

Making the Connections Between Housing and Health

And how that can help



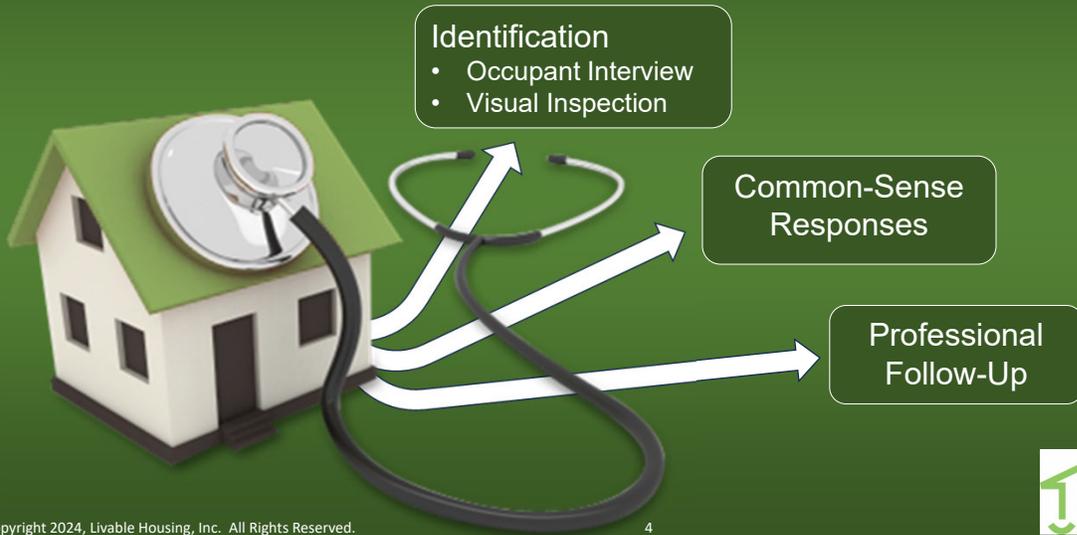
Rules for Healthy Housing Interventions

#1. Do no harm

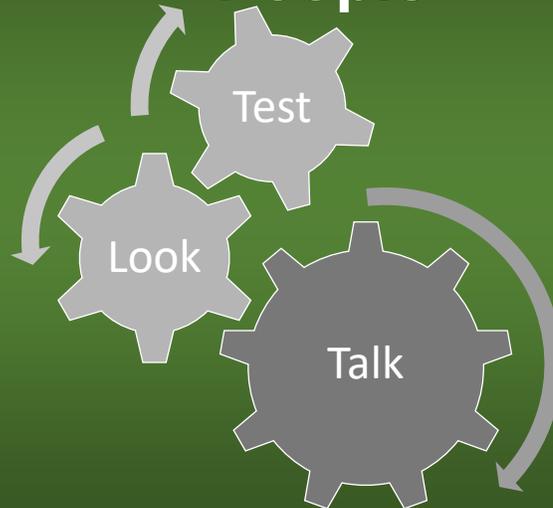
#2. Try to prevent harm



Identification & Remediation



Everything Must Start & End with People



Who's Most Vulnerable?



Image credit: From Frogtown: Photographs and Conversation in an Urban Neighborhood, 1993-1995

- Children
 - 70% of their time in home
- Elderly
- Pregnant/nursing
- Medically-underserved
- Poorly-nourished

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Let's Imagine Two Typical Households, and their potential housing issues:

The Jones Household

- Mrs. and Mr. Jones are in their 70s and retired
- Mr. Jones has difficulty with stairs
- Their two-story home was built in 1910
- Their son's two children, both under six, visit almost daily
- They have a damp basement and roof leaks

The Smith Household

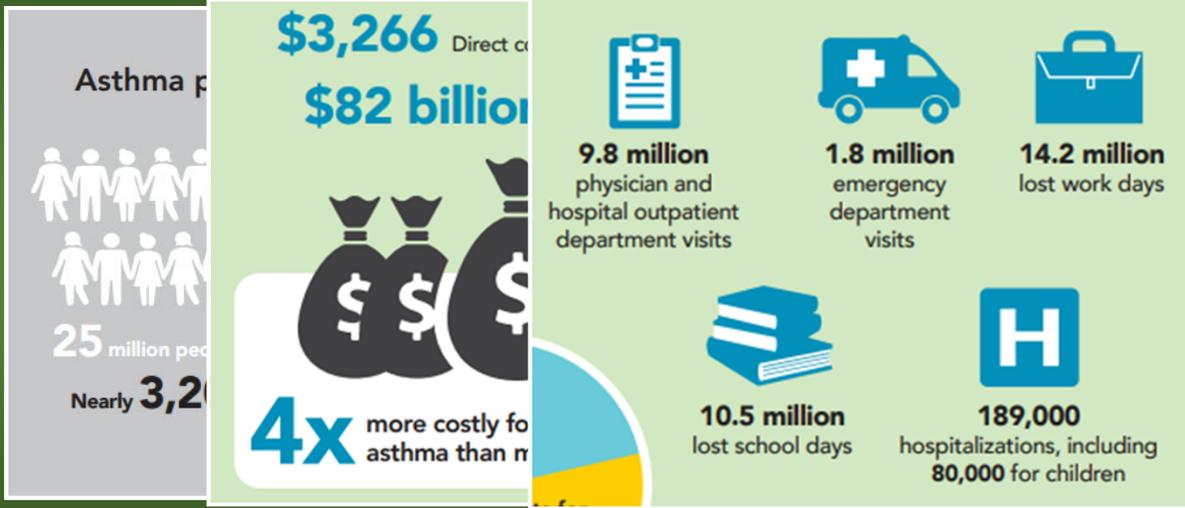
- Ms. Smith is in her 30s
- She has a 4 year old son with Asthma
- Her two story, semi-detached home was built in 1948
- A portion of the home is built over a crawlspace, that has a dirt floor
- Their lot is sloped, with poor grading
- Her aunt, in her 60s, visits regularly to watch her son.

