

Everyone Deserves a Safe and Healthy Home



A stakeholder guide for protecting the health of children and families

Lead
Mold and Moisture
Asthma and Allergies

Radon
Carbon Monoxide
Indoor Environmental Quality

Unsafe Drinking Water
Household Chemicals
Pests

Home Safety
Home Comfort
Asbestos



United States Department of Agriculture
National Institute of Food and Agriculture



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Introduction

To Safe and Healthy Homes

Everyone deserves to live in a safe and healthy home. It's important for people of all ages, especially children, adults, and seniors, because their health can be affected most by their environment. Most people spend 70 percent or more of their time inside their home. Millions of homes, however, have hidden hazards that can affect the health of the family and their visitors.

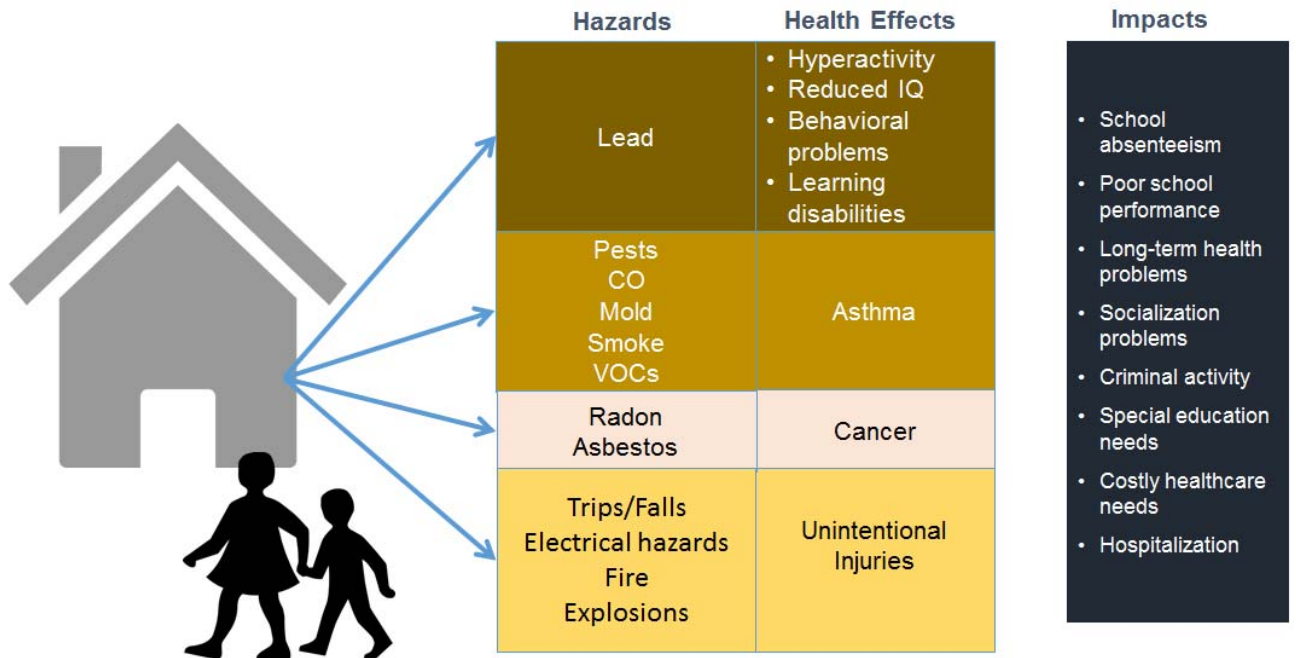
Scientific research has revealed that many homes contain one or more hazards that adversely affect human health. A 2013 federal government task force and the National Center for Healthy Housing found that these home hazards pose a wide range of risks:

- Mold and pests can cause and worsen asthma, allergies, and other respiratory illnesses. Poor housing conditions play a significant role in the respiratory health of vulnerable family members. The Centers for Disease Control and Prevention (CDC) estimates that 1 in 12 adults and 1 in 10 children in the U.S. suffer from asthma.
- Toxins such as lead, asbestos, and many household chemicals harm human health in a variety of ways. Lead poisoning in children causes reduced IQ and attention span, hyperactivity, impaired growth, reading and learning disabilities, hearing loss. The U.S. Department of Housing and Urban Development (HUD) estimates that almost 24 million homes have lead hazards from the paint, dust, or soil, and the CDC says that there are about 500,000 children in the U.S. with elevated blood lead levels.
- Invisible poisonous gases such as carbon monoxide and radon also pose serious threats to family health. Carbon monoxide poisoning results in more than 200 accidental deaths a year and, at much lower levels, causes flu-like symptoms, which often go undiagnosed. Radon can increase the risk of cancer, and is responsible for approximately 21,000 lung cancer deaths per year.
- Falls are the leading cause of accidental injuries for people aged 65 and older. Older adults are more likely to be victims of falls, and the resulting injuries can affect their ability to lead an active life.



Anyone can suffer from these housing-related illnesses and injuries, however, certain groups such as children, the elderly, and people with chronic illness are more at risk. Besides increases in illness and injury, an unhealthy home can also be a financial burden to an individual or family, as shown by this diagram:

Impact of Poor Housing Quality on Children

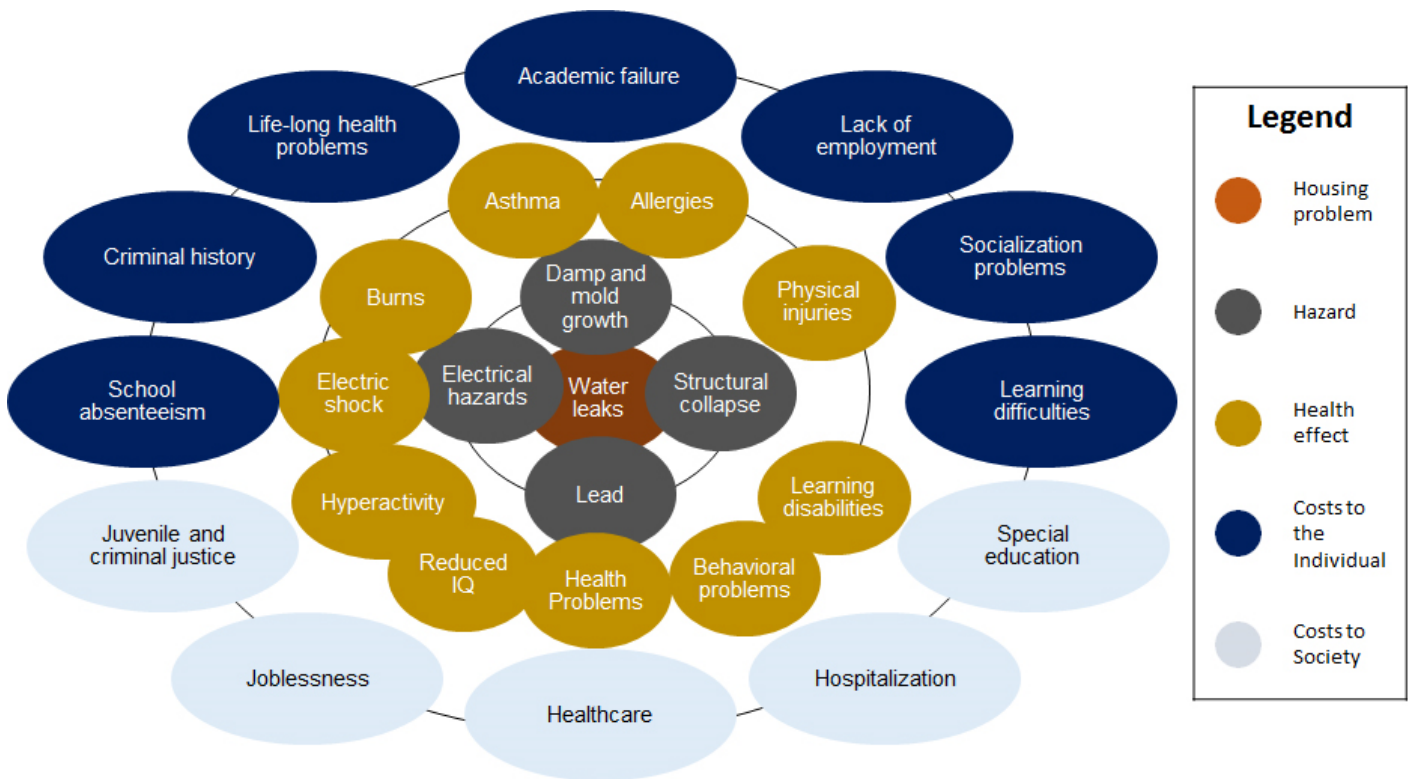


24 million homes
have significant lead-based paint hazards.
Lead poisoning effects
535,000
U.S. children ages 1-5

18,000 deaths
related to injuries occur annually in U.S. homes.
12 million nonfatal injuries
occur annually in U.S. homes.

6.8 million homes
have radon exposures above the current EPA action level.
Lung cancer
from radon exposure causes
21,000 deaths

Here is an example of how a single unhealthy housing problem can lead to multiple health effects and economic impacts: It is like a “pebble in a pond”: the impacts of one hazard can contribute to the many facets of the home, health, and community impacts.



This guide is intended to be a useful tool for people – “stakeholders” who serve all types of families from all zip codes. A stakeholder can be any person or group of people who serve the local populations to assist them in maintaining or improving their safety and wellbeing.

Examples include:

- Medical offices and health care professionals
- School nurses and teachers
- Religious leaders and agencies
- Public health or housing departments
- Agencies on youth and aging
- Community college, university and state outreach and extension
- Public assistance programs
- Not-for-profit organizations
- Home and professional daycare businesses

The best approach to ensuring healthy homes for families is to encourage and facilitate a cleaning and maintenance plan for each individual family that the stakeholder serves, based on an overall home assessment related to the family’s vulnerabilities. A healthy homes assessment is a great first step to help prevent diseases and injuries that result from housing-related hazards. Stakeholders can use this guide to educate, assess, advocate, train, and set standards and policy on healthy homes for their organizations.

This guide is a companion to a consumer guide on safe and healthy homes for families, homeowners, or renters. For more information on the consumer guide, please visit www.hud.gov/healthyhomes

Guiding Goals

For Safe and Healthy Homes

Keep it DRY

Damp homes provide an environment for dust mites, roaches, rodents and molds. All of these can cause or worsen asthma, and pests can transmit disease. In addition, moisture can damage the building materials in homes, including lead-based paints.

