity)

- Inappropriate over-reaction of immune systems-chain reaction
- Exposure to an antigen stimulates production of antibodies that attach to and activate mast cells
- Mast cells release histamine and cytokines causing symptoms
- Hay fever, allergic rhinitis sinusitis and conjunctivitis
  - ✓Inflamation
  - ✓Sneezing runny nose
  - ✓Sore throat, post nasal drip itchy ears
  - ✓Red itchy watery eyes
- Asthma
- Atopic dermatitis (eczema)
- Anaphylaxis

Allergy Prevalence

- Diagnosis is typically based on medical history.
  - ✓Skin or blood testing may be useful in certain cases.
  - ✓Can determine if a person is sensitized but can't determine where exposures occur

- About 20% of people are affected by allergic rhinitis

- In 2010, 11.1 million visits to physician offices resulted with a primary diagnosis of allergic rhinitis.

- Approximately 8% of people 18 and over in the U.S. have hay fever

Allergens

- Indoor aeroallergens are often proteins derived from
  - ✓Pollen and plant material
  - ✓fungal spores, and hyphal fragments,
  - ✓Dust mite fecal particles
  - ✓Cockroach frass – fecal pellets, secretions an exoskeleton fragments
  - ✓Cat and dog secretions and dander
  - ✓Rat and mouse urine

- Some chemical agents are allergens
  - ✓Enzymes
  - ✓Isocyanates
  - ✓Latex
  - ✓Cleaning agents
  - ✓Formaldehyde

- FDA 8 Major Food Allergens: milk, egg, peanut, tree nut, wheat, soy, fish, crustacean shellfish (labelling requirements)

Asthma

- Obstructive lung disease—harder to exhale
- Chain reaction—
  - Tissue inside airways become inflamed and swollen
  - Produce excess mucus that can further narrow the airways.
  - Muscles around airways them tighten causing constriction and less airflow
- Symptoms
  - Whistling and wheezing, chest tightness, shortness of breath and unexplained coughing
  - Prevalence -- about 10% of population has asthma

Asthma information and resources
http://www.asthma.ncdhhs.gov

Other rare diseases

- Hypersensitivity pneumonia,
- Chronic rhinosinusitis
- Allergic fungal sinusitis
- Allergic Bronchopulmonary Aspergillosis

Hypersensitivity in infectious disease components

Mycotoxins and Toxic Black Mold

Mycotoxins are substances produced and released by molds as secondary metabolites

- >200 mycotoxins identified
  - ✓Aflatoxin (*Aspergillus sp)*
  - ✓Tricothecenes (*Stacybotyrs sp*)

- Penicillin (*Penicillium chrsysogenum*)

- In 1994 and 1997 and Centers for Disease Control reported of clusters infants with idiopathic acute pulmonary hemosiderosis (IAPH) associated with exposure to toxic black mold, *Stachybotrys chartartum* in Cleveland and Chicago

- In a 2000, CDC Update: Pulmonary Hemorrhage & Stachybotrys - review of 1993-1997 investigations concluded that earlier association between exposure to *Stachybotrys chartarum* and IAPH was **not** proven.

Number one question. Do I have toxic black mold?

People associate with dampness and mold growth with other symptoms

- Fatigue and weakness
- Muscles aches, cramps, joint pains, morning stiffness
- Abdominal pain, diarrhea
- Headache, memory loss, concentration difficulty, confusion, learning difficulties, difficulty finding words, disorientation, mood swings, anxiety or panic

Scientific evidence is insufficient or unavailable to determine whether an association exists between damp buildings and these symptoms

What do you tell the concerned citizen?

The presence of water damage, dampness, visible mold, or mold odor in environments is unhealthy.