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Housing & The Asthma Epidemic



Excerpted from Asthma Management and the Allergist: Better Outcomes at Lower Cost. © 2020 The American College of Allergy, Asthma and Immunology. The complete report with supporting documentation is available at college.acaai.org/betteroutcomes
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Moisture/water intrusion



Mold



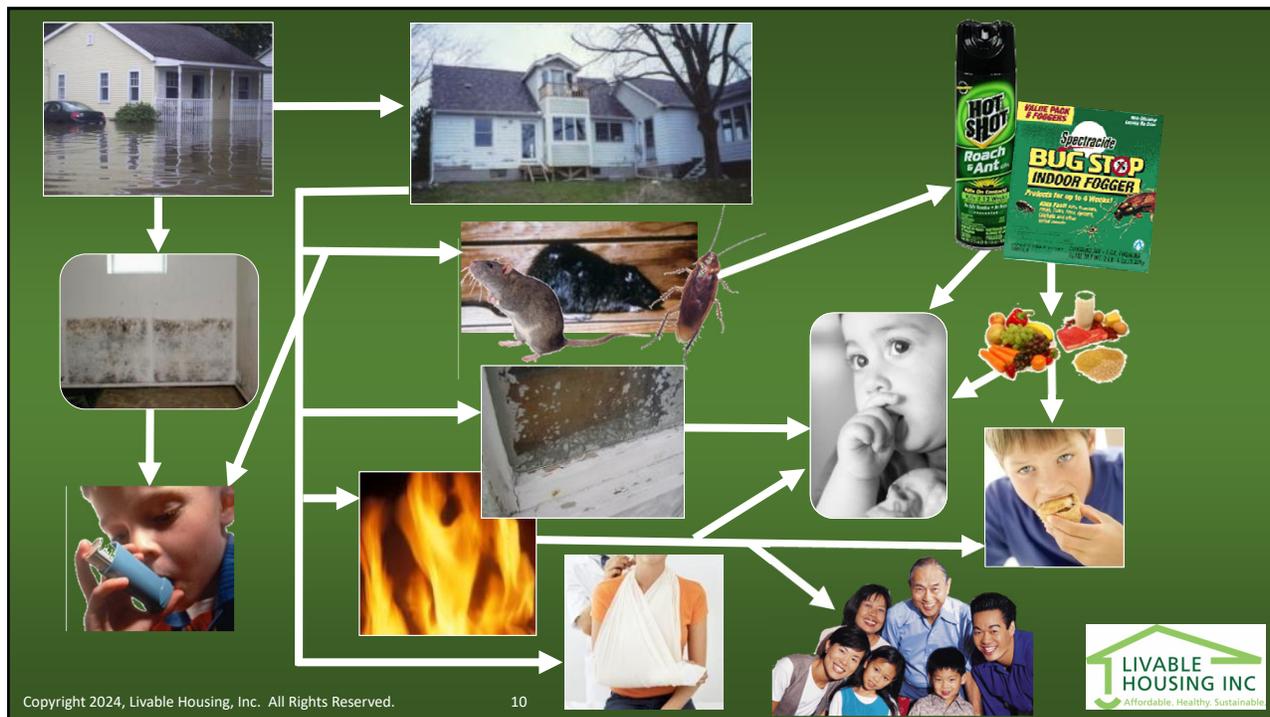
Asthma exacerbation

An Holistic Approach

- People
- Structure
- Potential Health Hazards

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Healthy Homes Principles



1. Keep it DRY



2. Keep it CLEAN



3. Keep it VENTILATED