Keep it CLEAN

Clean homes reduce pest infestation and exposures to contaminants.

Keep it PEST FREE

Exposure to pests such as roaches and rodents can trigger an asthma attack or cause other illnesses.



Keep it SAFE

Injuries such as falls, burns and poisonings occur most often in the home, especially with children and seniors.

Keep it CONTAMINANT FREE

Levels of contaminants such as lead, radon, carbon monoxide, asbestos, secondhand smoke and other chemicals are often much higher indoors.

Keep it WELL VENTILATED

Having a good fresh air supply in homes is important to reduce exposure to indoor air pollutants and to increase respiratory health.

Keep it WELL MAINTAINED

Poorly maintained homes are at risk for moisture, pest problems, and injury hazards. Deteriorated lead-based paint is the primary cause of children being harmed by lead.

Keep it TEMPERATURE CONTROLLED

Homes that do not have balanced and consistent temperatures may place families at increased risk from exposure to extreme cold, heat, and humidity. Young children, older people, and those with chronic medical conditions are at most risk.

Adapted from the National Center for Healthy Housing at www.nchh.org



LEAD

What are the Health and Safety Risks?

Lead is a metal. Before 1978, lead was used in paint, water pipes, gasoline, pottery, consumer goods and objects. Millions of older homes still have lead paint and lead and copper solder water pipes. There are industries in many countries outside the United States that still utilize lead components and ingredients in making of consumer items such as toys, decorative art and jewelry, and cultural display pottery. Many of these items are brought into the country. Home hobbyists may use lead in stained glass making, fishing sinkers or lead shot, or reloading ammunition, but many of them are unaware of the range of risks the hobby has on their home from the transfer of dust from those hobbies onto their clothes, shoes, and car, and the effect the lead has on their families.

If a home was built before 1978, paint on both the inside and outside may still contain lead. Lead in outside paint can get into the soil around a home and can eventually be brought inside a home.

Where Do Lead Risks Come From?

The paint or varnish on walls, doors, windows, and elsewhere in a pre-1978 home could have lead in it. Lead based paint was commonly used on surfaces that received a lot of wear. Household dust from old, worn paint could contain lead. Drinking water could have lead in it from original or repaired plumbing.



Lead paint that is intact is not a direct hazard, but a potential one. Lead paint that peels, flakes, or is disturbed (for example, by sanding) is a health risk. To reduce lead exposure, from paint and the lead dust it creates, it is very important to advise a family to look for damage or wear to the paint, conduct regular paint assessments (preferably by a lead certified assessor), and maintain the paint in good condition when living in an older home. When hiring a contractor for painting or remodeling a pre-1978 home, federal law requires that up-to-date safety procedures be followed by certified contractors if lead based paint is present or the contractor assumes it is present. A contractor must do this to prevent lead dust and chips from being spread but homeowners should be advised to use safe work practices to protect themselves and their family from lead hazards created by working with lead paint. A good resource for these practices can be found at the website for the EPA lead in renovation rule:

<https://www.epa.gov/lead/renovation-repair-and-painting-program> .

Older houses are much more likely to have lead in various locations. Homes built before 1940 are most likely to have lead in their paint and possibly in any original plumbing to the house. If a family has young children, it is very important to consult with them to find out if their home has lead in it, especially if their home was built before 1978. In general, lead pipes are more likely to be found in homes built before 1986. There are certified and licensed lead risk assessors and lead based paint inspectors in each state and information on lead risks, assessments, and safe practices can be found at www.epa.gov/lead.

Why is Lead Dangerous?

Whether the lead-based paint is inside or outside the home (including an apartment if a family is renting), if it is not intact, it is dangerous. When lead paint starts to wear off, it creates lead dust and/or small paint chips. Outside, these can then settle into the soil outside the home, and be tracked into the home. Inside, they can get on the floor, onto windows, or in places where children can touch them. Lead that is on the hands of young children can get into their bodies as children often put their hands, toys or other objects in their mouths. Lead can permanently damage a family member's nervous system, including their brain. It can cause permanent learning and behavior problems. Lead poisoning is one of the most preventable health risks for children at home.

Children with lead exposure might not even look sick. A blood lead level test is the only way to know if a child has a high level of lead in his or her body. It is up to parents and health care providers to recommend and complete a blood lead screening tests on all children ages 0-6 years old to ensure that the family is fully aware and educated about the risk of lead from the community they live in. Contrary to the information in the media, lead exposure is not limited to specific neighborhoods: children of all backgrounds and resources can be exposed to lead hazards at their day care, relatives, and friend's homes where they spend significant amounts of time.



What can you do to help the families and communities you serve? *Actions for Living in a Healthy Home*

Family Health

For each family served, healthy homes stakeholders should:

- Encourage health screenings for blood lead levels in children of all ages, but especially ages 1-6. This test is free at many clinics and health departments. It only takes a small blood sample to tell if a child has a high level of lead in their system.
- Encourage families to facilitate frequent hand washing, especially before eating, using soap and water.
- Encourage families to feed their children a healthy diet. Foods with vitamin C, calcium and iron can help lower the amount of lead the body takes in if exposed.

Healthy Housekeeping and Habits

For each family served, healthy homes stakeholders should:

- Encourage families to wipe window sills and other surfaces with paper towels, warm water, and soap once a week and rinse well. Families should not allow children to chew or put their mouths on window sills or casings.
- Reduce dust levels on floors. Wet washing is very effective for removing lead-contaminated dust
- Keep cribs away from windowsills and walls that have deteriorated paint.
- Suggest they wash work clothes separately and don't mix them with the rest of the family's laundry. Adults working in certain jobs can often bring lead dust home on their clothing, skin, or shoes.



- Encourage them to test for lead first if they plan to do any repair or remodeling, and their home was built before 1978. Also inform the family to:
 - Never scrape, sand, or burn lead paint.
 - Keep children and pregnant women away while the home is being remodeled.
 - Hire only lead-safe certified firms for painting and home renovations.

If there is Lead in a Home

If lead paint is intact, encourage the family to leave it in place and make sure it stays intact. If lead paint is deteriorated, the family should be encouraged to ask their local or state health department for a list of certified lead paint abatement companies. If their home was built before 1978, or it was near an industrial site that used lead, the soil could also be lead contaminated. In that case, the family should be warned to keep their children from playing in or near bare soil. The family might also consider placing ground covers or mulch, gravel, or plants to create a barrier in play areas.

Encourage the family to use cold water for cooking, drinking, or making baby formula, whether or not they know if there is lead plumbing in a home.

If there is Lead Plumbing in a Home

If a family's home has lead water pipes or faucets, they should be:

- Warned to use only cold water for drinking, cooking and making baby formula, and reminded that boiling water DOES NOT remove lead from water.
- Encouraged to run water for 30 seconds to 2 minutes before drinking it, especially if they have not used their water for a few hours.
- Reminded to regularly clean the screen in the faucet (also known as an aerator).
- Encouraged to use a filter on the tap that is certified to remove lead.
- Reminded to read the directions to learn when to change the cartridge.
- Reminded not to use a filter after it has expired can make it less effective at removing lead.
- Encouraged to determine if the pipe that connects their home to the water main (the lead service line) is made from lead by contacting their water company.
- Informed that they can find out who their water company is by looking at their latest water bill.
- Encouraged to contact a local plumber if they have lead pipes and are interested in replacing them.
- Encouraged to call their local health department or water company to find out about testing their water, or to visit www.epa.gov/safewater for EPA's lead in drinking water information.

For more information about lead in drinking water, contact [EPA's Safe Drinking Water Hotline](http://www.epa.gov/safewater) at 1-800-426-4791. Persons with hearing or speech impairments may access this number via TTY by calling the Federal Relay Service at 1-800-877-8339.

Remember – How could children get poisoned with lead-based paint?

The majority of children contaminated with lead comes from detached dust, almost *invisible*, that has become loose from lead-based paint. The dust sits on floors and other surfaces around a house, where it reaches the hands of children, their toys, and finally to their mouths. If a family is renting, the property owner is responsible for maintaining the paint in good condition.



ASTHMA and ALLERGIES

What are the Health and Safety Risks?

More than 7 million children in the United States have asthma, a lung disease that makes it difficult for them to breathe. Another 40 to 50 million people have allergies. They may be allergic to anything like certain foods, plants, or something in the air. Symptoms include runny nose, watery eyes and sneezing. Allergies can also affect a person's skin. Symptoms include a rash or itching. Sometimes allergies can actually cause asthma attacks. Prevention is the key for families.

With the right knowledge and assistance, a family member can control their asthma and allergies. A knowledgeable stakeholder or provider could help avoid or reduce doctor visits from family members by identifying changes in the home environment that could positively impact the recurring health issues that may be occurring. There are tools and training to teach about how to guide clients through a home assessment and educate families to learn how to make their home healthier so they will feel better. Family members should always be encouraged to see their health care provider if they believe they have asthma or allergies, where they can then get a diagnosis and proper medical advice.

Where Do Asthma and Allergy Risks Come From?

Asthma Triggers

Lots of things cause asthma attacks; these are called "triggers." Some people have only one or two triggers while others have many triggers. Some triggers are things that people are allergic to, called "allergens." An example of a trigger that is also an allergen is pollen from trees and flowers. Other allergens that are triggers come from dogs and cats, cockroaches, mice, mold and dust mites. Some of these allergens are very small and they float around in the air in a home. Dust mites are tiny "bugs" that cannot be seen. They live everywhere in carpets, bedding, furniture, and stuffed animals and they are more plentiful when the indoor air is humid.

Other asthma triggers have nothing to do with allergies. Extreme cold or hot weather, exercise, and strong emotions (laughing, crying, fear, and stress) can all trigger an asthma attack. Cigarette smoke is another common asthma trigger. Nitrogen dioxide gas produced by gas stoves, or other irritants, can also be a trigger.

Common Asthma Triggers

- Dust
- Pollution
- Pets
- Smoking
- Pests
- Mold
- Pollen
- Respiratory Infections like colds and flu
- Chemical irritants



Allergies

An allergy is an unusual reaction to something that is usually harmless, like a food, a plant, or something in the air. The good news for families is that most allergies can be treated. If a family member has allergies, it's important for them to find out what causes the problem and possible solutions including medication or reducing exposure to the risks. A health care provider can test a patient to find out what allergens they are sensitive to.

