

RED FEATHER HOME OWNERS MANUAL: A HEALTHY HOME



IT may not seem obvious, but our health is directly related to where and how we live. Most of us spend well over 50% of each day in our home.¹ We sleep there, eat there, and spend quality time with our families there. It makes sense that the indoor environment is one of the major influences on personal well-being and long-term health. But, what makes a home a healthy place to live? According to the U.S. Environmental Protection Agency (EPA) and other federal departments, a healthy home is **dry, safe, well ventilated, pest free, contaminant free, well kept**, and, most importantly, **regularly maintained** – both inside and out. The guidance and strategies presented in this chapter will help you identify the characteristics of a healthy home and describe easy, do-it-yourself (DIY) steps to make where you live a healthier place.

In this chapter we will:

- Present the most common influencers of **indoor air quality (IAQ)** and considerations for reducing the risks and triggers of asthma, allergies, and other chronic illnesses.
- Discuss controlling moisture to reduce or eliminate mold and mildew growth.
- Explore some of the health risks of pests and how integrated pest management practices keep pests from wanting to live in your home while minimizing the use of poisonous chemicals.
- Investigate different methods to identify, eliminate or remediate other naturally occurring and human-created contaminants, including: tobacco smoke, carbon monoxide, lead dust, radon, asbestos, and the volatile organic chemicals (VOCs) used in the construction, maintenance, and cleaning of your home.
- Describe a few simple home maintenance techniques to keep your home healthy and in tip-top shape.

The indoor air quality (IAQ) of your home may cause or add to health problems related to breathing. Medical research indicates allergies and asthma problems are highly correlated to the air we breathe. The

► **Indoor Air Quality (IAQ)** *the quality of air inside your home after pollutants like pollen and man-made chemicals build up*

National Center for Healthy Homes published a compilation of modern scientific research on IAQ and healthy homes in “Science Supports Action Now to Make High-Risk Homes Healthier” stating air quality inside our homes can be between 2 and 100 times more polluted than air outside. As such, we must take steps to ensure the air we breathe in our homes is as clean as possible. To the extent that **environmental allergens** enter our homes, such as mold and mildew caused by excessive moisture, or pests, pets, pollen (grass, tree, and weed), smoke and other self-generated hazards, to naturally occurring hazards like radon gas, we must put strategies in place to minimize the health risks for our families.

► **Environmental Allergens**

are anything from pollen to cleaning supplies to pesticides to carpet that can cause lung irritation in an asthma sufferer

The housing problems that can make us sick are related. Lack of ventilation and airflow keeps toxins and allergens in and allows moisture and relative humidity to build up.¹ Moisture causes paint to deteriorate, attracts and keeps pests around, and invites mold and mildew to grow.¹ Pests find holes and enlarge them; that in turn, can become leaks, which in turn may encourage homeowners to use strong poisonous pesticides around their families.¹



Through the course of reading and working through this chapter, the relationship between the principles of a healthy home and the health of your family will become more apparent. To walk the path of a healthy home your strategy must be integrated and holistic.

7 STEPS TO A HEALTHY HOME

1 KEEP MOISTURE OUT!

Standing water or too much **relative humidity (RH)** provides a moisture source for mold spores to grow. Moisture is also attractive to bugs and other pests. Sources of water from the outside of your home may include leaks from the roof, around windows and doors, or from an improperly graded drainage. Sources inside your home may include leaks from plumbing, such as supply or drain lines or even the hot water used in the morning's shower.²

► **Relative Humidity** describes the amount of moisture in the air at a given temperature. Relative humidity (RH) greater than 50% can cause structural damage to homes and encourage mold to grow

2 KEEP YOUR HOME SAFE.

Pesticides, cleaning, building or automotive products are often poisonous and require proper labeling and storage where children cannot access them. Keep children's play areas free of sharp or hard objects and furniture. Clean up clutter to limit tripping and falling hazards. Use safety gates at the top and bottom of stairs. Smoke alarms, carbon monoxide detectors and fire extinguishers installed correctly and conveniently in your home will reduce the risk of property damage or death.²

