Objectives

MOLD
Standards, codes, regulations and laws
How housing and property maintenance codes relate to mold?

RADON (Rn)
Standards, codes, regulations, and laws

CARBON MONOXIDE (CO)
Standards, codes, regulations, and laws
What Is Mold?

Fungi Kingdom

• Eukaryotes
• Heterotrophic
• Indeterminate growth
• Absorptive nutrition

What Is Mold? (cont.)

• Chitin cell walls - (not cellulose)
• Most fungi are multicellular, bodies made of microscopic filaments called hyphae
• Many hyphae are called mycelium
• Sometimes fungi are unicellular (yeasts)
What Is Mold? (cont.)

- Some fungi make massive fruiting bodies with millions of spores
- But their fruiting bodies are usually ephemeral

The simplified view of the fungal tree of life

95,000 described species

Dikarya
- Ascomycota
- Basidiomycota
- Glomeromycota
- Zygomycota
- Chytridiomycota
- Microsporidia
The simplified view of the fungal tree of life

5,000 described species

Fungal Species Diversity

100,000+ described spp.

Estimated total diversity: 5 million species
Fungi have many ecological roles
- Plant pathogens
- Symbionts (mycorrhizas & lichens)
- Saprobes (decay organisms)

Fungi are some of the best saprobes on the planet
- Wood
- Bones
- Paint

Fungi in a home environment are mostly saprobes
Mold – What Does It Look Like?

Mold – What Does It Look Like? (cont.)
Mold – What Does It Look Like? (cont.)

Mold Statement Based on Best Available Science

- The presence of water damage, dampness, visible mold, or mold odor in residences and other indoor environments is unhealthy.

- The Department recommends against measuring indoor mold or other microorganisms or using the presence of specific microorganisms to determine the level of health hazard or the need for urgent remediation.
Rather, the Department strongly recommend addressing water damage, dampness, visible fungal growth, and mold odor by:

- Identification and correction of the source of water that may allow microbial growth or contribute to other problems
- The rapid drying or removal of damp materials
- The cleaning or removal of mold and moldy materials, as rapidly and safely as possible, to protect the health and well-being of building occupants

Yes!
- The US Environmental Protection Agency offers practical guidelines for tenants, homeowners, environmental professionals, public health professionals, and contractors.
- Highly recommended!
Guidance or Standards for Mold Remediation? (cont.)

- New York City Department of Health & Mental Hygiene (NYCDOHMH) “Guidelines on Assessment and Remediation of Fungi in Indoor Environments”
- International Panel of Experts
- Originally published in 1993, last revised November 2008
- Highly regarded
- [www.nyc.gov/health/](http://www.nyc.gov/health/)

Guidance or Standards for Mold Remediation? (cont.)

- Institute of Inspection, Cleaning, and Restoration Certification (IICRC)

http://webstore.iicrc.org

ANSI = American National Standards Institute
An Endorsement of Guidelines / Standards?

- American Public Health Association (APHA) and the National Center for Healthy Housing (NCHH)
- National Healthy Housing Standard, 2014
- [http://nchh.org/](http://nchh.org/) → tools and data → housing code tools
- NCHH Code Comparison Tool

National Healthy Housing Standard

Chapter 6.1.5.1 - mold remediation to follow IICRC’s standard, NYCDOHMH’s guidelines or EPA’s guidelines

IICRC – Institute of Inspection, Cleaning, & Restoration Certification  
NYCDOHMH – New York City Department of Health & Mental Hygiene  
EPA – U.S. Environmental Protection Agency
Are There Applicable Laws or Regulations in Florida?

Yes, No, and Maybe.

- Florida Statutes do
  - Require professional licensure for mold-related services.
  - Authorize the inspection of certain facilities for safety/sanitation purposes (but not mold specifically).
  - Authorize the adoption and enforcement of code of ordinances for local governments.

Are There Applicable Laws or Regulations in Florida? (cont.)

Yes, No, and Maybe.

- Florida Statutes do not
  - Regulate the activities of licensees with minor caveats.
  - Authorize the regulation of mold.
  - Require anyone to perform mold assessment or remediation on their buildings or to hire a licensed individual.
  - Assign responsibility for addressing mold problems to landlords or tenants.
Are There Applicable Laws or Regulations in Florida? (cont.)

Yes. Licensure of for-hire mold-related service providers
- Chapter 455, Florida Statutes - General Provisions
- Chapter 468, Part XVI, Florida Statutes
- Chapter 61-31, Florida Administrative Code

No. Laws/rules do not regulate practice/procedures or building owners regarding mold

Are There Applicable Laws or Regulations in Florida? (cont.)