Common Allergens

Many of the asthma triggers listed above can also cause allergic reactions for people who don't have asthma. Some additional common allergens are listed here. A family member should talk to their health care provider if they have a reaction to any of these:

- **Foods:** milk and dairy products; eggs; gluten; citrus fruits like oranges and lemons; artificial colors and flavors; nuts; shellfish like shrimp or clams.
- **Medicines:** penicillin; some heart medicines.
- **Insect stings or bites:** bee stings from yellow jackets, honeybees, wasps, or hornets; bites from fire ants. Sometimes reactions to insects get more serious as a person gets older. Eventually, only one sting could kill someone. A family member should always talk to their health care provider if they have had a serious reaction to a sting or bite.
- **Contact allergens:** when these touch a person's skin, they could get a rash or another reaction. These include plants like poison ivy and others, cosmetics or personal care products, jewelry, latex, and household chemicals.
- **Inhaled allergens:** when a person breathes these, they could have a reaction. They include cockroach droppings, dust mites, saliva and dander from cats and dogs, tree or plant pollen, and chemical irritants from cleaning products.



**What can you do to help the families
and communities you serve?**
Actions for Living in a Healthy Home

Family Health

Stakeholders and providers (health care and family agencies) should assist and encourage families to identify their risks for asthma and allergies and what their triggers are. They can also help provide training and education on home assessment tools and how to integrate them into a holistic approach to health, including a focus on education, assessment, and maintenance tips on allergens, pets, smoking, mold and moisture.

Housekeeping and Maintenance

As part of a holistic approach to reducing asthma triggers and allergies in the home, families should be encouraged to:

- Use zippered mattress covers and pillow covers under sheets and pillowcases and discouraged from using feather or down pillows. They should look for "hypoallergenic" bedding.
- Routinely wash blankets, sheets, pillowcases, and mattress pads in hot water and detergent weekly and use high heat in clothes dryers.

- Change the filter on their furnace and air conditioner at least a couple of times each year. The “MERV” rating on the package for air filters should be at least 8, if the equipment manufacturer allows such filters to be used; if not, filters with the highest allowable MERV rating should be used.

Pets

A family that has pets, should be advised to:

- Keep furry and feathered pets out of sleeping areas and off of furniture, and keep bedroom doors closed to them.
- Clean pet beds, litter boxes and cages frequently.
- Damp dust with a microfiber cloth and vacuum often, preferably with a HEPA vacuum. This will reduce pet hair and dander, or feathers.
- Never leave pet food out overnight.

Pollen, Pollution and Fragrances

Families should be encouraged to:

- Shower or wash hair at night before going to sleep when they have spent time outdoors, and wear clean clothing daily. This is especially important when the pollen count is high.
- Ventilate their home and be sure appliances are vented to the outside. They should use exhaust fans in the kitchen and bathroom and avoid smoke from fireplaces, fire pits and charcoal grills.
- Avoid having air fresheners, incense, scented candles and fresh flowers in their home. They should use “fragrance free” laundry and cleaning products. Perfume and scented personal care products can trigger allergic reactions.

Smoking

If a family member smokes and they would like to quit, encourage them to look for help. Many programs can provide help for free. Good resources for smoking cessation help include the American Lung Association hotline at 1-800-LUNG-USA, and the website smokefree.gov. Until the family member has quit, they should be counseled to smoke outside and away from children, as smoke in the air can give other family members, especially children, asthma and other lung diseases.

Mold and Moisture

In order to avoid substantial mold growth in a home, a family should be coached to:

- Fix all water leaks quickly as mold needs water or damp conditions to grow.
- Make sure clothes dryers are vented to the outside.
- Turn on kitchen fans when cooking; these should be exhausted to the outside.
- Use exhaust fans that are vented to the outside or open a window when showering.
- Use a dehumidifier if the humidity in the home is above 50%.

MOLD and MOISTURE

What are the Health and Safety Risks?

Mold is everywhere inside and outside of a home, including the interior surfaces and air, but is typically not a problem until it affects the health of the occupants. Mold can affect the health of all family members, and it is important for stakeholders, especially healthcare and service providers, to understand that many homeowners and renters do not have a clear understanding of what causes mold, how to treat it, or that it could be impacting their family's health.

Molds produce allergens and irritants. Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic reactions to mold are common. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of family members. Stakeholders should note that these symptoms could also be attributed to other toxins or hazards in a home.

Where Do Mold and Moisture Risks Come From?

Mold is a fungus that is alive and grows in wet or damp places. It is usually gray or black, but can also be white, orange or green. Mold can grow on walls, ceilings, furniture, clothes, or appliances, and it can also grow in hidden places such as behind walls, in attics, and under carpet. In significant quantities, mold usually makes a home smell musty and that smell can identify a potential health hazard. Mildew is a common name for mold that grows in a thin layer on surfaces. Mildew is typically found in and around high-humidity areas of a house. If a family lives near water or in a humid climate, then mold is more likely to grow in their home.

Some common places in a home where mold can be found, if the interior environmental conditions are favorable for mold growth:

- In bathrooms, especially around the shower or tub
- In humid or leaky basements and crawl spaces
- Around leaky sinks
- On windows and walls where moisture builds up from condensation or where there is moisture intrusion
- In attics, especially those that are not properly vented or under leaking roofing
- On wet clothes that are not dried quickly
- In closets, or other areas without air circulation
- Under wallpaper or carpets
- In an air conditioner or ductwork
- Inside of kitchen or vanity cabinets
- Around cooktops and countertops

Should a Family Test for Mold in the Home?

In most cases, if visible mold growth is present, testing is unnecessary. Since the EPA and other federal agencies have no recommendations on safe levels for mold, testing is not helpful or encouraged. However, surface sampling may be useful to determine if an area has been adequately cleaned or remediated after mold has been removed. Sampling for mold should be conducted by professionals who have specific experience in designing mold sampling protocols, using sampling methods and interpreting results.



What can you do to help the families and communities you serve?

Actions for Living in a Healthy Home

Family Health and Housekeeping Habits

A stakeholder should always advise families that it is important to fix any moisture problem in their home right away, including using dehumidifiers, fixing plumbing and roof leaks, and ventilating kitchens, bathrooms, and dryers to the outside. In addition to these recommendations, stakeholders should encourage families to talk to their health care provider if they think mold is affecting their health. If a family member's asthma or allergies are worse when they are at their home than away, mold may be a trigger. Encourage them to check for mold and moisture problems in each room of their home.

Stakeholders and service providers can also educate families in the community by:

- Encouraging healthcare providers and community assistance organizations to help families to assess their homes for asthma/allergen triggers that could include mold and other healthy home hazards.
- Assisting community agencies and health care providers in identifying and advocating for actions families can take to reduce allergens and mold in their home.
- Focusing education, training, and assessments on moisture prevention and safe cleaning of suspected mold areas.

Preventing Significant Moisture and Mold Inside a Home

For each family served, healthy homes stakeholders should recommend that families:

- Repair any water leaks in their home right away.
- Keep an eye out for mold and mildew or water stains in the home, including on ceilings, walls, around windows, floors and fabrics.
- Avoid letting water sit in drip pans, basements or air conditioners.
- Find and correct the moisture problem and dispose of moldy materials if mold is suspected, seen, or smelled.
- Avoid letting damp laundry stay wet in the laundry basket or machine.
- Use exhaust fans to move any moist air outside especially from kitchens and bathrooms.
- Make sure clothes dryers are vented to the outside.
- Use a dehumidifier or air conditioner to dry out damp areas.
- Throw away any moldy items that can't be cleaned.
- Store items in basements on shelves above the floor and in sealed plastic containers instead of cardboard boxes.

Preventing Significant Moisture Outside a Home

For each family served, healthy homes stakeholders should recommend that families:

- Make sure gutters and downspouts are working and aren't clogged, and rainwater drains away from the house to prevent wet basements or crawl spaces.
- Keep trees and bushes trimmed away from the home. This will allow air movement to deter mold growth.

Recommended Procedures for Cleaning Up Mold

Before a family attempts to remove mold, the first thing they should do is to figure out the source of the moisture problem. For example, if they have mold on a ceiling, it could be from a leaking pipe or roof above. If they don't fix the leak, then the mold will most likely return.

A healthy family member may be able to clean up a small area with mold, but should always wear protective gear including a respirator rated "N-95" or higher. The family member should wear long sleeves and pants, shoes and socks, gloves made of rubber, neoprene, polyurethane, or PVC, and goggles for eye protection. A mix of water and either an all-purpose cleaner, laundry or dish soap will usually be sufficient to remove mold with a stiff scrub brush. The surfaces should be rinsed with clean water and dried. After cleaning up the mold, mold removal guidelines recommend the use of a High Efficiency Particulate Air (HEPA) vacuum for final mold removal and HEPA air cleaners for continued use, to help reduce mold spores in the air. Any fabrics or porous materials contaminated by mold should be discarded.



Stakeholders should note that a professional mold remediation specialist is highly recommended when the mold surface exceeds 100 square feet or more, and the use of bleach to remove mold in these large projects is not acceptable because of safety concerns. Families should be instructed to keep small children, older and sick people and anyone with allergies or asthma away from the home during cleanup as the cleaning procedure usually makes mold spores more airborne and more easily inhaled.

Health departments and the Cooperative Extension Service in a community can also provide more information to families on mold and mold remediation. For additional "how to" guides to inform families about on how to safely clean up mold, especially after a flood or other disaster, visit the Rebuild Healthy Homes guide and App at www.hud.gov/healthyhomes. To find a cooperative extension office in a state, a family can visit the U.S. Department of Agriculture's Partners and Extension Map web page at <https://nifa.usda.gov/partners-and-extension-map>.



CARBON MONOXIDE

What are the Health and Safety Risks?

Carbon monoxide (CO) is a toxic gas. No amount is safe to breathe. CO cannot be seen, tasted, felt, or smelled. CO can make a person sick and can be fatal. Over 400 people in the United States die every year from CO poisoning.

Signs and symptoms of CO poisoning may include:

- Headache
- Nausea
- Vomiting
- Dizziness
- Confusion
- Weakness
- Sleepiness
- Tightness in the chest
- Trouble breathing
- Changes in sight, hearing, touch, taste or smell

Breathing low levels of CO can harm brains, hearts, and other organs. When a person breathes high levels of CO, they don't get enough oxygen, may not be able to think clearly, and can lose control of muscles. In severe cases, the person might not be able to move to safety. High level CO poisoning can cause loss of consciousness, coma, and death. High CO levels from a fire can kill someone in less than a minute.