4. Keep it PEST-FREE



5. Keep it SAFE



6. Keep it CONTAMINANT-FREE



7. Keep it MAINTAINED



8. Keep it THERMALLY-CONTROLLED



Excess Moisture Leads to Problems



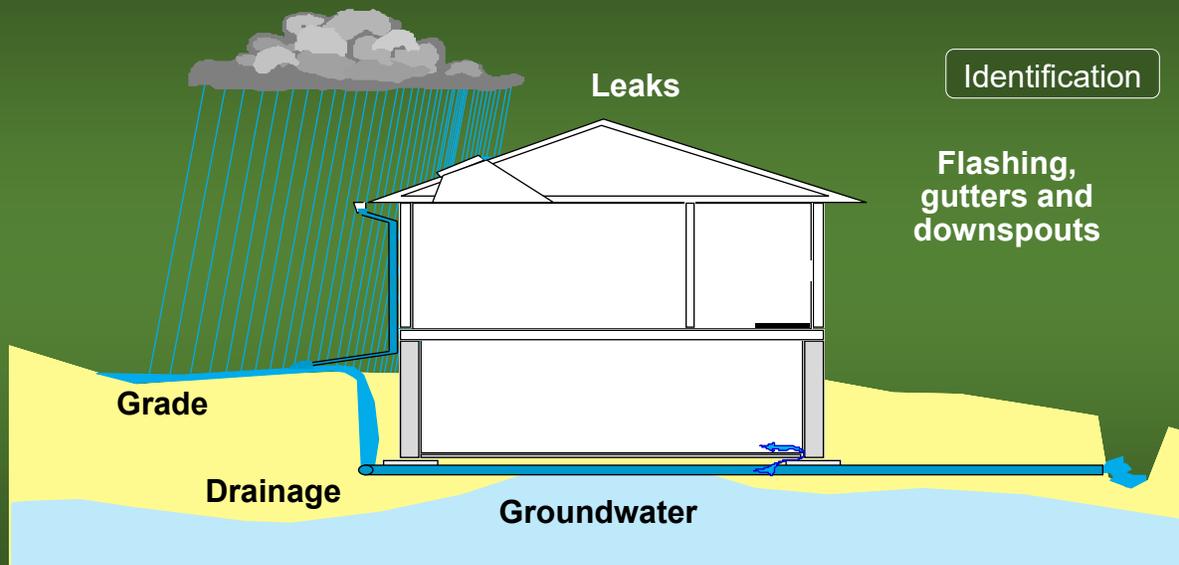
- Structural damage
- Deteriorated paint (LBP)
- Mold
- Pests



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Stop Liquid Water Entry First

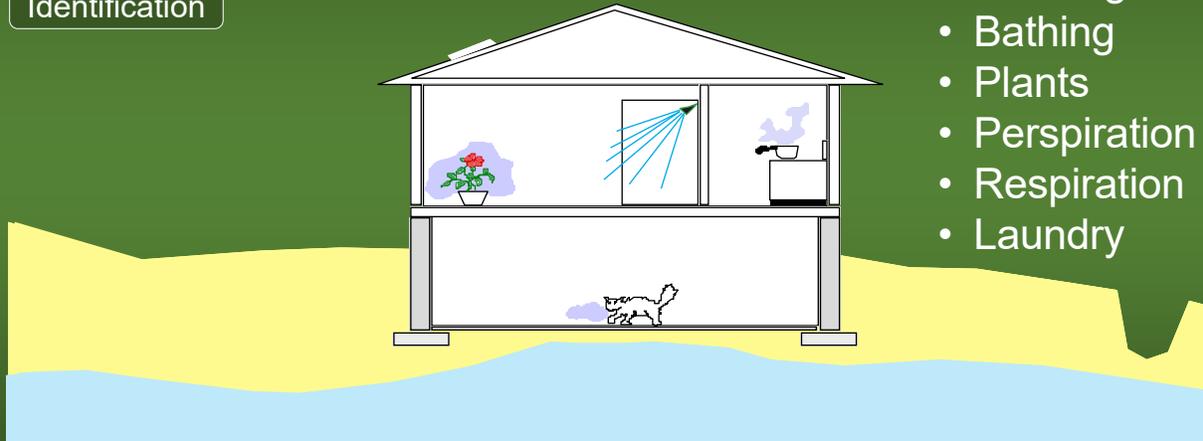


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Moisture Generated by Activities

Identification



- Cooking
- Bathing
- Plants
- Perspiration
- Respiration
- Laundry

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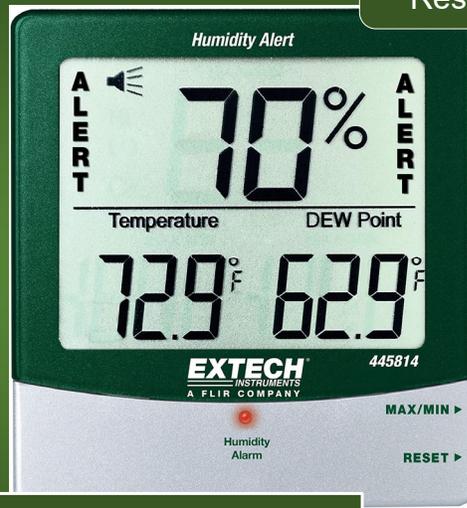
How Wet Is It?