Recommend to:

a) Identify and correct source(s) of water that enable mold and microbial growth or contribute to other problems

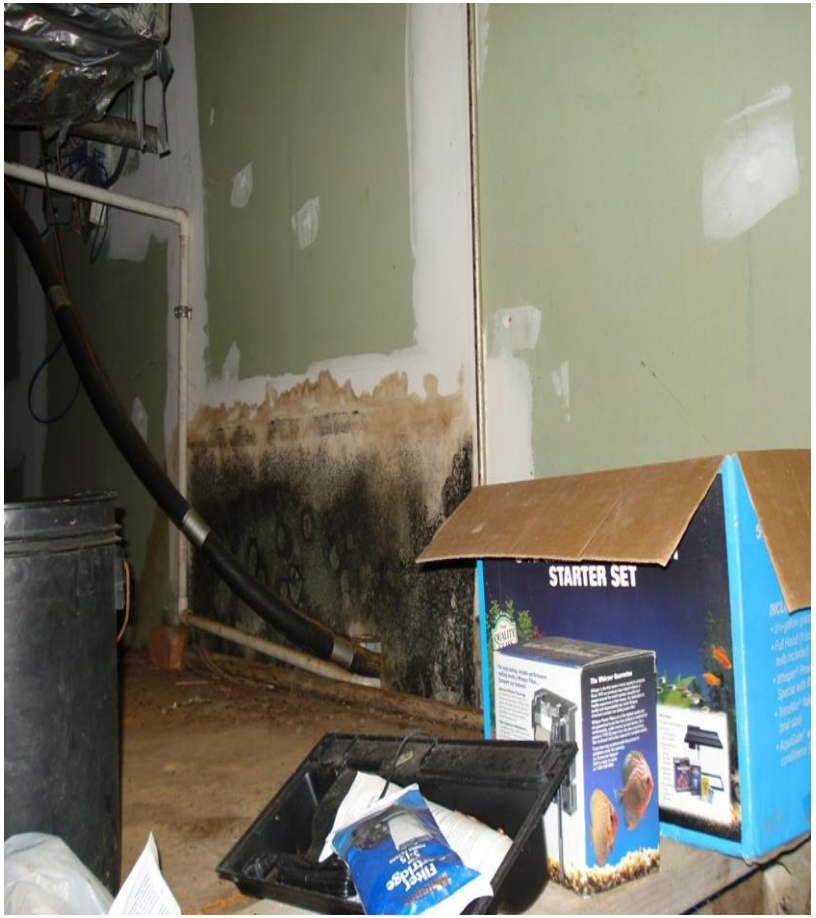
b) Clean and dry hard surface or inorganic materials

c) Remove porous and organic materials colonized with mold growth as rapidly and safely as possible and dry environment

d) Consider other contributors to health impacts using healthy homes principals

Other sources of indoor pollutants

Which is more of a health risk?



A systems approach to assess, respond and remediate dampness and mold growth

General Principles

Consider Buildings as interactive systems

- Components.
- Equipment
- Outdoor conditions
- People
- Owners, occupants and other stakeholders must cooperate

Define "healthy" indoor environments"

- Dry
- Clean
- Properly Ventilated
- Well Maintained
- Contaminant Free
- Pest Free
- Safe
- Thermally controlled

Transform "mold" into dampness and mold growth and then into maintenance and repairs, along with other changes or actions that promote health and wellbeing.

Assessment of dampness and mold growth

Informed and visible inspection of subject building is the most important first step.

- Informed

✓Prior information about construction, operation, maintenance, and occupant activities in the building

- Visual inspection to concentrate on
  - ✓Sources, duration and movement of excess moisture
  - ✓ Places, types of materials, and extent of mold growth
  - ✓ Degree that materials are colonized with mold growth or water damaged
  - ✓Impact on heating and air-conditioning systems

Type of occupancy, perceptions of occupants and presence of sensitive occupants

- Transform "mold issues" to problems with the design, construction, maintenance, repairs, operations and activities in the building

Source water

- Clean- potable water or rain water
- Grey water– contains contaminants, soils, dissolved organics from washing machines, dishwashers, and showers
- Black water unsanitary– rising water, flood waters, sewer backup
- Affect of time and temperature
  - Over 2-4 days clean water will degrade into grey water as soils and other contaminants are dissolved and microbial amplification begins.
  - Over 2-4 days grey water will degrade into black water as microbial amplification accelerates

Size and location

- Size Per EPA and New York City Guidance
  - <10 square feet
  - 10 to 100 square feet
  - >100 square feet
  - For comparison a 4 by 8 panel is 32 square feet

- Location
  - Will cleaning or removal cause spread moldy dusts outside work area

References: EPA Mold Remediation in Schools and Commercial Buildings and NYC Guidelines for assessment and remediation of fungi in building