Where Do Carbon Monoxide Risks Come From?

Fuel burning appliances are the main source of CO in the home. Common fuels are natural gas, gasoline, kerosene, coal, propane, oil, or wood. CO can be produced at dangerous levels if fuel burning appliances aren't vented to the outside or working right. Most fuel burning appliances are safe if they have been correctly installed and maintained. All fuel burning appliances need to be vented outside as unvented appliances are not safe. For example, a fireplace burns wood and smoke escapes out through the chimney. Likewise, other fuel appliances have chimneys or flues for the dangerous gases to escape. Electric appliances don't burn fuel and don't make CO.

Specific home sources of CO include:

- Furnaces, boilers, and water heaters that burn gas or oil
- Wood burning fireplaces and stoves
- Blocked chimneys and vents
- Gas appliances like ovens, stoves, and dryers
- Gas and kerosene space heaters
- Gas and charcoal grills
- Cars, trucks, campers, tractors, and other vehicles
- Gasoline powered equipment: lawn mowers, portable generators, snow blowers, chainsaws, or pressure washers
- Generators in campers and houseboats
- Tobacco smoke
- House fires



What can you do to help the families and communities you serve?

Actions for Living in a Healthy Home

Family Health and Safety

To ensure safety in a home from the dangers of carbon monoxide, it is essential to advise families to:

- Go outside right away if they hear a smoke or CO alarm, or if they smell natural gas. Families should be taught to treat any alarm as an emergency and never ignore it. They should then call 911 from a phone outside of their home and seek medical attention as needed.
- Read the manuals for all appliances, and follow all instructions.
- Engage the services of a company that services home furnaces, chimneys, and appliances at least yearly.
- Vent all heating appliances outside and avoid blocking air openings or exhaust vents.
- Turn off any appliance that is not working right and call a qualified contractor or repair company.
- Never operate grills, generators or anything with an engine inside a home, garage, or basement.
- Always start lawn mowers, snow blowers and all yard equipment outdoors.
- Never use the kitchen stove or oven to heat their home. *There may be programs to help families get or keep heat on in their home during cold weather days. Have them contact their local health department, community action agency, or city housing office to inquire what services may be available locally.*
- Turn on the kitchen exhaust fan when using a gas oven or stove, and leave it on after it's done for a half hour or more.

Carbon Monoxide Alarms

CO alarms are essential to protecting families from CO poisoning. An alarm will make a loud noise if CO is in the air. Alarms are sold as plug-in or battery operated and can be purchased online or at a home improvement or hardware store. If a CO alarm sounds, everyone in the home must go outside immediately and then call 911 from a phone outside of their home and seek medical attention as needed.



CO Poisoning Prevention

Stakeholders should advise families to:

- Put CO alarms on every level of a home and in sleeping areas.
- Never leave a vehicle running in the garage with the garage door closed. Doing so can cause CO poisoning, even if it is for just a couple of minutes.

Bad weather or disasters can cause the power to go out. Some people use portable generators indoors or close to windows or doors to the outside during these emergencies, which is a high risk activity for CO poisoning for families unfamiliar on how to operate them safely. Families should only use portable generators OUTSIDE and at least 20 feet away from the home or garage. Also, for explosion safety reasons, families should never refuel a generator when it is hot.



RADON

What are the Health and Safety Risks?

Radon is a gas that cannot be seen or smelled or tasted. As a result, it may be present at a hazardous level without the family's being aware of it. Radon is estimated to cause many thousands of deaths each year. That's because when a person breathes air containing radon, they increase their chances for lung cancer. In fact, the U. S. Surgeon General has warned that radon is a leading cause of lung cancer in the United States. If a family member smokes and the home has high radon levels, their risk of lung cancer is especially high.

Families can reduce their risk of lung cancer by lowering the amount of radon in their home. The good news is that a radon problem can be fixed, and in most cases, radon levels can be reduced significantly. Nearly 1 out of every 15 homes in the U.S. is estimated to have an elevated radon level. Radon has been found in every state in the U.S. and any home can have a radon problem.

Where Do Radon Risks Come From?

Radon comes from the natural breakdown of uranium in soil, rock and water. Radon typically enters a building through cracks and holes in walls and floors closest to the surrounding soil. Radon can be found all over the U.S. and it can get into any type of building — homes, offices, or schools. But a family is most likely to get the greatest exposure at home, where they spend most of their time.

Testing for Radon

Testing is the only way to know if a family is at risk from radon. The EPA and the Surgeon General recommend testing all homes for radon at the lowest livable level. It's easy to find out if a home has high levels of radon. Families can do a radon test on their own or they can hire a professional. There are two main types of radon tests that are do-it-yourself:

- A long-term test lasts 3 months to a year. These tests are more likely to give a home's year round average radon level. Radon levels vary throughout the year. These longer lasting tests are recommended.
- A short-term test lasts 2-4 days. This is the quickest way to check a home; this is often done during home inspections as part of buying a home.

A family can purchase a radon kit in a hardware store, a discount store or online. Testing does not require any protective equipment. Because testing improperly can make a significant impact on the results of the test, families should be advised to read all directions and label the test kit completely as described on the package, and to avoid moving the test kit around after it is originally placed in a room.

Understanding Radon Test Results

The amount of radon in the air is measured in "picocuries per liter of air" or "pCi/L". The average indoor radon level in the U.S. is about 1.3 pCi/L. The EPA and the U.S. Surgeon General recommend a radon mitigation system if the indoor radon level is 4 pCi/L or higher. Families may also consider taking action even if the level is between 2 and 4 pCi/L.



What can you do to help the families and communities you serve? *Actions for Living in a Healthy Home*

Family Health and Safety

It is not possible to get rid of the uranium in the soil that is causing the radon problem in a home, but there are other things that families can do. The goal is to reduce the radon levels in the home by stopping it from entering. The most important points to communicate to a family is that they need to be informed and educated about the dangers of radon, how to test homes, and remedial measures available to them when radon levels are too high.

A Radon Problem Can Be Fixed

Radon reduction systems work and they are not too costly. Installing a radon mitigation system will help reduce (“mitigate”) radon indoors. Some radon reduction systems can reduce radon levels in a home by up to 99%. Even very high levels can be reduced to acceptable levels with an appropriate installation.

The first step is to seal and caulk all openings, cracks, and crevices in the concrete foundation floor (including the slab perimeter gap) and walls with polyurethane caulk. Before deciding to install a mitigation system, the area should be retested for its radon level. The retesting should start at least seven days after the sealing and caulking is done.

The most common mitigation system is a pipe that goes from under the lowest floor - basement or first floor - of the home and continues straight through the roof. For higher radon levels, a motorized fan is attached to the pipe (often in the attic or basement) to help remove the radon gas to the outdoors. The EPA recommends that a homeowner have a qualified radon mitigation company install the mitigation system. There is help available to install these systems by contacting a state radon office for qualified radon mitigation companies in the area.

Fixing a Radon Problem with a Mitigation System

There are several proven methods to reduce radon in a home, but the one primarily used is a vent pipe system and fan, which pulls radon from beneath the house and vents it to the outside. This system does not typically require major renovations to a house, as it can often be placed in closets or between rooms. Sealing foundation



cracks and other openings is often completed with the installation of the vent pipe to make the mitigation system more effective and cost-efficient.

A licensed radon mitigation specialist can recommend what system is best for a home. Homeowners should check with their state health department website for more information on how to find certified radon mitigation contractors. Retesting a home after a radon mitigation system has been installed is always recommended to verify the efficiency of the work completed and to make sure the radon level has been reduced to less than 4 pCi/L.



DRINKING WATER

What are the Health and Safety Risks?

Every day, Americans drink more than a billion cups of water and use water to cook and clean. Most people trust that their water is safe, and this is usually true. Public drinking water in the United States is routinely tested for safety, but if a home has a well or other private water supply, it's the homeowner's responsibility to test it.

No matter where water comes from, families need to make sure it's safe. Family members can get sick from drinking, cooking, and bathing in unsafe water even though it may still look, smell and taste fine.

Drinking unsafe water can cause an upset stomach, diarrhea, or more serious problems. It can be worse for children, pregnant women, those who are sick and older people. Unsafe water can be more dangerous for children than adults because children drink more than adults for their size and their bodies are still growing.

Unsafe drinking water may contain bacteria and viruses that can cause diseases as well as heavy metals and chemicals that can cause other health problems. Contaminated water can damage kidneys, liver, and other organs. Some chemicals in unsafe water may cause cancer.

Lead in water can cause permanent learning and behavioral problems in children. Babies who get too much copper can get colic and spit up their formula if these metals are in the water used to make formula. Older children and adults may get upset stomachs or diarrhea from copper.

Nitrates in water may also cause birth defects and miscarriages. Too much nitrate in drinking water can also cause blue baby syndrome in babies less than six months old. Blue baby syndrome is when a baby's blood doesn't get enough oxygen and their face can turn blue or purple. If this happens, they need medical attention right away.

Where Do Drinking Water Risks Come From?

Nitrates are chemicals that get into water from animal and human waste or from fertilizers. Nitrates can seep into drinking water from a lawn or a sewage system, and water from wells in farming areas are at greatest risk. Testing tap water annually for nitrates is important before giving it to babies and children.

Lead and copper are metals that can get into water from plumbing pipes and fixtures. Other harmful chemicals can get into drinking water such as pesticides that wash off lawns or leak from storage containers, and gas or oil that has seeped into the ground and into wells used for drinking water.

Public Water Supplies

The water in most U.S. homes comes from a public water supply. Public water typically comes from groundwater or from a nearby river or lake. If the drinking water is from a public water supply, it is tested for over 80 chemicals. The water company determines if the water meets EPA safety standards for drinking water and they are required to notify customers if it is unsafe.

Every year, water companies are required to give their water test results to customers. Reports are available online or by mail. Families can also call their water company to ask what chemicals are in the water and also ask how they treat it to make it safe. Even public water can still become unhealthy if the home has lead or copper water pipes or faucets, or the pipe solder contains lead.

Lead Pipes: Older homes or apartments may have lead pipes. Lead is a dull gray color and scratches easily. Brass faucets (especially those purchased before 1998) also contain lead.

Copper Pipes: Copper pipes are reddish brown in color.