Moisture Meter



Identification

Common-Sense Responses



Thermo-Hygrometer

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Healthy Homes Principles



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8. Keep it **THERMALLY-CONTROLLED**

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Where Does House Dust Come From?

Brought-In

Home-Grown

- Lead Dust
- Dust Mites

Resident-Made

- Garbage
- Clutter



Identification

Common-Sense Responses



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Making Buildings More Cleanable

- Focus on horizontal surfaces
 - Floors
 - Carpet = evil
- Effective storage
- Educate the residents



Identification

Common-Sense Responses

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Why Ventilate?

Indoor Air Quality

- Bathrooms
- Kitchens
- Clothes Dryers

Combustion Contaminants

- Gas ranges & ovens
- Boiler, furnace, water heater
- Fireplace, wood-burning stove
- Car exhaust from attached garage

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Local Ventilation: Kitchen

Remove moisture, odors, grease

If gas oven or range, remove products of combustion:

- Moisture, CO, NO₂

Must be vented to the outside

If it is not reasonably quiet, many people will not use it

Identification



Common-Sense Responses

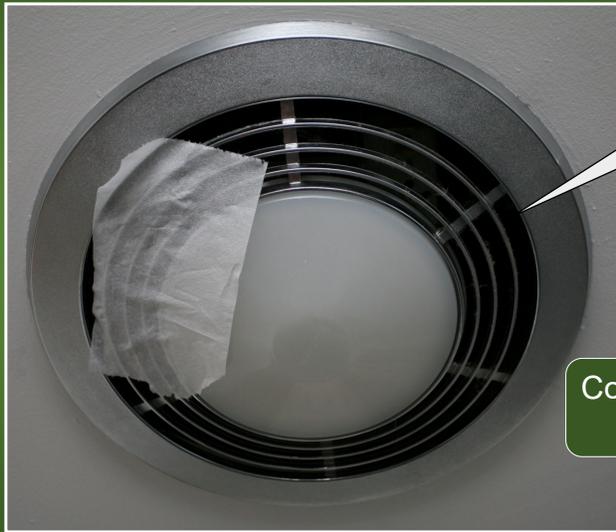
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Local Ventilation: Bath

Identification



Ventilated
also helps to
Keep it Dry

Common-Sense
Responses



Hot, humid air for the attic?

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Our Recommendations

- Bathroom with tub/shower - minimum 80 CFM fan vented outside with a time delay of 20 minutes
- Half-baths - 50 CFM & no time delay
- Kitchens - minimum 150 CFM fan vented outside.
- Install whole house ventilation to meet ASHRAE 62.2
- Clothes dryers must vent to the outside.
- Seal all air leaks between attached garage & the house

Common-Sense
Responses



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Healthy Homes Principles



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Health Effects of Pests

- Asthma
- Infectious diseases
- Pesticide poisoning (people)
- Contaminate food
- Loss of sleep
- Health effects greater on children