Assessment of degree of damage

- Small area, superficial growth on finishes (paints or coatings) and on hard inorganic or nonporous surfaces – *clean and dry*
- Clothing and textiles-- *clean and dry*
- Solid wood furniture and other hard or semi-porous materials -- *clean and dry*
- Soft, fluffy or organic based materials books and papers –c*lean and dry or dispose*
- Carpet, drywall and insulation -- *dispose*
- Upholstered furniture, mattresses and box springs -- *dispose*

General guidance for mold remediation

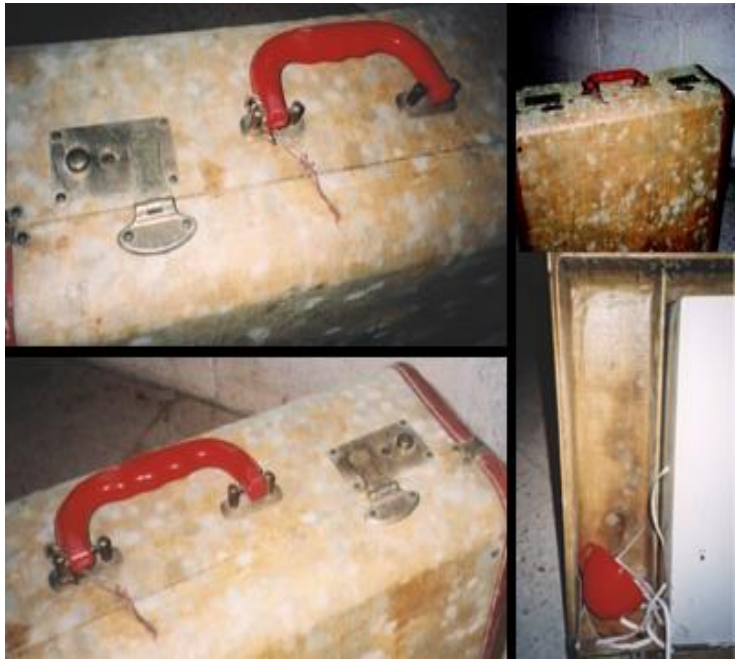
Goal is to restore the building to a clean and dry condition

- Identify potential sources of excess moisture
- Follow moisture flow through materials and contents
- Fix source of moisture intrusion or accumulation
- Assess degree of damage
- Develop and implement a plan to get mold growth out of environment
  - ✓ **Clean and dry**
  - ✓ **Remove and dispose**
- Protect workers, non-impacted materials and areas of the building
- Federal, state, and industry standards for best practices

Cleaning: an environmental management process

- Identifying unwanted matter
- Extracting or separating unwanted matter from objects in the environment
- Containing of unwanted matter so it can be effectively collected and removed
- Transport unwanted matter to suitable location for proper disposal.


Sterilite



When is work complete?

- Underlying moisture problem identified, eliminated and environment controlled
- Isolation of the work area was appropriate and effective
- Mold removal and worksite cleanup performed according to the site-specific plan
- Any additional moisture or water damage or mold damage found during remediation was properly addressed
- Upon completion, surfaces in the work area and adjacent areas are:
  - ✓Dry
  - ✓Free from visible dust and debris.
  - ✓Without any musty or moldy odors

Outside assistance: consultants and contractors

- Mold professionals
- Licensed Home Inspectors
- Pest Control Professionals for Wood Destroying Organisms
- Residential Services Energy Network (RESNET) Certified Home Energy Raters
- Building Performance Institute, Certified Building Analysts
- Others

Professional services to assess and remediate mold growth can be very expensive

Organizations offering Mold Certifications

National Environmental Trainers

National Association of Mold Professionals

Mold Inspection Consulting and Remediation Organization

Institute of Inspection Cleaning and Restoration Certification

Professional Certification Institute

Southeastern Mold Institute

American Council for Accredited Certifications

Professional Home Inspection Institute

Restoration Industry Association

American Society of Home Inspectors

National Air Duct Cleaners Association

National Association of Certified Home Inspectors

American Board of Industrial Hygiene

Mold and Indoor Air Quality Board of Ethics

Testing for mold

- **The Environmental Protection Agency (EPA) does not recommend mold testing as first step to assess problems**

- **The Centers for Disease Control and Prevention (CDC) does not recommend routine mold testing**