3 KEEP YOUR HOME WELL-VENTILATED.

Clean, replace or install exhaust fans in bathrooms and kitchens to reduce the concentration of contaminants in your home. Vent fans with lint/dust build-up are also a potential fire hazard. Be sure these fans vent to the outside. Open windows to allow for the natural exchange of air with the outside.²

4 KEEP YOUR HOME PEST-FREE.

Pests such as rodents, roaches, dust mites and bed bugs want a nice warm place with food and water to live. Don't invite pests into your home or tolerate them once they get in. Keep unwanted visitors out of your home by sealing up cracks and other openings, store food in pest-resistant containers, and use common-sense **Integrated Pest Management (IPM)** strategies to decrease food, water, and shelter sources for pests inside and around your home.²

► **Integrated Pest Management (IPM)** an approach to pest infestations; whereby the resident works with professionals to keep pests out and avoid inviting them in.

5 KEEP YOUR HOME CONTAMINANT FREE.

You may not realize it, but many homes contain **volatile organic chemicals (VOCs)** and gases. Some are naturally occurring, like radon gas. Radon gas percolates up from the soil because of natural soil and rock decay. Some contaminants are ingredients in construction materials, like asbestos or lead. Other contaminants occur from regular home use, like **carbon monoxide (CO)**.²

► **Volatile Organic Chemicals (VOCs)** include both human made and naturally occurring chemical compounds. Most scents or odors are VOCs. Can be harmful to humans, animals and the environment.

► **Carbon Monoxide** is an odorless, colorless, poisonous gas produced by the combustion of fossil fuels

6 KEEP YOUR HOUSE CLEAN.

Food, water and dirt invite pests like mice, cockroaches, ants, mites, bed bugs, and other small critters into your home. Frequent cleaning minimizes dust and other environmental allergens that can cause chronic, health problems, such as allergies and asthma. Reducing clutter inside takes away places for pests to hide and live.²

7 KEEP YOUR HOME WELL-MAINTAINED.

Maintaining your home on a regular basis will help ensure that small problems don't become bigger and more costly problems later on. Repair cracks and holes in foundations and exterior walls to minimize points of entry for pests or moisture. Fixing peeling paint will reduce the risk of lead contamination. Replace furnace filters regularly to keep indoor allergen levels manageable. Check the batteries on your smoke detectors every six months and test each unit monthly by pushing the "TEST" button.²

When these seven steps are put into action together, they create a comprehensive action plan to make your home a healthier place to live.

STEP 1: KEEP MOISTURE OUT!

WHY? Removing moisture from the home reduces asthma triggers and moist conditions that can complicate breathing issues. Removing excessive moisture from your home also reduces habitat for pests, mold and the likelihood of lead-based paint peeling.

A certain balance of moisture is necessary to keep your home comfortable – too little moisture and your skin dries out. But, too much moisture and pests and mold are more likely to find your home inviting.

HOW DOES MOLD GROW?

Mold is a living organism that needs an organic food source; like cardboard, jute or even dust; and water to live. Mold does not need sunlight to grow. A leaky pipe, standing water or even condensation can provide enough water for mold to flourish or for pests to find your home an inviting place to live.

If a part of your home starts to develop mold, don't just clean it up, try and figure out the water source and fix the leak. First, be on the lookout for plumbing leaks and solve the problem immediately. Leaks may develop around sinks, faucets, tubs, showerheads, drains, and the hot water heater. Check likely areas in and around your home (such as the attic or around doors and windows) for leaks after heavy rain or snowstorms. If you notice a leak identify the source and fix it right away, return to cleaning up.



Mold is evidence of an improperly vented exhaust fan.