Pests violate Housing Codes



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Signs of Pests

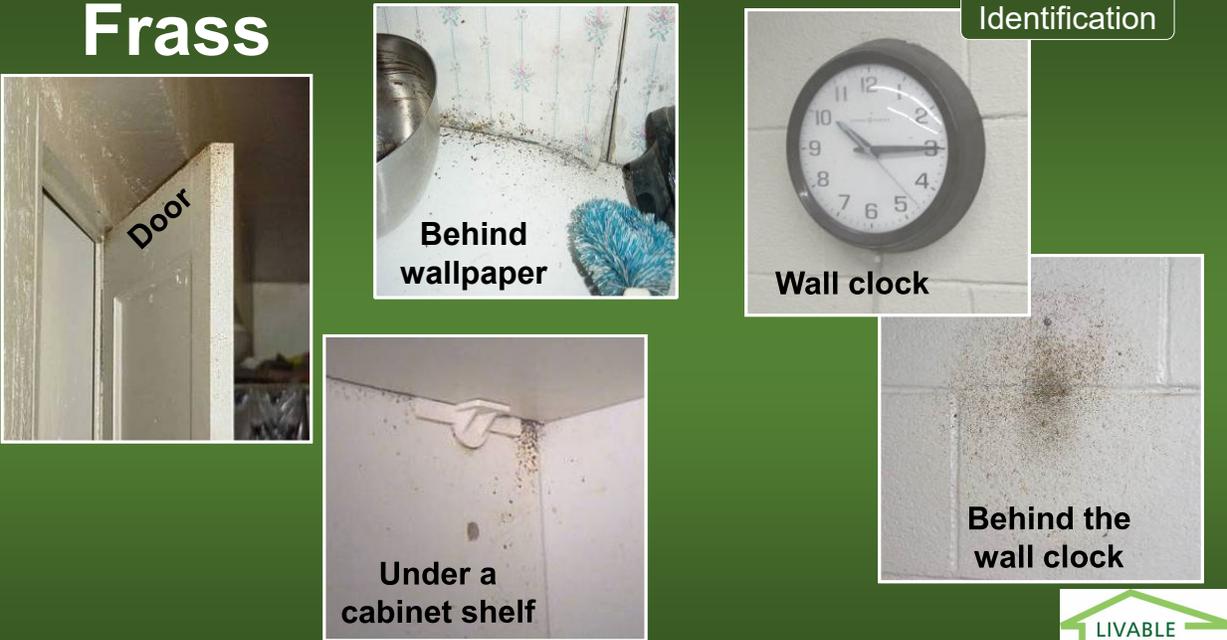


Identification

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Frass



Door

Behind wallpaper

Under a cabinet shelf

Wall clock

Behind the wall clock

Identification

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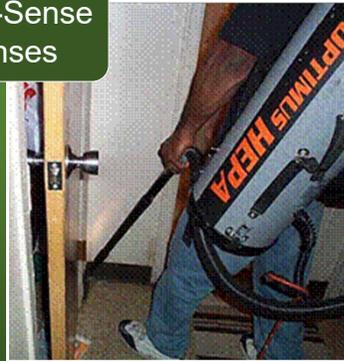
Cockroach Control

- Habitat modification
- Monitors
- Dust and caulk
- Baits and gels
- Insect growth regulators
- Sticky traps

Identification



Common-Sense Responses



Professional Follow-Up



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Healthy Homes Principles



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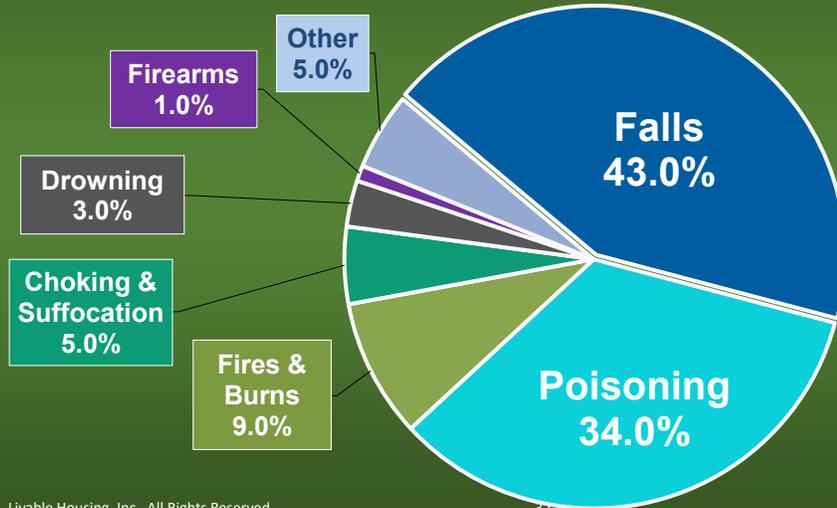


8. Keep it THERMALLY-CONTROLLED

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The Most Common Causes of Home Injury Deaths



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INJURY

The #1 killer of children in the US



For every **1** child that dies there are...

25 hospitalizations

925 treated in ER

Many more treated in doctors' offices



In 2005, injuries that resulted in death, hospitalization or an ER visit cost nearly \$11.5 billion in medical expenses.

SOURCES: Web-based Injury Statistics Query and Reporting System (WISQARS), CDC, 2009.

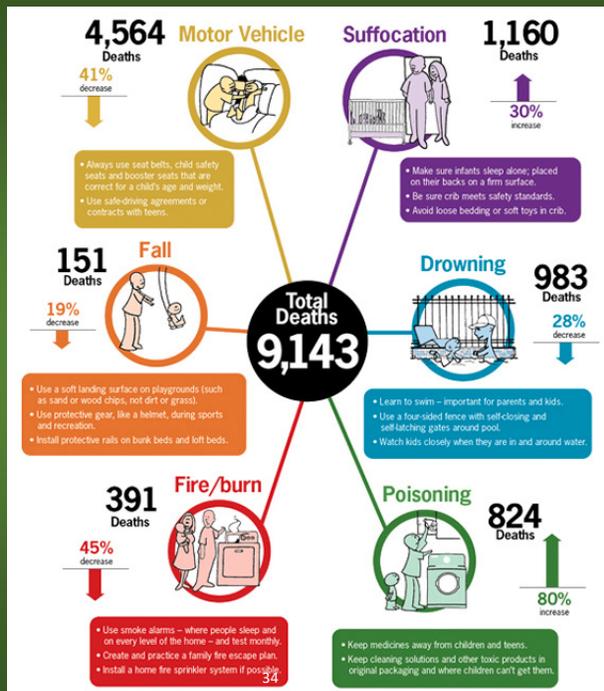
National Health Interview Survey, 2009 data release, CDC, National Center for Health Statistics.