- No recognized airborne exposure limits

- North Carolina does not have oversight of :
  - ✓Certified Mold inspectors
  - ✓Certified Mold Remediation Contractors
- We don't know about the curriculum, content and quality of training, or specific requirements to obtain 3rd party certifications

- Testing is often driven by insurance or professional standards of practice

Limitations of mold testing

- Spore count varies over time and space
  - ✓May or may not be representative of actual conditions
  - ✓Difficult to make inferences about other times and conditions

- From public health perspective
  - ✓Response is always to correct underlying moisture issues and
  - ✓Remove mold growth from the environment

- Linking mold with specific causation is difficult

- May not be helpful to get a party to respond appropriately

- Divert attention from underlying issues causing moisture problems or other IEQ issues

Considerations before mold testing

- Has there been an informed and thorough survey of the area?
- Will testing prove or disprove a specific hypothesis developed from the building survey?
- How will the results going to be interpreted?
- What do the results really mean?
- Will test results aid in determining health-based decisions or actions?
- Is money better spent on fixing the underlying problems?

Other Considerations:
Asbestos

Asbestos

- The Health Hazards Control Unit administers the North Carolina Asbestos Hazard Management Program.
- Regulates building demolition and renovation activities
- Some requirements are not applicable to single family homes
- Accredits workers, inspectors, and project designers and other asbestos professionals
- Removing asbestos containing materials is a regulated activity

Contact the Health Hazard Control Unit at (919) 707-5950 for details

Other Considerations:
Lead-based paint

Lead-based Paint

- The Health Hazard Control Unit administers
  - ✓Lead-based Paint Abatement Program and the Lead-based Paint Renovation Repair and Painting Program (RRP)
  - ✓The RRP program requires that firms and individuals disturbing lead-based paint in child occupied facilities (homes) built before 1978 to be certified and to follow “lead safe” work practices to prevent environmental contamination
- Certifies contractors and firms that perform these activities
- Abatement and disturbing lead-based paint during renovation repair and painting in child-occupied facilities are regulated activities

Contact the Health Hazard Control Unit at (919) 707-5950 for details

Guidance for tenants with dampness and mold growth

*Statutory tools for code enforcement**

Conditions are detrimental to the health safety and welfare of citizens

- § 160A-174(A) general power to make ordinances for cities and towns
- § 153A -121(a) general power to make ordinances for counties

Conditions are unfit for human habitation

- § 160A-426 through 160A-450 minimum Housing Codes.

Conditions are especially dangerous to life…

- § 160A 426 -160A-434 condemnation

Conditions are dangerous to public health

- § 160A-193 abatement of public health nuisances

Reference: Housing Codes for Repair and Maintenance, UNC school of Government 2011

Minimum Housing Codes

- Structure
  - ✓Space, use and required facilities
  - ✓Means of egress (exit)
  - ✓Structural condition
  - ✓Electrical facilities and equipment
  - ✓Plumbing systems and fixtures
  - ✓Heating standards.

- Maintenance
  - ✓Grading and drainage
  - ✓Protective treatments paintings and coatings
  - ✓Sanitation
  - ✓Garbage and Rubbish disposal
  - ✓Exterior Areas
  - ✓Pest Control

Residential rental agreements

§ 42-42. Landlord to provide fit premises

- ✓Fit premises – structural condition
- ✓Keep systems and facilities in good repair
- ✓Smoke detectors and carbon Monoxide
- ✓12 conditions defined as Imminently Dangerous