Maybe and No.
- Public Food Service and Public Lodging Establishments Law
- Enforced by DBPR, Division of Hotels & Restaurants
  - Chapter 509, Florida Statutes
  - Hotels, motels, apartments, & other public lodging
Are There Applicable Laws or Regulations in Florida? (cont.)

**Maybe and No.**

- No mention of mold but has a “clean and in good repair” requirement in the adopted Florida Administrative Code Chapter 61C-1.
- DBPR’s website states (due to lack of authority) DBPR will not
  - Inspect inside apartments for mold
  - Require landlords to fix a mold problem or mold damage in the apartment
  - Test for mold

Are There Applicable Laws or Regulations in Florida? (cont.)

**No.**

- Florida Landlord and Tenant Law
  - Civil Practice and Procedures
  - Chapter 83, Florida Statutes
- No mention of mold specifically
  - [www.800helpfla.com](http://www.800helpfla.com)
  - [www.freshfromflorida.com](http://www.freshfromflorida.com)
  - [www.floridabar.org](http://www.floridabar.org)
  - [www.floridalawhelp.org](http://www.floridalawhelp.org)
Some County and City governments offer free mediation services between consumers and businesses

- City of Tallahassee; Landlord-Tenant Mediation Program
- Miami-Dade County Consumer Mediation Center
- Palm Beach County Consumer Affairs Division
- Hillsborough County Consumer Protection Services

Let me know if you know of others I can add to the list!

What About Local Codes?

Yes, No, and Maybe.

Chapters 125, 162 and 166 Florida Statutes authorizes county or municipal governments to adopt and enforce Code of ordinances that address situations not regulated in state laws.
Some local governments have adopted codes relevant to housing conditions.

- Housing
- Property maintenance
- Unsafe structures

Some have included specific code language on indoor dampness and mold.

What About Local Codes? (cont.)

- Some local governments have adopted the International Property Maintenance Code or an earlier version called the Standard Housing Code.

- Section 305.3 - Interior Surfaces
  - “Interior surfaces, ..., shall be maintained in good, clean and sanitary condition. Cracked or loose plaster, decayed wood and other defective surface conditions shall be corrected.”
Example of Local Code Language on Mold

Hillsborough County, FL

• Section 8-115 - Structural Standards for Dwellings.

• *The interiors of all buildings and facilities shall be kept free of any visible or otherwise demonstrable growth of mold or mildew.*

Example of Local Code Language on Mold (cont.)

City of Miami Gardens

Section 12-79 - Requirements relating to the safe and sanitary maintenance of dwellings and dwelling units.

• *(9) Properties must be kept free of mold and evidence of mold.*
Example of Local Code Language on Mold (cont.)

City of Miami Gardens

Section 12-81. - Responsibilities of owners and occupants.
• (11) Every owner of a dwelling or dwelling unit shall, before renting or subletting to another occupant, remediate any mold or evidence of mold in accordance with standard environmental practices and to the satisfaction of the city, and may be required to produce proof of remediation.

Example of Local Code Language on Mold (cont.)

City of Miami
Unsafe Structures - Section 10-101
(4) All structures that meet any of the criteria from subsection (c)(1) above and have been posted with the requisite notice, must be approved by the building department based upon all of the following inspections before the structure can be deemed safe for use:
   a. An electrical inspection;
   b. A plumbing inspection;
   c. An inspection by a certified mold inspector; and
   d. An inspection by a structural engineer.
Example of Explaining How Mold Concerns Relate to Local Code Enforcement

City of Plant City, Code Enforcement Division webpage:

• Mold growth itself is not a code violation. However, the presence of mold is sometimes related to building problems that are code violations.

• Plant City Code Enforcement Inspectors do not investigate complaints of mold inside buildings, unless contributing factors are present such as a leaking roof or leaking.

Example of Explaining How Mold Concerns Relate to Local Code Enforcement (cont.)

City of Plant City, Code Enforcement Division webpage:

• If your landlord is not properly responding or fails to address the cause of the mold in a timely manner, code enforcement may be able to intervene on your behalf.

• Please note, inspectors will not issue notices of violation for mold growth - only the property maintenance issue causing the mold, if visible.
Example of Local Code Language on Moisture

City of Jacksonville

- Section 518.420 - Interior Structure Residential

- “In every dwelling,..., cellars, basements, crawl spaces and every floor, walls and ceiling shall be maintained reasonably free from dampness.”

What About Federal Laws or Regulations?

- There are no mold related laws or regulations at CDC or EPA.

- HUD and USDA are authorized to regulate housing that receives HUD or USDA subsidies or financial support.