Causes of child injury and prevention tips

www.cdc.gov/vitalsigns
Your Source for Credible Health Information



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Window Safety Guard



Identification

Common-Sense Responses



Safety Glass

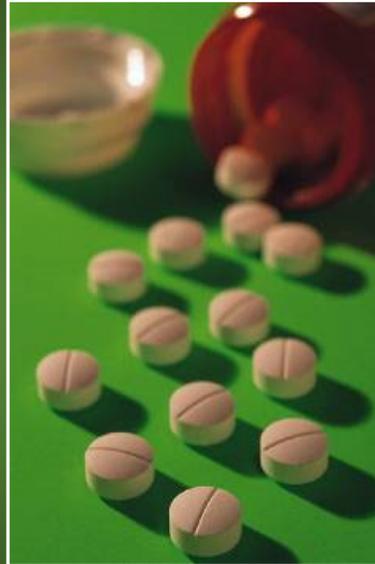
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Avoid Poisoning

- **82%** of households keep medicines in unlocked drawers or cabinets.
- **69%** of homes with young children store household chemicals in unlocked areas.



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Identification



Common-Sense Responses

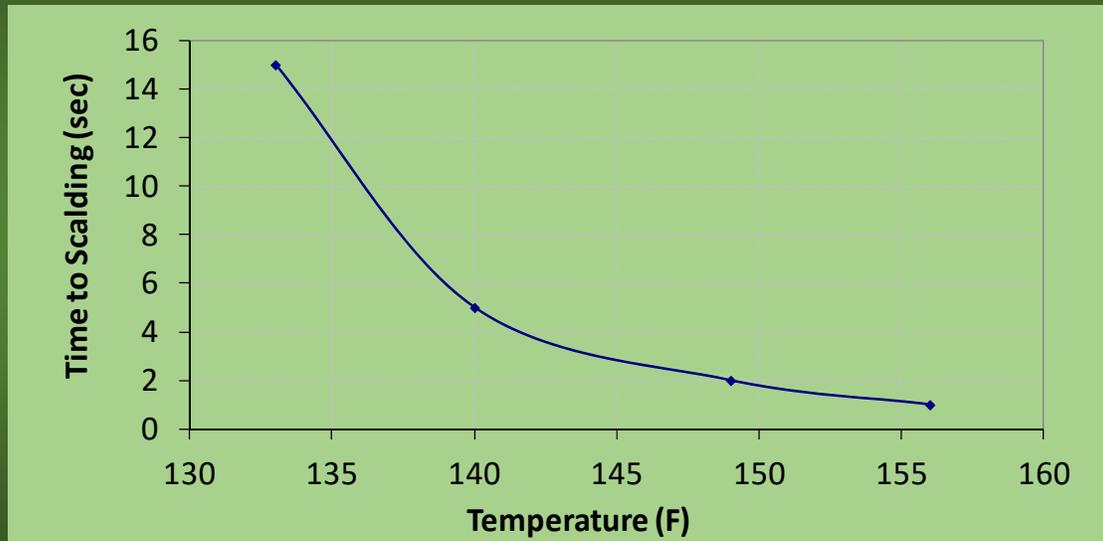


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Avoid Scalding

To avoid risk of scalding, water temp. should be less than 120° F



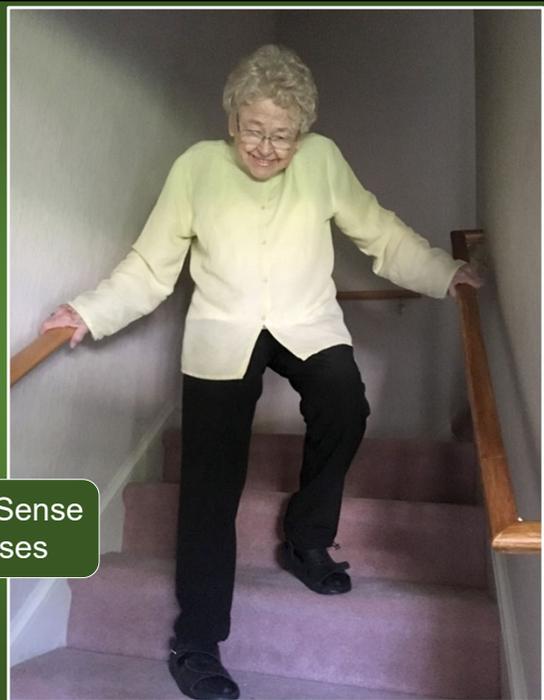
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Fall Prevention

- Good lighting
- Indoors and out
- 3-way switches
- Handrails
- Well-designed stairs
- Ramps
- Grab bars
- No tripping hazards

Common-Sense Responses



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Fire Safety

Identification



Common-Sense Responses



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Healthy Homes Principles



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Volatile Organic Compounds (VOC)

- Cleaning & Disinfecting
- Paints, Sprays, Coatings
- Building Products
- Hobbies



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Potential Health Effects of ETS



Children

- Causes premature death and disease in children

Adults

- Immediate adverse effects on the cardiovascular system and causes coronary heart disease and lung cancer