§ 42-43. Tenant to maintain dwelling unit

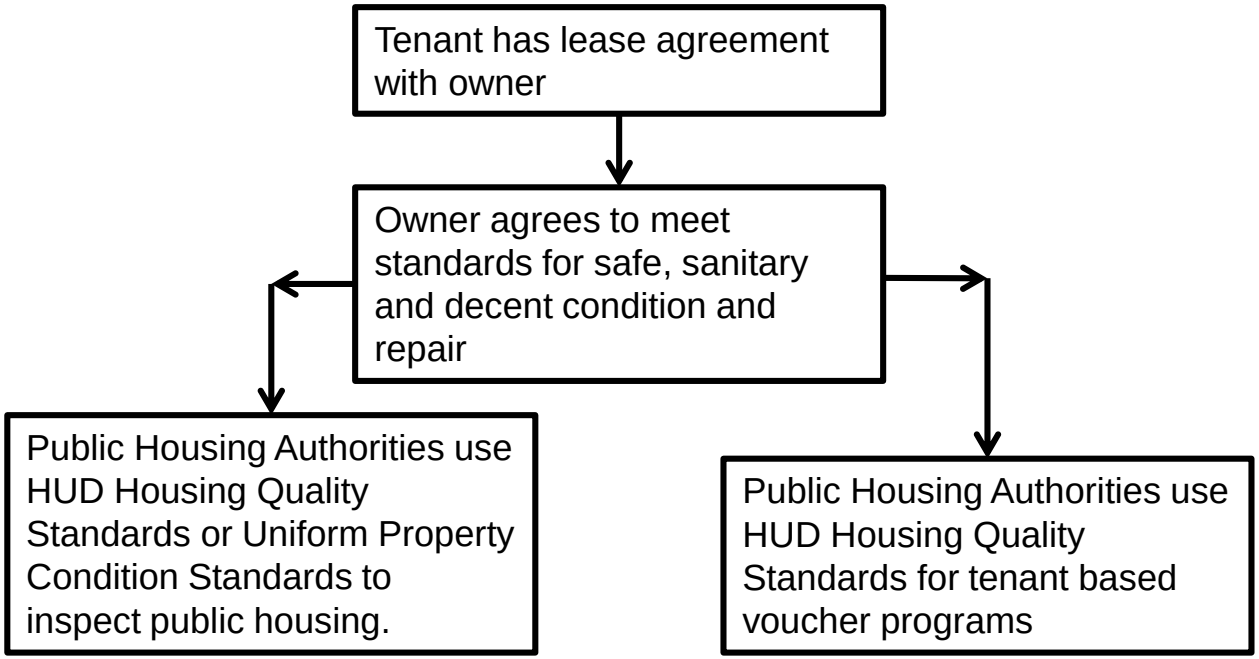
- ✓Clean premises as clean as condition permit
- ✓Prevent unsanitary conditions with tenant's control from developing

Public, affordable and subsidized housing

Purpose is to assist low income families, families with children, the elderly and disabled to live in safe decent and affordable housing

- Public Housing
  - ✓Owned and operated by local Public Housing Authority (PHA)
  - ✓Housing Choice Voucher Program (Section 8) administered by the local PHA
- Subsidized Housing
  - ✓Financial incentives (tax relief or direct payments) to developer or owner who may be a for-profit or not for profit corporation
  - ✓Development subsidies
  - ✓Development subsidies with rent and operating assistance
  - ✓Individual rent subsidies
  - ✓Supportive housing for people with disabilities
  - ✓Supportive housing for the elderly

Two contracts



Options when dampness and mold growth is present

- Communication, cooperation and common ground with landlord
- Minimum housing codes
- Fitness and habitability law
- Leases and rental agreements

Communication, cooperation and common ground with landlord

- Transform “mold” into maintenance and repairs. Both parties want a home that is home that is dry, clean, properly-ventilated, well-maintained, contaminant-free, pest-free, and safe

- Educate landlord of consequences
  - Accelerated deterioration of materials, equipment and contents;
  - Structural damaged and decay by infestations of wood destroying organisms and termites and;
  - Increased repair costs and possible reduction in property values.
  - Be specific about maintenance and repair needs

- Best outcome occurs when tenants and landlords communicate and cooperate

Minimum housing codes

Contact Minimum Housing Code Officials if available

- Emphasize structural, maintenance, and repair items that may be code violations
- Be as specific as possible about needed maintenance or repairs that would prevent dampness or related to water damage
- Mold is not directly regulated by minimum housing codes
- Code Officials react poorly when complaint is about mold

Fitness and habitability law

Building inspectors can declare unsafe buildings that appears to him to be especially dangerous to life because of its liability to fire, bad conditions of walls, overloaded floors, defective construction, decay, unsafe wiring or heating system…

- Legal order
- Must follow agency procedures
- Must provide for due process

Leases and Rental Agreements

Enforce terms of lease agreement

- ***Don't withhold rent to force landlord to make repairs***
- Inform landlord of
- Read the lease agreement
- Landlord must perform repairs
- Tenant must keep dwelling as clean and sanitary as conditions permit
- Keep records and documentation
- Negotiate a new terms of lease or rental agreement
- Can negotiate new terms (get any agreements in writing)
- Could become a civil matter