Private Water Supplies

Nearly 15% of Americans have private water supplies mostly from a well on their property. A well is a deep hole in the ground that fills with water and has a pump and pipes which transport water into a home. There are many different types of wells.

Types of Wells

A dug or bored well has a hole about 2 feet across and are typically less than 50 feet deep. A drilled well has a narrow hole and is 6 to 8 inches around and can be hundreds of feet deep. A driven point or sand-point well is 2-3 inches around and may not be very deep. If a homeowner doesn't know what kind of well is on the property, a local well driller can be of assistance. If the well is more than 20 years old, it should be checked for contaminants often.

Testing Well Water

Stakeholders should recommend that homeowners and renters have well water tested every year by a state certified laboratory. They should be sure the test includes bacteria and nitrates. Families can go online or call a local or state health department or Cooperative Extension Service (www.nifa.usda.gov/extension) to find out what tests are needed.



**What can you do to help the families
and communities you serve?**
Actions for Living in a Healthy Home

Family Health

Families should be advised never to use hot water from the tap for cooking, drinking, or making baby formula if lead is present in the water. If the home has lead or copper plumbing with lead solder, or if the family is unsure if it does, family members should be instructed to:

- Use cold water instead of hot water and heat it on the stove or in the microwave to warm it up, and test it to be sure it is not too hot before feeding a baby or toddler.
- Let the cold water run for a few minutes when the water hasn't been used for at least 3 hours. This will help clear out any water that is sitting in the pipes which might collect lead or copper.

Community Health and Safety

Keeping water clean in public water supplies and from private wells requires community-wide outreach so that everyone is doing their part to keep the water safe to drink for all families. In order to help keep local water safe, healthy homes stakeholders should advise families in proper care and disposal of household and yard chemicals to avoid adding contamination to the surrounding groundwater and wells. Families need to:

- Ask the water company for the most recent water quality report, and then check the report for contaminants harmful to family members, especially children and pregnant women.
- Follow all directions on the label when using poisons to kill bugs or weeds.
- Store chemicals safely and be sure containers are labeled and sealed.
- Avoid putting chemicals in the garbage or down the drain and reading labels for disposal instructions.
- Give leftover chemicals to someone who will use them, or call a local or state health department to find out how to get rid of them safely.
- Make sure to clean up after pets. Don't leave droppings on the ground. Rain can wash germs into storm drains, rivers and lakes. Flush pet waste down the toilet, or put it in a plastic bag and throw it in the trash.

Housekeeping and Maintenance

To protect a private water supply, homeowners and renters should be advised to:



- Test their well water every year. (see the Testing Well Water section above)
- Have a professional plumber check the well if it is having problems or has high levels of contaminants.
- Make sure the well is not in a low area of the yard where rainwater can collect. Rainwater can carry germs and pollutants into well water.
- If the well is in a low lying area, consult a well installation company for advice.
- Avoid keeping gas, oil, weed killer, or other chemicals near the well or uphill from it.
- Ask the local or state health department how to seal an unused well if it is abandoned. Cap or fill unused wells to prevent ground water contamination.
- Put “back-flow prevention devices” on outdoor faucets to keep water from flowing backwards into the water

supply. These devices help keep germs and pollutants from washing back into a home's drinking water.

When a family moves into a new house or apartment that uses water from a well, they should always be advised by a professional well installation company or cooperative extension agent to find out where the well is located and place a well marker to designate the exact location of the well.



HOUSEHOLD CHEMICALS

What are the Health and Safety Risks?

Some household chemicals and products are more dangerous than others. Some can be used safely if the directions are followed on the label. Hazards from household chemicals include using too much of a product or misusing a product, such as mixing two products together that are dangerous when they are combined.

Children and adults can be injured or poisoned by accident. This can happen if products are misused, stored or disposed in the wrong way. Eating or drinking a hazardous product is very dangerous, sometimes deadly. Children have smaller bodies that are growing so hazardous chemicals can harm them more.

Some hazardous products can burn just by touching them and some can poison through the skin if they are touched. Others can also poison a person when they breathe them in. Exposure to these chemicals might make a person feel sick to their stomach or dizzy and their eyes might water, sting or hurt. Other common reactions are headaches or nasal congestion.

Sometimes a person can know right away if a family member has been poisoned by a hazardous product. But some problems don't show up for a long time. Some chemicals can also change how a child grows and develops. Long-term contact with some products can cause cancer or damage to lungs or other organs.



Where Do Household Chemicals Risks Come From?

Hazardous household chemicals are products for use around a house or yard that can be harmful or poisonous. They can hurt someone if they are not used the right way. Here are some common examples:

- All-Purpose, surface and floor cleaners
- Detergent
- Medicine
- Glass cleaner
- Batteries
- Bleach
- Bug spray
- Toilet and drain cleaners
- Furniture polish
- Oven cleaner
- Rat poison
- Mothballs
- Charcoal lighter fluid
- Dishwasher pods
- Mercury thermometers
- Gasoline
- Oil
- Paint
- Shoe polish
- Glue and epoxies



What can you do to help the families and communities you serve? *Actions for Living in a Healthy Home*

Family Health

The stakeholder should remind all families they serve that if they think a family member has been poisoned they should call the poison control center number immediately. If a family member is exposed to, breathes in, or swallows a dangerous household chemical, they can reach a local Poison Control Center by calling **(800) 222-1222** toll free from anywhere in the United States at any time. Families should store this number in a mobile phone or speed dial and also put it where hazardous products are stored.

Some persons can have allergies to strong chemicals which could be affecting their health and work. If a family member identifies sensitivity to chemicals during cleaning they should notify their health care provider.

Housekeeping and Maintenance

Most families can create a healthier home environment by changing some of their everyday practices so they don't routinely use hazardous products for cleaning. Some suggestions for them include:

- Use only the amount of the product that is recommended.
- Steam cleaning of clothes and upholstery is a good alternative for people who want to reduce their exposure to hazardous chemicals.
- Look for products that are less toxic: Look for products that list all ingredients and that have been tested for safety by a reliable third party, such as: EPA Safer Choice, Green Seal and EcoLogo.
- Keep a doormat by every entrance to the home to encourage "wipe your feet" habits.
- Removing shoes worn outside the home when entering it.

A stakeholder should encourage the families they work with to take the following precautions to protect the most vulnerable family members:

- Always keep hazardous products in their original containers.
- Recycle products at approved locations. Oil, antifreeze, and products with mercury can be recycled in many parts of the U.S.
- If they have with young children, always buy products in child-proof containers and only get medicines with child-proof caps.
- Keep all hazardous products and chemicals in locked cabinets away from children who live in or visit the home.

Use Safely as Directed

Family members should always follow directions on the labels of household chemicals. That is one of the most important steps in using hazardous products. They should also take extra care if a label has any of these words:

- Caution
- Harmful
- Warning
- Danger
- Poison
- Flammable
- Toxic

Safe Housekeeping Habits

Healthy homes stakeholders should recommend that families:

- Always put the cap back on a product tightly and put everything away right after use.
- Do not eat, drink, or smoke when using a hazardous product, and wash hands thoroughly after use.
- Never mix products together unless directed to do so by the product label.
- Keep children, pets, and pregnant women away from the area where the hazardous products are being used.
- Store laundry and dishwasher pods away from children. They are very dangerous for children as they are brightly colored and may look like candy.
- Keep products in the original package, can, or bottle. Never put products in another container. Keep containers and packages dry. Close containers tightly.
- Keep household products away from heat, sparks, and fire. Don't store anything near the furnace.
- Store batteries and flammable chemicals like gasoline out of direct sunlight.
- Find out where to recycle products with mercury, as it is quite toxic, even in small amounts. Some items that contain mercury are: fluorescent bulbs, thermometers, thermostats, and blood pressure meters.



Learn as much as you can about home health and safety,
and get your community involved.

Healthy Homes Basics App

- Download the app to learn more:
<https://itunes.apple.com> or <https://play.google.com/store>
- Connect to resources you need
- Take quizzes to test your awareness
- Check each room in a house





PESTS

What are the Health and Safety Risks?

Pests are unwanted living creatures in or around a home. Pests can act as asthma and allergy triggers in sensitized family members and those with asthma or who are chronically ill. Inside of homes, mice, rats, and cockroaches may also trigger asthma attacks. Pests can be a health and safety hazard because they can carry bacteria in on their skin or fur, can bite humans, or damage home structures or components making the home unsafe.

Indoor pests include bugs or rodents that get inside and into food; mice and rats which can chew on electrical wires and cause fires; rats and certain spiders which can bite and make people very ill; and fleas and ticks which can be carried into a home on pets or clothing and can cause disease.

Bedbugs are tiny insects that feed on blood of humans and animals. They are hitchhikers and they can crawl onto children and adults or their belongings. Bed bugs are very difficult to get rid of once they have infested a room or area. Common bed bugs are not known to transmit disease but some people have allergic reactions to their bites.

Where Do Pests Risks Come From?

Pests travel into a home looking for places with food, water and shelter. Removing their access to these things can greatly reduce pest problems. Families should be advised to ask these questions in order to identify the problem and possible solutions:

- Are there gaps or openings in the walls, doors or windows?
- Are pets bringing in pests?
- Is there spilled or open food anywhere in the home?
- Is there a water leak in or around the house?

Bedbugs can be carried home in luggage, bags or on clothing. They are most common in public places or where people sleep (homes and hotel rooms). They can be found in homes, apartments, dorm rooms, hotels, cruise ships and in public transportation. Bed bugs tend to hide during the day in bedding, furniture, cracks, and tight places and come out at night. If a family thinks they have bed bugs they will need to confirm it with a cooperative extension agent or pest management professional. If a family is renting the home they should immediately contact their landlord, and check with state or local laws regarding bedbugs.



**What can you do to help the families
and communities you serve?**
Actions for Living in a Healthy Home

Preventing or Controlling Pests Safely

Identifying pests and fixing the causes of pest problems is the first step families should take. First, families should try pest prevention and mechanical tools like traps that do not use toxic substances.

Next, families should try to remove the conditions that allowed the pest(s) to enter and live. This system of removing pests is called **Integrated Pest Management** or **IPM**. IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of commonsense practices. IPM programs use information on pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

IPM in Multifamily Housing

If a family lives in an apartment, a condominium, or any kind of unit in a multi-family housing complex, there are special measures that should be considered to prevent or solve pest problems. To keep pest numbers down, each resident needs to do his or her part, keeping individual apartments clean to discourage pests throughout the building. The stakeholder should advise apartment residents to:

- Prepare units for visits from a pest management professional or exterminator such as clearing clutter from rooms hallways.
- Follow leases regarding housekeeping, sanitation, trash removal and storage.
- Report the presence of pests, leaks and mold to the landlord.
- Monitor common areas for problems.