CDC – Centers for Disease Control & Prevention
EPA – Environmental Protection Agency
HUD – Department of Housing & Urban Development
USDA – United States Department of Agriculture
What About Federal Laws or Regulations? (cont.)

US Department of Housing and Urban Development
Code of Federal Regulations (CFR)
- Title 24, Subpart A, Part 5, Subpart G
- Section 5.703 - Physical condition standards for HUD housing that is decent, safe, sanitary, and in good repair
- (f) Health and safety concerns
  “The dwelling units... must... be free of mold, odor ..., or other observable deficiencies.”

HUD Multifamily Housing Helpline

- 1-800-MULTI-70
- Managed by a contractor for HUD
- Callers can report complaints regarding
  o Poor maintenance
  o Dangers to health & safety
  o Mismanagement / Fraud
USDA – Rural Development

US Department of Agriculture, Rural Development
Code of Federal Regulations
• Title 7, Subtitle B, Chapter XXXV, Part 3560, Subpart C
• Section 3560.103 - Maintaining housing projects
(a) Physical maintenance
“must not have evidence of rot..., free of leaks...,free of deterioration....”
“Process for responding to malfunctions...”

USDA – Rural Development (cont.)

USDA - Rural Development has seven area offices in Florida and is
has a state office in Gainesville
• Contact information for the state office and the area offices can
be found here:
www.rd.usda.gov/fl
• It has been my experience they have been very responsive to
tenant complaints.
Some Notable Situations That Made the Local News

WPTV, 10/25/2016
Astorwood Apartment residents told their homes are 'dangerous;' code enforcement tags entire complex
WPTV, 10/26/2016
Stuart Code Enforcement says Astorwood Apartments have more than 19 code violations; Residents still living in 'dangerous' conditions
WPBF, 10/25/2016
Stuart officials requiring fixes, mold test from apartments deemed dangerous
WPBF, 11/1/2016
City of Stuart working on plan to clean up apartment complex

Some Notable Situations That Made the Local News (cont.)

Palm Beach Post, 2/2/2018
Families scramble as toxic mold forces them from Wellington homes

What is Radon and Why do we care

- Naturally occurring gas, odorless, colorless, tasteless and radioactive
- Decay of uranium, found in soil, rock and earthen construction materials
- Accumulates in buildings, sometimes reaching high levels
  - Largest source of natural radiation exposure
  - Can cause lung cancer
  - Measured in picoCuries per liter (pCi/L)
Impact of Radon

Annual Estimates of Certain Causes of Deaths

(Source: Environmental Protection Agency, EPA)

Radon in Buildings
Source of Radon and Radon Entry in Building

Particles from Radioactive Elements

\( ^{222} \text{Ra} \) Particles
- Massive size
- Slow speed

\( ^{40} \text{K} \) Particles
- Very small size
- High speed

\( ^{40} \text{K} \) RaU
- No mass
- Travels at the speed of light
- Called a "nuclide"
Radioactive Decay of Radon & Radiation Around Us

- Unit of measure for radiation dose is the rem (Roentgen Equivalent Man)
- Average annual radiation dose per person is 620 millirem
- Single largest contributor to the average radiation dose is indoor radon

Source of Radiation and Radon Reduction

- At 4 pCi/L radon contributes to 63% of the dose
- Promoting and adopting radon resistant policies in construction, could reduce total annual radiation dose to the public could by 25%
Radon Health Effects

• Radon and decay products release radioactive alpha particles
• Alpha particles in the lungs can damage lung cell DNA
• Results of DNA damage:
  o DNA is repaired
  o Cell dies
  o DNA improperly repaired
  o Potential cancerous growth

Source: U.S. EPA

Radon Testing Maps: Florida and US by County

• In Florida on average 1 out of every 5 (20%) homes has a radon problem with some counties averaging 1 out of every 3 homes (33%)
• The national average is 1 out of every 15 (~7%) homes has a radon problem
Radon – Are There State Laws?

2018 Florida Statues
• Title XXIX - Public Health
• Chapter 404 - Radiation
• Section 404.056 - Radon (environmental standards)
  o Certification
  o Public Information
  o Mandatory Testing
  o Notification on Real Estate Documents
  o Rules

Radon – Are There State Laws?