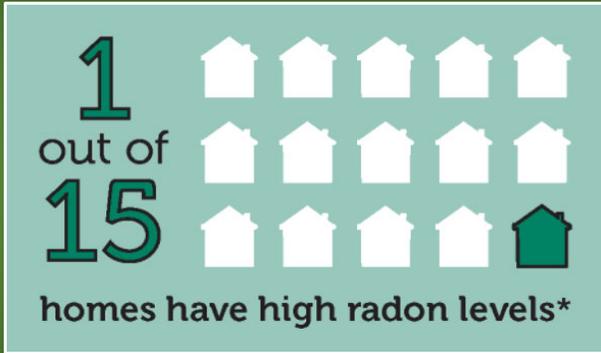
60% of US population has biological evidence of exposure

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Radon – A Serious Health Concern



- Odorless, colorless, naturally-occurring gas
- The 2nd leading cause of lung cancer after smoking
- Leading cause of lung cancer in nonsmokers

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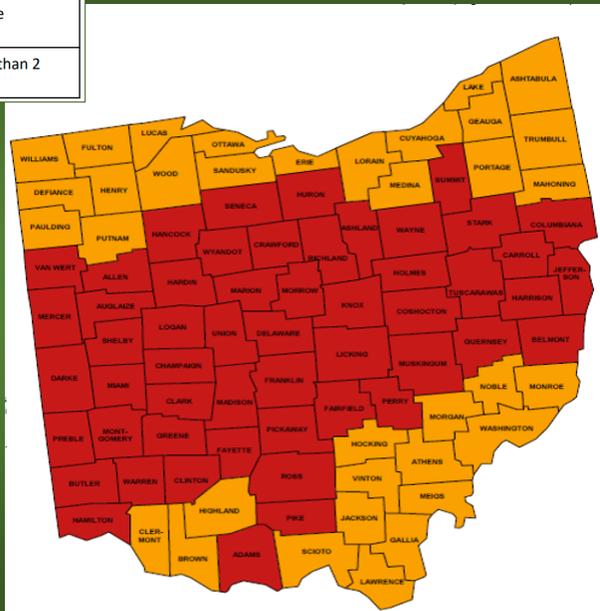
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| | | |
|--|------------------------------|---|
| | Zone 1 (red zones) | Highest potential; average indoor radon levels may be greater than 4 pCi/L (picocuries per liter) |
| | Zone 2 (orange zones) | Moderate potential; average indoor radon levels may be between 2 and 4 pCi/L |
| | Zone 3 (yellow zones) | Low potential; average indoor radon levels may be less than 2 pCi/L |

OHIO EPA Radon Zones

- Average levels are high
- We don't know if we don't test



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Free Radon Test Kits for Homeowners

Radon is the number one cause of lung cancer for non-smokers and the second leading cause of lung cancer in smokers.

You can reduce radon levels, but the only way to know if your home has high radon levels is to test.

Identification

Free radon test kits are available for Ohio homeowners.
Order your FREE test kit now.

Common-Sense
Responses

Radon can be reduced with a mitigation system. Use this link to find a **radon mitigation contractor** licensed in Ohio: [Find a Licensed Radon Contractor](#).

Ohio

**Department
of Health**



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Our Recommendations

- Test for radon & remediate
- Reduce VOCs and asthma triggers
- Prevent mold/control moisture
- Keep homes and cars smoke-free
- Install 10-yr carbon monoxide (CO) alarms and smoke detectors
- Use and properly maintain the ventilation system

Identification

Common-Sense
Responses



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Sometimes, residents intentionally introduce contaminants because of a function the contaminant provides.

What contaminants
have you seen
residents use in
their homes?
(Please answer in the chat)

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Legacy Toxins

Identification



Professiona
I Follow-Up



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Why Avoid Lead?

- Reduced IQ
- Learning disabilities
- Impaired hearing
- Reduced attention spans, behavior problems
- Anemia
- Kidney damage
- Damage to central nervous system
- Coma, convulsions, death