- http://www.ncdoj.gov/getdoc/65f98289-61ec-4d13-b2dc-133bb5c44999/landlord-tenant-booklet.aspx

Other related statutes

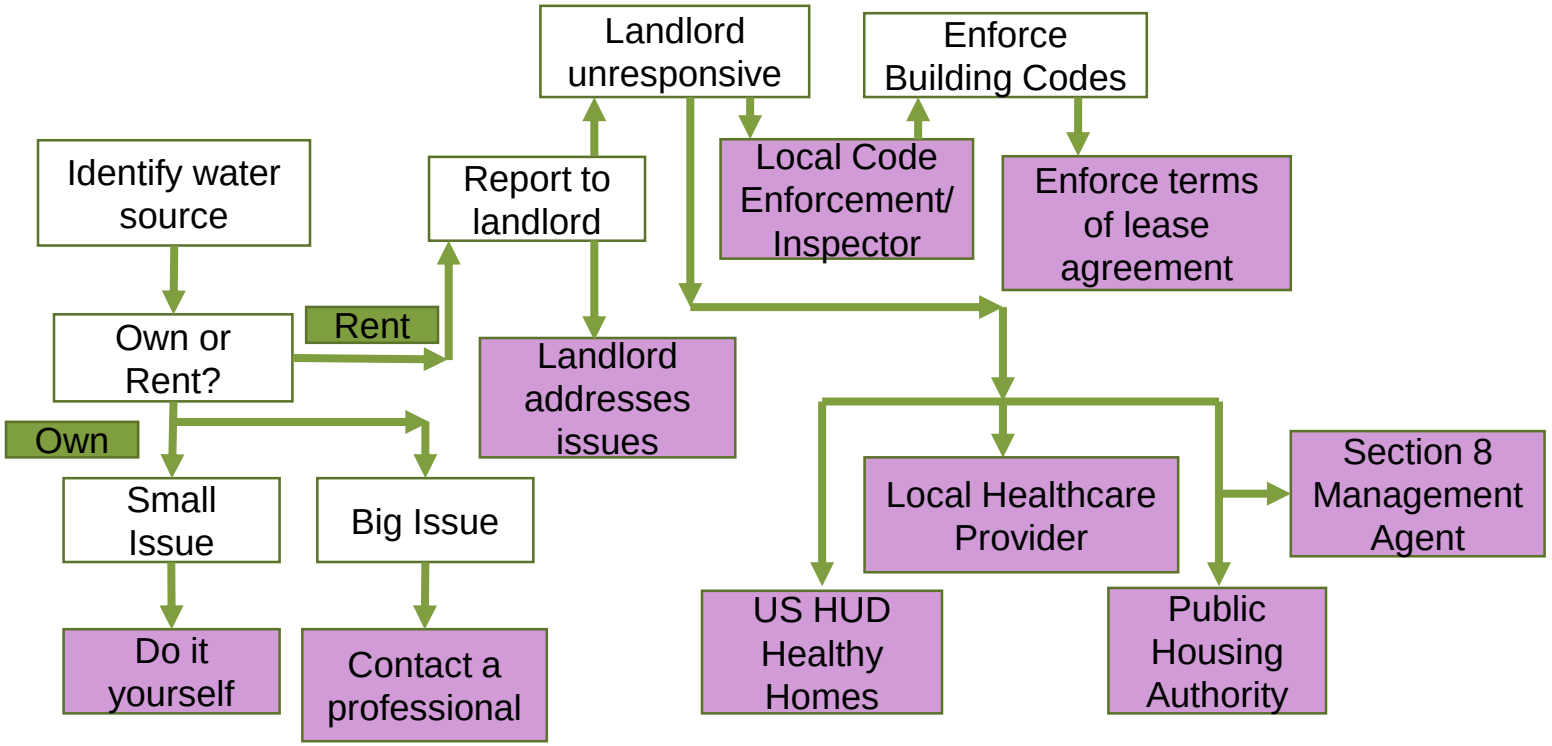
Fair housing law -§ 41A-4.