2018 Florida Statues
• Title XXXIII - Regulation of Trade, Commerce, Investments, and Solicitations
• Chapter 553 - Building Construction Standards
• Section 98 - Development of Building Codes for Radon-resistant buildings
  o Funding
  o Rules
  o Ordinances
Radon - Rules

Florida Administrative Code - 64E-5 Parts X and XII
Florida Administrative Code - 61-38

• Residential Radon-Resistant Construction Standard
• Large Building Radon-Resistant Construction

Radon – Florida Protocols / Standards / Guidelines

• Facility Testing Protocols
• Radon Testing Protocols for Residences
• Disciplinary Guidelines
Radon – Florida Protocols / Standards / Guidelines

- Florida Building Code
  - Appendix B - Florida Standard for Passive Radon-Resistant Construction
  - Appendix C - Florida Standard for Mitigation of Radon in Existing Buildings
  - Appendix E - Florida Standard for Radon-Resistant New Commercial Construction

Regulations / Standards

Sec. 553.98 (3) F.S.
- Local jurisdictions may enact ordinances for radon-resistant building construction...
- A county governing authority and the governing bodies of the municipalities... shall enter into an inter-local agreement to adopt... radon-resistant construction standards...
- Standards shall apply uniformly to the entire jurisdictions that adopt the standards
- Currently Charlotte, Duval, Hernando, and Miami-Dade counties have adopted codes
What is Carbon Monoxide?

- Odorless, colorless
- Asphyxiant
  - Combines with hemoglobin, forming carboxyhemoglobin, disrupts oxygen transport in the blood, makes heart work harder and damages your brain
- May cause death which is almost always preventable

Carbon Monoxide – Why Do We Care About It?

- Significant cause of illness and death particularly after sustained loss of power
Carbon Monoxide – Are There State Laws or Regulations?

- Chapter 509 - Lodging and Food Service Establishments
- Section 509.211(4) - Safety Regulations
  - Every enclosed space or room that contains a boiler regulated under Chapter 554 (combustion fired) and that is located in any portion of the public lodging establishment that also contains sleeping rooms shall be equipped with one or more carbon monoxide detection devices....
  - Such devices shall be integrated with the establishment’s fire detection system

Carbon Monoxide – Are There State Laws or Regulations? (cont.)

- Chapter 553 - Building Construction Standards
- Section 553.885 - Carbon monoxide alarm required
  - New construction or addition to existing building
  - Has fossil fuel burning appliances or an attached garage
  - Required within 10 feet of each room used for sleeping purposes or as otherwise required by the Florida Building Code (FBC)
  - Florida Building Commission to adopt rules and incorporate into the FBC
Carbon Monoxide – Florida Fire Prevention Code

- Adopts National Fire Protection Association (NFPA) 720 - Standard for the Installation of Carbon Monoxide Detection and Warning Equipment
- Local fire marshals have cited the Florida Fire Prevention Code to require carbon monoxide alarm installation in an apartment complex
  - News 4 Jax, 4/27/2016 - Councilman, fire marshal inspect Washington Heights

Carbon Monoxide – What About Local Codes?

City of Hialeah
- Chapter 38 - Fire Prevention and Protection
- Included requirements for existing and new
  - Residential dwellings
  - Dwelling units
  - Rental
  - Commercial dwellings
Unfortunately, even with carbon monoxide alarm codes in place tragedies still happen.

- Palm Beach Post, 1/25/2011 - Hialeah motel where five teens died had no carbon monoxide detectors
- CBS Miami, 8/14/2017 - Man Killed By Carbon Monoxide Poisoning In Hialeah
- Local 10 News, 8/15/2017 - 2 adults, 2 children suffer carbon monoxide poisoning in Hialeah; 2 generator(s) found inside enclosed patio

The Florida Department of Health investigated:

- 666 reports of CO poisoning
- 528 met case definition (301 confirmed, 56 probable, and 171 suspect)
- 439 cases interviewed (338 cases and 101 proxy)
- 14 deaths (12 generator, 1 fire smoke, 1 car exhaust)
CO Incidence Rates by County (n=528), Sept. 9–Sept. 30, 2017

Bottom Line on Carbon Monoxide in Florida

- Everyone needs at least one functional carbon monoxide alarm/detector in their one home.
- If you are interested in spreading the word regarding carbon monoxide poisoning prevention and safety let me know.
- The US Consumer Product Safety Commission and the National Fire Prevention Association have a free carbon monoxide safety kit available for presenters.
  - Designed for fire safety professionals, code officials, public safety/health officials, etc.
Questions?

Tim Wallace, RS, CEHP - Environmental Health Program Consultant
Tim.Wallace@FLHealth.gov

Joseph Kidder - Environmental Health Specialist III
Joseph.Kidder@FLHealth.gov

800-543-8279 or 850-245-4288

Program Information

Radon & Indoor Air Program
Public Health Toxicology Section
Bureau of Environmental Health
Division of Disease Control & Health Protection
Florida Department of Health
Tallahassee, Florida

http://radon.floridahealth.gov
http://www.floridahealth.gov/indoorair
Our team

THANK YOU!