Housekeeping and Maintenance

The stakeholder should encourage families to be diligent in finding out how pests are getting into their home and advise them to walk around the house from outside, and:

- Look for openings in walls, doors and windows, and seal gaps where pipes and wires – and pests - come inside.
- Use screens on windows and repair holes in screens.
- Make sure doors and windows are tight and well- sealed. (Mice can get in a hole the width of a pencil). Repair damaged doors and windows.
- Trim plants so they don't touch the exterior walls,
- Do not collect large amounts of trash.
- Keep gutters clean and use downspouts to direct water away from the home.
- Get rid of standing water in watering cans, toys, wading pools, buckets, cans, tires, and plant containers. Standing water breeds mosquitoes.
- Repair openings in the roof and eaves which may let bats, bees and squirrels inside.



After an inspection from the outside, the family should be advised to inspect the conditions of the interior, and routinely:

- Clean countertops, floors, window sills, and other surfaces often.
- Clean up spills and crumbs and dirty dishes right away.
- Keep a tight lid on trash cans and empty the trash daily.
- Store food in tightly sealed containers. Pests are attracted to food in open bags, boxes or containers.
- Keep pests from getting water by fixing plumbing leaks and not leave dishwater in the sink overnight.
- Get rid of clutter, especially newspaper, bags, papers, and cardboard boxes. Paper makes a good home for pests. Also, roaches like the glue in paper bags and cardboard boxes.
- Never leave pet food out overnight.

Safe Pest Control Methods

Once clutter is removed, cracks and crevices are sealed, and a home is clean, THEN a family may be further advised on pest control methods that may still be needed. Families should always choose less toxic methods first; mechanical methods of pest control are safest. Other suggestions to help families with pest management include:

- Snap (not sticky) traps for mice. Mice or rats may stick to the traps but not die and remain a bite hazard.
- “Child resistant” traps for roaches, ants or mice.
- Avoiding the use of pesticides or rodenticide pellets. Rodents can eat them and die inside walls and hidden places. Dead rodents smell bad and the smell can last for months. Also, children or pets may eat the pellets.
- Fly swatters to kill flies, spiders or roaches. A vacuum cleaner can also remove them but the vacuum bag should be thrown away as soon as possible so the pests don’t get out.
- Sealant, steel wool or other pest-proof materials to plug cracks. An “escutcheon plate” keeps pests out around pipe openings.
- Not using products designed to be used outdoors inside a home.

Methods That Use Pesticides

Pesticides can cause health problems if not used properly. If the mechanical methods do not work, it’s best for a family to call a certified pest management professional. Family members should only use pesticides according to the label directions, and choose products that cannot be easily breathed, swallowed or touched by babies, children and adults. Children could easily become sick from contact with pesticides. If they have to keep pesticides in the home, families should always keep them in a locked cabinet and out of reach. It is vital that the person applying the pesticide uses only the amount of product that the instructions say to use. More is not better and can be very dangerous to persons and pets.



Stakeholders should advise residents planning on using chemical pesticides to review important information on recommended protection, which may include using:

- Plastic or rubber gloves
- Long sleeves
- Long pants
- Safety glasses or goggles
- Dust mask or respirator

Families using pesticides should always be advised to wash hands after use and never smoke, eat, or drink while using the products. For more information on pesticide safety, the Environmental Protection Agency’s Office of Pesticide Programs supports the National Pesticide Information Center. Their toll-free number is (800) 858-7378 and their website is: www.npic.orst.edu. People with hearing or speech impairments may access the number above through TTY by calling the toll-free Federal Relay Service at (800) 877-8339.

Bed Bug Prevention and Removal

When returning home from travel or somewhere that may have had bed bugs, families should be advised to store belongings in sealed bags until they can be carefully inspected with a flashlight or magnifying glass. If bedbugs are found, non-flammable items and clothing should be immediately put in the clothes dryer on the highest heat setting for 30 minutes to kill them. Flammable items should be discarded, if possible. Clothing from a suitcase should be unpacked and put directly into a clothes washer and hot dryer.

Regular maintenance in a home to reduce the possibility of bed bug infestation includes recommendations to regularly wash and dry bedding and any clothing that touches the floor and routinely throwing away the vacuum bag or contents.



HOME SAFETY

What are the Health and Safety Risks?

When it comes to safety, preventing injuries at home is important for people of all ages. A family member's chances of getting hurt at home are much higher than at work or school. Very young children and older adults are the most likely to get hurt. The leading causes of death and injury in the home are:

- Falls
- Poisoning
- Fires or burns
- Blocked airway
- Drowning
- Weapons

Where Do Home Safety Risks Come From?

Falls are the leading cause of deadly and non-deadly accidental injuries for people aged 65 and older. Most falls happen at home and can be inside or outside. Most people trip and fall at floor level, not going up or down stairs. Older adults are more likely to be victims of falls, and the resulting injuries can affect their ability to lead an active life, or worse.

Young children can get into everyday items that can poison them. Children like to play with things that they find because they can look or smell good and by nature they are curious. Children may find new things appealing such as medicine, makeup, household chemicals, alcohol or plants. Babies and toddlers will put items in their mouth as they crawl or run around.

Fires and burns are a main cause of death in the home. Older adults are most at risk. They might not be able to hear an alarm or get out of their home or apartment quickly. Older adults also may have difficulty seeing, smelling or hearing.

When a person is choking, a blocked airway can cause them to stop breathing and can be fatal. Children under age 4 and older adults are the most likely to die from choking. People usually choke on food although children can choke on something they find, like a button or a coin.

Sheets, blankets, and plastic bags can suffocate people or pets who get caught in them. Strangulation deaths and injuries can occur anywhere in the home. For example, corded window coverings are a risk for young children and pets.

Drowning is a major safety risk at the home. Children aged 1 to 4 have the highest drowning risk. Weapons are also a major safety concern.





What can you do to help the families and communities you serve?

Actions for Living in a Healthy Home

Stakeholders and service providers should be aware that many families live in blended and extended home situations where multiple families are joined in one residence, causing space to be cramped, and trip and fall injuries to be a higher risk. Encourage and facilitate families to be aware of home hazards and to take action for those family members at highest risk of injuries in all rooms of the home.

Some actions that families can take to increase the safety of their home include:

Help Prevent Trips, Slips and Falls

- Keep floors clear of anything that could cause someone to trip. This includes: clothing and shoes, papers and newspapers, and clutter.
- Use night lights in bedrooms, hallways, stairs, landings, and bathrooms to increase visibility.
- Don't use chairs or tables as ladders.
- Use safety gates to prevent falls down stairs. Repair any stairs that are cracked or worn. Install secure handrails on steps and ramps.
- Use anti-slip mats around and in tubs and showers.
- If an older adult or someone with mobility or balance concerns is present in the home, install grab bars at toilets, showers, and tubs.
- Supervise children and keep their play area away from windows and stairways.
 - Be aware that screens alone cannot prevent children from falling. Use window guards and window stops. Window guards prevent children from falling out of windows. Adults and older children should know how to open these easily in case of fire. Window stops prevent the window from opening more than 4 inches.
 - If possible, open windows from the top to get fresh air, not the bottom.

Help Prevent Fires and Burns

- A smoke/fire alarm should be located on every level of a home and an additional one in or near every sleeping area.
- An adult should always be in the kitchen during cooking in ovens or on stoves. Family members should never put or leave flammable items on or near the stove or cooktop.
- Store matches, lighters, and other heat sources in a safe place like a locked drawer.
- Talk about fire safety with children. Talk about how to prevent fires and what to do if there is a fire.
- Plan and practice a fire escape route.
- Keep a fire extinguisher on each level of the home.
- Keep pathways clear of tripping hazards.
- Keep portable heaters out of doorways, halls, and other busy areas and away from curtains, bedding, and anything that could catch on fire.

Help Prevent Choking and Suffocation

Small children, older adults or other people that need help eating should not eat food that they could easily choke on. Everyday foods like nuts, popcorn, hard candy, or other small foods can easily get stuck in the throat.

- Have children drink while sitting up. Drinks like formula, milk, and juice can make babies choke if they are drinking while lying down, especially when drinking from a bottle.
- Balloons are a choking hazard. Infants and toddlers are most at risk for choking on items like small toy parts, coins, marbles, buttons or anything that can fit in their mouths.
- Do not tie toys or pacifiers to children's clothes. Small children should not wear jewelry around their necks.
- Read every toy package to make sure it's safe for children in the home. Small toy parts are a choking hazard. Only allow children to play with toys that match or are recommended for children below their age.

Help Prevent Strangulation

- Corded window coverings can accidentally strangle infants, children and pets. In 2012, new standards were approved for corded window coverings. If a home has older window coverings, it is best to replace them. Children can accidentally wrap window cords around their necks and become entangled.
- Drawstrings on children's clothing can be hazardous – they can attach to playground equipment, vehicles, or furniture, and may cause strangulation. Children shouldn't wear jackets, hoodies or sweatshirts with drawstrings longer than 3 inches. Drawstrings must be stitched to the back of clothing. Do not purchase clothing with toggles or attachments on drawstrings.



Help Prevent Tip-Over Hazards

Furniture and appliances such as televisions that are not well secured represent tip-over hazards, which can crush and cause head injuries, especially to young children. Parents or caregivers should ensure that furniture and appliances are stable and not prone to tipping.

- Large appliances and furniture (e.g., bookcases) should be anchored to the wall.
- Televisions should be on sturdy, low bases and should be pushed as far back on stands as possible.
- Remote controls, toys, and other items that might attract children should be kept off of TV stands or furniture that represents tip-over hazards.



Help Prevent Drowning

- Parents or other adults should always supervise children and older adults by the water. Life jackets or vests should be worn on docks, at beaches, rivers and by the pool.
- Make sure pools, hot tubs, and spas have a fence around them. Make sure the fence is at least 5 feet high or the height required by the local building code, if higher. Openings in the fence should be no larger than 1/4 inch. Select a pool fence with a self-closing gate and install pool and gate alarms near pools. Surface wave and under water alarms are also available. Make sure pool and spa covers are in good condition.
- Young children should never be alone in the bathtub. Use toilet lid locks when you have toddlers in the home to prevent drowning in the toilet. Remember, children can drown in only a couple inches of water.