- Unlawful discriminatory housing practices.
  - ✓Refuse to permit, at the expense of a handicapped person, reasonable modifications of existing premises...necessary for the handicapped person's full enjoyment of the premises
  - ✓ Refuse to make reasonable accommodations in rules, policies, practices, or services, when these accommodations…necessary to a handicapped person's equal use and enjoyment of a dwelling

Retaliatory Eviction -§ 42.37.1

- Public policy that tenants cannot be evicted for:
  - ✓Requesting repairs
  - ✓Filing a complaint to a government agency
  - ✓Complaining to landlord
  - ✓Exercising rights under a lease agreement
  - ✓Joining/participating in a tenants rights group
- Can be evicted for:
  - ✓Willful neglect of a property (not cleaning or maintaining the property responsibly)
  - ✓Building code renovations or repairs that require that the tenants be displaced

Decision Tree



After assessment of issues, if symptoms are present contact your health care provider

Other options for assistance

- HUD multi-housing family complaint 800 number
- Legal aid of North Carolina
- North Carolina Human Relations Commission
- Local Social Services
- Urgent Repair, Rehabilitation and Weatherization Programs

How can public health system help ?

- Listen
- Help to focus on underlying issues and develop coherent stream of thought
- Help focus on actionable items- empower people to take actions
- Provide checklists and other guidance
- Refer to other community and partners and resources

Assessment tools

- Tool to determine is a home assessment is warranted for dampness and mold growth Part A and Part B
- Inspection Checklist for Maintenance and Repairs
- Detailed Inspection Checklist for Maintenance and repairs
- Instructions for Dampness and Mold Growth decision Tree

Bringing it All Together--Case 1

A caller says that mold is present throughout the house. No obvious sources of water. Caller mentions that do not run the air-conditioner often and keep windows shut.

- What are the issues?
- What other questions may help to understand and resolve this situation?
- What information would be useful for this caller?

Bringing it All Together--Case 2

A caller describes mold in the bathroom and bedroom areas. Caller says windows in bathroom are locked and there is no exhaust fan. Caller told landlord about the concern and landlord said he would paint over the mold.

- What are the issues?
- What options does the tenant have?
- What local partners could be engaged?
- What other questions may help to understand and resolve this situation?
- What information would be useful for this caller?

Bringing it All Together--Case 3

A caller has consulted with their physician who recommended mold testing in the home and that exposure to mycotoxins might be the cause of their health symptoms. Caller says there was a roof leak about a year ago that was repaired. Water damage to the ceiling was visible and the owner painted it over. There is no evidence of current water damage

- What are some questions to ask that may help to understand and resolve this situation
- What information would be useful to give this caller?
- What some options or actions for the caller ?

OEE's Role

- The Occupational and Environmental Epidemiology Branch will continue to provide "wholesale" support to local health departments and other parts of the public health system county health departments through:
  - Technical expertise,
  - Best practices guidance
  - Training
  - Questionnaires
  - Materials for in-house training
  - Material for public
- We will be available for assistance for complex, controversial situations and for emergencies (disasters/flooding)
- Contact Us

Conclusion

- Healthy safe, and decent affordable housing is a complex issue. Improving housing stock will take a public health approach.

- Goal is to assist people using evidence-based, proven tools and interventions, so they can modify environments to conditions that support health and wellbeing.

- Greatest health benefits in health were reported among vulnerable populations, especially those with respiratory disease

Thomson H, Thomas S, Sellstrom E, Petticrew M. Housing improvements for health and associated socio-economic outcomes. Cochrane Database of Systematic Reviews. 2013, Issue 2. Art. No.: CD008657.

Governmental Guidance

- EPA -- Mold remediation in Schools and Commercial Buildings

https://www.epa.gov/sites/production/files/2014-08/documents/moldremediation.pdf

- EPA Moisture Control Guidance for Building, Design, Construction and Maintenance

https://www.epa.gov/sites/production/files/2014-08/documents/moisture-control.pdf

- NY City Department of Health and Mental Hygiene --*Guidelines on Assessment and Remediation of Fungi in Indoor Environments* *https://www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf*

- CDC NIOSH *Preventing Occupational Respiratory Disease from Exposures Caused by Dampness in Office Buildings, Schools, and Other Nonindustrial Buildings* *http://www.cdc.gov/niosh/docs/2013-102*


EUREKA!

Questions?

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