Identification

Professiona
I Follow-Up



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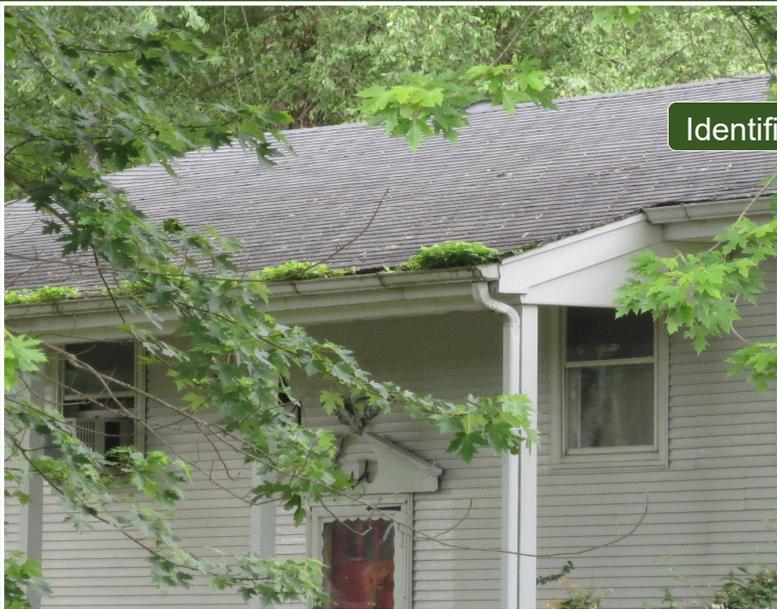
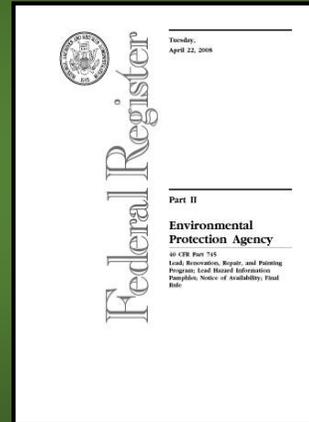
EPA Renovation, Repair and Painting (RRP) Rule

- 8.4 million renovation events annually
- Effective in 2010
 - Pre-1978 housing
 - Certification of Firms & Renovators
 - Mandatory Work Practices
 - Cleaning & Verification
 - Documentation
- Triggers
 - Compensation
 - Disturbing paint

Identification

Common-Sense Responses

Professional Follow-Up



Identification







Identification

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National Center for Healthy Housing
National Healthy Homes Training Center and Network

Healthy Homes Maintenance Checklist

The following checklist was developed for the Healthy Homes Training Center and Network as a tool for healthy home maintenance. A healthy home is one that is constructed, maintained, and rehabilitated in a manner that is conducive to good occupant health.

To maintain a healthy home, occupants should keep it dry, clean, and pest-free, and prevent injury and control chemical contaminants both indoors and outdoors. Good home maintenance can aid to reduce allergens, prevent illness, and reduce injury from accidents. This checklist provides basic guidelines. Some may need to be checked more often depending on local conditions and manufacturer suggestions.

Developed for the National Healthy Homes Training Center by Terry Blanton, Committee Associate and Ellen Dale, ER7 Associates.

| | Spry | Rep | Insul | Air-Filter | Pest-Management |
|---|------|-----|-------|------------|-----------------|
| Yards & Exterior | | | | | |
| Water drains away from house | ✓ | | | | |
| No tripping, choking, sharp edge hazards | ✓ | ✓ | | | |
| Fence around pool intact | ✓ | ✓ | | | |
| Check for signs of rodents, bats, roaches, termites | ✓ | ✓ | | | |
| Drain outdoor faucets and hoses | | ✓ | | | |
| Clean window wells and check drainage | ✓ | ✓ | | | |
| Clean gutters and downspouts | ✓ | ✓ | | | |
| Basement & Crawlspace | | | | | |
| No wet surfaces, puddles | ✓ | ✓ | | | |
| Sump pump and check valve working | ✓ | ✓ | | | |
| Floor drain working | ✓ | ✓ | | | |
| Vacuum basement surfaces | ✓ | | | | |
| Check for signs of rodents, bats, roaches, termites | | ✓ | | | |

Identification

Seasonal Inspections & Key Risks

- ✓ Moisture Management
- ✓ Safety
 - Child Safety
 - Trip & Fall
- ✓ Toxic Chemicals & Haz-Mats
- ✓ Combustion/fire
- ✓ Pest Control

Common-Sense Responses

| | Spry | Rep | Insul | Air-Filter | Pest-Management |
|---|------|-----|-------|------------|-----------------|
| Exterior Roof, Walls, Windows - check for leaks | | | | | |
| Shingles in good condition | ✓ | | | | |
| Check chimney, valley, plumbing vent, skylight flashing | ✓ | | | | |
| Make sure gutters discharge water away from building | ✓ | | | | |
| Check attic vents | | ✓ | | | |
| Check attic for signs of roof leaks | ✓ | | | | |
| Check for icicles and ice dams | | | | Insul | |
| Look for peeling paint, efflorescence | ✓ | | | | |
| Look for signs of leaks where deck attaches to house | ✓ | | | | |
| Check below window & door that flashing intact | ✓ | | | | |
| Repair broken, cracked glass | | | | ✓ | |
| Look for signs of leaks at window and door sills | ✓ | | | | |
| Clean dryer vent | ✓ | ✓ | | | |
| Check exhaust ducts are clear | ✓ | ✓ | | | |

Mark www.Checklist continued on back.

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Healthy Homes Principles



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Why Avoid Temperature Extremes?

Extreme Heat

- Heat exhaustion, Heat cramps, Heat stroke
- Death
- Exacerbate pre-existing conditions

Extreme Cold

- Increase blood pressure
- **Asthma symptoms**
- Poor mental health
- Excess winter mortality & morbidity



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