TEMPERATURE CONTROL

What are the Health and Safety Risks?

Every home needs to be temperature controlled in order to ensure that families and the house structure are safe from extreme temperatures and is comfortable. A temperature controlled home has balanced temperature and humidity levels. Older homes were constructed with materials and methods that are not very energy efficient. On the positive side, most have good ventilation from infiltration (leaks) of air, which reduce the concentration of indoor air pollutants. However, homes that are not energy-efficient cause increased monthly utility bills, so homes should have a balance of high energy efficiency and adequate ventilation, both of which have to be intentionally part of the design and operation of the home.

Homes that are not temperature controlled may place a family – especially its elderly and ill members - at increased risk from exposure to extreme cold and heat. High temperature and humidity in a home can make asthma, mold, and other indoor pollution worse, as well as cause general discomfort for the family. Having high monthly utility bills can also lead to financial stress for families.

Where Do Temperature Control Risks Come From?

A home's heating and cooling system should provide a stable temperature that also prevents excessive moisture, heat and cold. When it doesn't, families will sometimes go to extreme measures to improve their comfort. To avoid extreme temperatures in their homes, families will sometimes do what they can, such as:

- Turning on the oven, even if it is a gas oven
- Using portable heaters that burn fuel and electric
- Using generators
- Adding fans and window air conditioners
- Overcompensating with heat or cold air to avoid extreme temp during loss of energy or service

There are times when resources are not available for long periods and these temporary fixes above become the only form of heating and cooling they have available to them. However, families should be warned that:

- Long term use of an oven, fuel burning portable heaters, and generators to heat a home creates a fire and burn risk as well as, if the oven burns fuel, a CO poisoning risk to the occupants of the home. These measures may also not prevent excessive cold from impacting the most vulnerable populations, because they heat only small portions of the home.
- Long term use of window air conditioners, or their improper installation or maintenance, can create mold and moisture issues especially beneath the unit, including the window sill trough, siding and all components in the "water run-off" path that these units create.
- Some older people have a very low tolerance to cold and keep their home at very high levels of heat year round. Although this is understandable in that their circulatory system is working hard to keep their body strong and balanced, other occupants may be compensating by opening windows or adding window air conditioners in certain parts of the home. The mixture of heat and cold will start to create condensation in the home building materials and structure. Excessive moisture can rot wood based materials; also paper, fabrics, and gypsum materials are ideal environments for mold and mildew growth. Mold and mildew growth can occur quickly and may hide behind walls, under flooring and wallpaper.



What can you do to help the families and communities you serve? *Actions for Living in a Healthy Home*

Family Health and Housekeeping Habits

Stakeholders and providers should encourage families to assess ways to improve their heating and cooling system and their maintenance. A home energy audit can assess a home's energy use and can suggest strategies that a family can implement to find a healthy compromise to temperature and humidity levels that meet the needs of all of their family members. See www.energy.gov/energysaver for more information.

Insulation

Insulation acts like a blanket around a home and slows heat from escaping the home in the winter and from entering the home in the summer. It is installed throughout homes in the walls, floors, attics, and sometimes basements and crawl spaces. When adding or removing insulation, caution should be taken by the homeowner to look for possible existing **asbestos insulation** (such as having an easily crumbled (“friable”) grainy texture) or **vermiculite** insulation (pellets). These types of insulation were popular at one time but are known to have harmful health effects if the material is disturbed and the fibers become airborne. It is best for homeowners to have a certified insulation contractor or home inspector identify the risk of any material that is suspected of containing asbestos.

Air Ducts

Some homes use forced air systems to provide heating and cooling. In these homes, air travels through a system of supply and return ducts. These may be made of rigid and/or flexible materials. Ductwork can be found in attics, in walls, above ceilings, and under floors. Heated and cooled air leaking from out of ducts should be fixed by sealing the leaks - otherwise the homeowner is wasting energy and money. Homeowners should be instructed to:

- Check air ducts for leaks and repair them, especially in places like attics and crawl spaces, using mastic or foil tape to seal the leaks.
- Keep air outlets and registers open and not block them, such as with furniture or draperies.

General Heating and Cooling Tips

Stakeholders should encourage families to take the following low- or minimal-cost steps to balance energy efficiency with heating and cooling requirements:

- Add a programmable thermostat, or use small room or ceiling fans during the summer, to keep the home cooler in winter and warmer in the summer.
- Change the temperature on the thermostat by 2° to reduce utility bills by about 5-10%.
- Install curtains and/or shades: open them to let the sun shine in during the winter and close them in the summer to keep the heat out.
- Use caulk and weather stripping around windows and doors to stop air drafts. Replace old, cracked or peeling material with new material and seal cracks around pipes.

Indoor Environmental Quality

For Safe and Healthy Homes

Indoor environmental quality refers to the quality of the home's environment in relation to the health and well-being of the family. There can be gases and particles in the air that are dangerous or unhealthy for various family members. It is not always easy to tell if a home has good indoor environmental quality. The air inside a home can actually be worse for a person's health than the air outdoors. Most people spend more than half their lives inside their homes, which is why good indoor environmental quality is so important. The following is a summary of indoor air quality issues in a home for stakeholders and service providers:

Lead

Homes or apartments built before 1978 could have lead paint. Dust from deteriorating lead paint can get into the air, where it can be breathed in, and onto floors, windowsills, and other surfaces, which can be touched and then have the lead dust swallowed. Lead exposure is especially hazardous to children under the age of 6.

Asthma and Allergies

Asthma is a lung disease that can be triggered by indoor air pollution. An asthma attack is when a person with asthma has extra difficulty breathing. An allergy is an immune response or reaction to substances usually not harmful. Many people have allergies to pets dander pollen, and mold.

Mold and Moisture

Mold is a kind of fungus. It grows in wet or damp places and it often makes the indoor air smell musty. It produces spores that float in the air and adhere to surfaces in humid or moist areas of a home. Mold is an asthma and allergy trigger.

Carbon Monoxide

Carbon monoxide (CO) is a deadly gas that is invisible and undetectable without a CO detector. CO can come from fireplaces, fuel burning appliances such as a furnace or gas stove that are not working right, and car exhaust.

Radon

Radon is poisonous gas that can cause lung cancer. It cannot be seen or smelled. It comes from the ground below a home. It enters a home through cracks in floor slabs and basement or foundation walls.

Pests

Pests are unwanted living things in or around a home. Pesticides can help fight pests, but they can also be dangerous to use at home, especially if used incorrectly, and can contribute to poor indoor air quality. It is best to use other, preventive approaches, – part of integrated pest management – such as cutting off pests' access to food and water, before considering using pesticides, and even when they are being used.

Household Chemicals

Many household products can pollute the indoor air if they are not used correctly. Chlorine bleach, cleaning products, alcohol, thinner, and varnish are a few examples. Hobbies and projects like sanding, painting, welding or gluing can pollute the air with dust or harmful chemicals.

Asbestos

Asbestos was used in homes in the past because it has great thermal and fire-resistance. Asbestos fibers are dangerous if they get into the air and are inhaled because they can cause serious long term health problems including lung cancer. Asbestos is commonly found in materials such as roofing shingles and siding; floor tiles and vinyl flooring, backing and mastic; textured and spray-on ceilings and paints; pipe coverings, thermal insulation, and fireproofing. Asbestos should be removed or repaired only by a licensed asbestos abatement professional and not by a homeowner or renter. More information is available by visiting the EPA Asbestos information website at: www.epa.gov/asbestos

Checklist

For Safe and Healthy Homes

This room-by-room checklist is based on one developed by the Healthy Homes Partnership at www.healthyhomespartnership.net and www.extensionhealthyhomes.org. It is useful for establishing a healthy home assessment protocol with the families you serve.

1. Living, Dining, and Family Rooms

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- Vacuum carpets regularly to reduce asthma triggers
- Move window blind cords out of reach of children to prevent strangulation
- Check lighting and extension cords for fraying or bare wires
- Avoid having lighting and extension cords in floor pathways
- Purchase children's toys that do not have small parts for choking and do not contain lead
- Secure heavy items (televisions, bookcases) to walls to prevent tip overs

2. Kitchen

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- Use a range hood exhausted to the outside (or open window) to ventilate while cooking
- Clean up liquids and foods right after spills
- Keep matches, glassware, knives, and cleaning supplies out of reach of children
- Avoid leaving food and water, whether for people or pets, out overnight
- Mop floors at least weekly
- Place Poison Control Hotline number **(800) 222 – 1222** on the refrigerator and in every room
- Do not allow children to be in kitchen unsupervised when the range or oven is on

3. Bedroom(s)

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- Move window blind cords out of reach of children to prevent strangulation
- Make sure room has a working smoke detector
- Make sure the hall outside of bedrooms has a working carbon monoxide detector
- Use mattress and pillow covers, and vacuum carpets regularly to reduce asthma triggers

4. Entry

- Use floor mats by entry doors to reduce bringing in lead dust and other toxins into the home
- Remove shoes at entry if lead is present in the soil or paint
- Repair or install weather seals around the perimeter of doors

5. Bathrooms

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- Use an exhaust fan to ventilate after shower or bath use
- Use slip resistant mats in showers and tubs
- Clean up water from floors right after spills
- Move window blind cords out of reach of children to prevent strangulation
- Keep medicines and cleaning supplies locked away and out of reach of children
- If an older adult or someone with mobility or balance concerns is present in the home, install grab bars at toilets, showers, and tubs

6. Laundry

- Vent clothes dryer to the outside (through roof or wall, not into the attic)
- Keep laundry soaps and detergents out of reach of children
- Wash sheets and blankets weekly to reduce asthma triggers
- Regularly remove lint from dryer screen

7. Attic

- Clean up clutter to prevent rodents and insects from finding places to nest
- Check exposed attic insulation for asbestos and consult with an asbestos professional for removal
- Make sure eave and roof vents are not blocked with insulation

8. Basement (or Crawlspace)

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- Seal holes in walls and around windows and doors to keep rodents and pests out of living spaces
- Clean up clutter to prevent rodents and insects from finding places to nest
- Test the home for radon. If test shows radon above EPA action levels, seal slab and foundation wall cracks, and if the problem persists, consider installing a radon mitigation system
- Keep pesticides and cleaning supplies locked away and out of reach of children
- Seal all cracks in slabs and foundation walls for moisture, radon, and pest protection

9. Garage

- Never run lawnmowers, cars, or combustion equipment inside the garage with garage door closed
- Keep gasoline, pesticides, and cleaning supplies out of reach of children
- Clean up oil, gasoline, and other spills immediately
- If a floor drain is present, make sure it drains to well beyond the outside of the home

10. Outside

- If the home was built before 1978, check painted doors, windows, trim, and walls for lead
- If painted walls, doors, windows, or trim may contain lead, keep children away from peeling or damaged paint and prevent children from playing around the ground next to the walls
- Remove leaves and debris from gutters regularly and extend downspouts to drain away from the house
- Replace missing or broken shingles or flashings
- Clean window wells of trash and debris
- Install and maintain fences completely around pools with openings less than 1/4 inch
- If the home was built before 1978, check hardboard siding for asbestos
- Make sure private wells are sealed and capped
- Consider testing well for pesticides, organic chemicals, and heavy metals before you use it for the first time
- Test private water supplies annually for nitrate and coliform bacteria
- Do not leave open garbage containers near the home
- Repair broken glass in windows and doors
- Seal holes in walls and around windows and doors to keep rodents and pests out of living spaces

11. General

- If the home was built before 1978, use lead-safe work practices for all renovation and repairs and test children in the home for lead exposure
- Check piping connecting the home to the water main and the piping in the home for lead (lead pipes are dull and can be scratched easily with a penny). Lead pipes are more likely to be found in homes built before 1986
- No smoking inside the home, especially with children in the same home
- Have a professional maintain yearly all gas appliances and check for carbon monoxide leaks and proper venting
- Do not use candles or incense in the home when adult supervision is not present
- Secure balcony and stair railings, and install no-slip nosings
- Replace burned-out bulbs in lights over stairs and landings
- Run a dehumidifier if indoor humidity is above 50 percent or there is condensation on windows
- Make sure all gas burning appliances, furnaces, heaters, and fireplaces ventilate to the outside
- Replace the furnace filter with a MERV 8 or higher every three months
- If mold is visible in any room, refer to mold removal guidelines from the EPA, CDC, or HUD
- Install child-proof locks on cabinets and child-proof covers on electrical outlets
- Keep water temperature at less than 120 degrees
- Keep firearms in locked safes
- Use pest management recommendations or safer alternative products before applying pesticides
- Keep all cleaning products in original containers and do not mix two products together
- Keep all hazardous products and chemicals in locked cabinets away from children.

Room by Room Checklist for a Heathy Home

To help connect the room, steps, and hazards please look for the following icons:



Lead



Pests



Indoor Air Quality



Carbon Monoxide



Asthma and Allergies



Home Safety



Radon



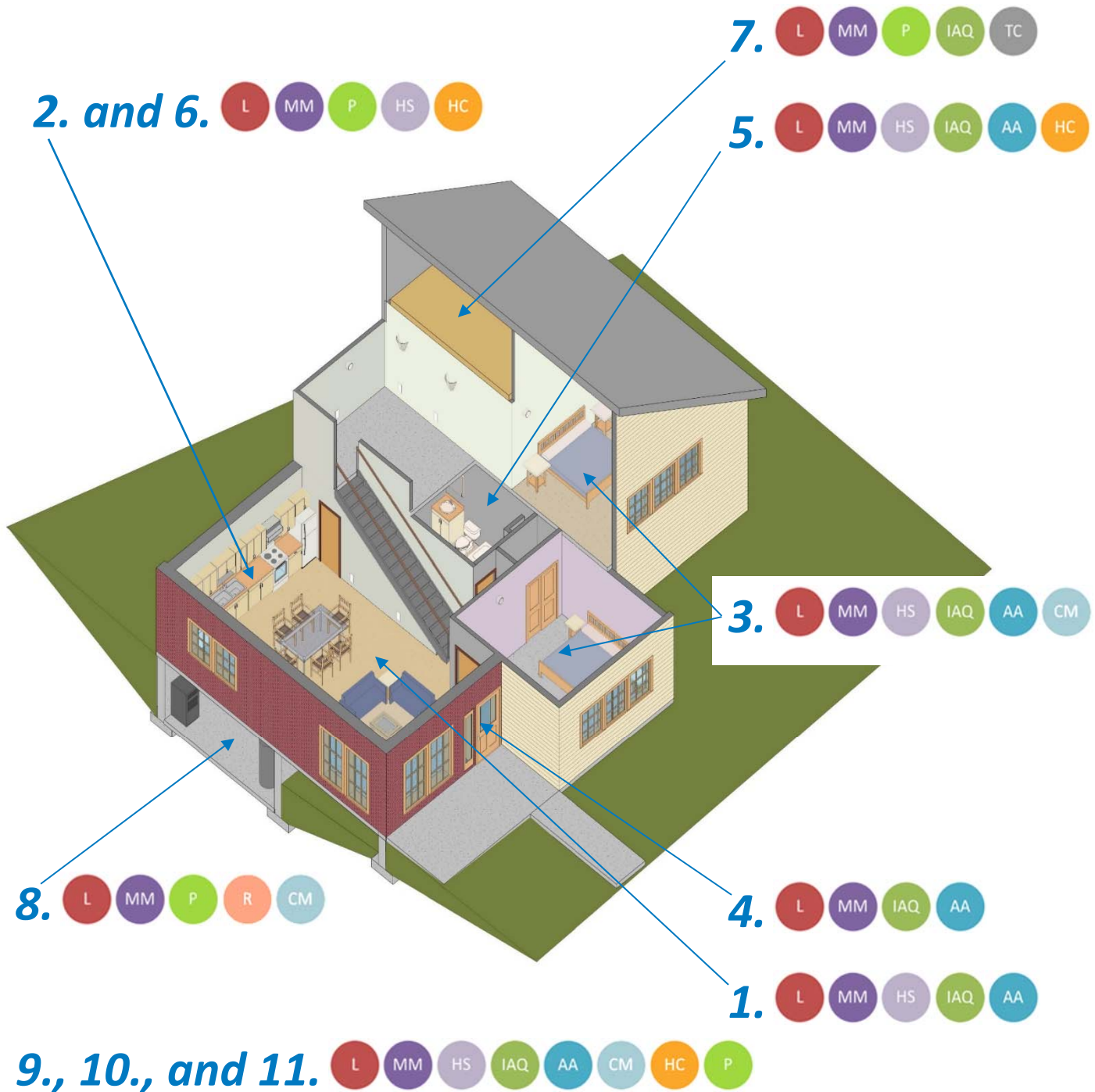
Household Chemicals



Mold and Moisture



Home Temperature Control



Resources

Persons with hearing or speech impairments may access the federal government numbers below through TTY by calling the toll-free Federal Relay Service at (800) 877-8339

General Safe and Healthy Homes Information

U.S. Department of Housing and Urban Development www.hud.gov

Office of Lead Hazard Control and Healthy Homes www.hud.gov/healthyhomes

Office of Education and Outreach, Fair Housing and Equal Opportunity www.hud.gov/fairhousing

U.S. Department of Agriculture, National Institute of Food and Agriculture www.nifa.usda.gov

Cooperative Extension Service for your state land grant university:

www.nifa.usda.gov/extension or www.eXtension.org or your telephone book

U.S. Environmental Protection Agency www.epa.gov

U.S. Centers for Disease Control and Prevention (800) CDC-INFO/(800) 232-4636 www.cdc.gov

U.S. Consumer Product Safety Commission (800) 638-2772 www.cpsc.gov

U.S. Department of Energy www.energy.gov

Local or state health department: Look in your telephone book or online

National Healthy Homes Partnership www.healthyhomespartnership.net

National Center for Healthy Housing www.nchh.org

Children's Environmental Health Network www.cehn.org

National Safety Council www.nsc.org

Pediatric Environmental Health Specialty Units www.aoec.org/pehsu.htm

Lead Poisoning

U.S. Department of Housing and Urban Development

Office of Lead Hazard Control and Healthy Homes www.hud.gov/healthyhomes and lead.regulations@HUD.gov

Environmental Protection Agency (800) 424-LEAD / (800) 424-5323 www.epa.gov/lead

Safe Drinking Water Hotline (800) 426-4791 www.epa.gov/drink

Centers for Disease Control and Prevention www.cdc.gov/nceh/lead

Asthma & Allergies

American Lung Association (800) LUNG-USA www.lungusa.org

American Cleaning Institute (202) 347-2900 www.cleaninginstitute.org

Allergy and Asthma Network: Mothers of Asthmatics (800) 878-4403 www.aanma.org

The Food Allergy and Anaphylaxis Network (800) 929-4040 www.foodallergy.org

U.S. Environmental Protection Agency www.epa.gov/asthma

Mold & Moisture

U.S. Environmental Protection Agency www.epa.gov/mold

U.S. Centers for Disease Control and Prevention www.cdc.gov/mold

Health House www.healthhouse.org

Carbon Monoxide

U.S. Centers for Disease Control and Prevention (800) CDC-INFO/(800) 232-4636 www.cdc.gov/co

U.S. Consumer Products Safety Commission (800) 638-2772 www.cpsc.gov/co

Radon

U.S. Environmental Protection Agency www.epa.gov/radon

State Radon Contacts www.epa.gov/radon/wherelive.html

National Radon Program Services (KSU) (800) SOS-RADON / (800) 767-7236 www.sosradon.org

Drinking Water

U.S. Environmental Protection Agency (800) 426-4791 www.epa.gov/drink

U.S. Centers for Disease Control and Prevention www.cdc.gov/healthywater/drinking

Household Chemicals

U.S. Environmental Protection Agency www.epa.gov/pesticides/regulating/labels/consumer-labeling.htm
and www.epa.gov/saferchoice

Poison Control Center (800) 222-1222

Household Products Database www.householdproducts.nlm.nih.gov

Pests

U.S. Environmental Protection Agency www.epa.gov/bedbugs and www.epa.gov/pesticides/controlling

National Pesticide Information Center (800) 858-7378 www.npic.orst.edu

Home Safety

National SAFE KIDS Campaign (202) 662-0600 www.safekids.org

National Safety Council (800) 621-7615 www.nsc.org

Temperature Control

U.S. Department of Energy www.EnergySaver.gov

Energy Information Administration www.eia.gov

U.S. Environmental Protection Agency

Indoor airPLUS www.epa.gov/indoorairplus

Mercury cleanup and disposal www.epa.gov/cfl

Energy Star www.energystar.gov

Residential Energy Services Network www.resnet.us

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