When cleaning up mold, don't overuse harsh and caustic chemicals like undiluted bleach. These chemicals don't solve the problem caused by the leak and can cause breathing issues for sensitive residents. Always make sure your work area is well-ventilated when cleaning up mold. Ventilation not only keeps the fumes of harsh chemicals to a minimum, but also helps to dry out the area.

EXTERIOR SOURCES OF MOISTURE

Your roof is the most obvious source of protection from water falling from the sky. Common places for your roof to leak are at **penetration points**. Examples of water penetration points include exhaust vents for furnaces and plumbing stacks. Another place to look for leaks is the **ridge vent** if there is one present. Over time, defects may develop that allows water to infiltrate through this gap. While wearing a dust mask, use a flashlight to inspect your attic on a regular basis for signs of water, such as

► **Penetration Points** are any hole in the exterior of the building

► **Ridge Vent** is the engineered gap at the peak of your roof that allows air to pass through

stains on the underside of your roof or damp insulation. **Red Feather recommends inspections before and after the heavy rain season – before it gets too hot in the attic.**



Broken windows expose the homes interior to outside temperatures.

Moving from the roof down the structure – windows, doors, or even siding might leak if proper steps weren't taken to ensure that the building's **thermal and air boundaries** were sealed properly. When inspecting windows, doors and walls be sure to look inside and around these

openings for any sign of moisture. An example might be bubbling paint or even small amounts of pooled water. Fix any downspouts that might not be draining water away from the structure.⁷

► **Air Boundary:** *an attached membrane or other weatherization measure that reduces or eliminates air movement into and out of a building*

► **Thermal Boundary:** *restricts or slows the loss/gain of heat in a building*



Frost indicates accumulated moisture in the attic space

Finally, draw an imaginary circle out from your house a minimum of 10 feet. Check the grade of the ground in this circle out from the foundation looking for signs of erosion, ruts or pooled water. These might be indicators that the **drainage or grade** of your home is inadequate to keep water away from your foundation. Typically, drainage should slope away at least five inches within the first ten feet from your foundation.

► **Drainage or Grade** *is a hill that slopes away from your home in all directions to allow for above ground water from precipitation to runoff and drain away.*

INTERIOR SOURCES OF MOISTURE

There are many places inside your home where moisture might accumulate. The most obvious places to look for standing water are around pipes and plumbing fixtures. Be sure to open cabinets and look inside for damage or signs of water. If you see any signs of water, then determine

the source of the leak. Is it a supply line or drainage line? Fix the problem immediately. Look for leaks around tub and shower enclosures or kitchen countertops that are missing caulk, or show signs of mold growth such as discoloration or black spotting. Check around toilets for indications of water. Does your hot water heater have pools of water or dampness underneath? **Red Feather recommends consulting with a qualified plumber if you are uncertain how to repair the leak.**

Using your home generates moisture in the form of invisible vapor. This is an indirect source of moisture and may not be directly linked to your plumbing or exterior systems (roof, windows, walls, drainage). The following table illustrates how much water vapor is generated during typical household tasks. If measures are not taken to remove this moisture from the air, then certain areas of your home may become more humid, in turn inviting mold to grow and pests to stay.



TASK	WATER VAPOR GENERATED
Steam from shower	1.0 pint / 10 minutes of shower
Clothes drying	5.0 pints / load
Cooking dinner	1.2 pints for a family of four (1.6 pints for gas)
Respiration	0.4 pint / hour
Combustion (unvented space heater)	7.6 pints/ gallon of kerosene
Floor mopping	1.5 pints / 50 square feet

Depending on the temperature, 1.0 pint of moisture can increase relative humidity (RH) by 8% in a 1500 sq. ft., single story home.⁸

The bathroom is perhaps the moistest room in the house. Not only does this little room contain a tub/shower, toilet, and sink; but as the table above indicates, using this room also generates large amounts of airborne water vapor – as much as 1 pint in 10 minutes. If this water doesn't have a way to get out, then when it lands, mold spores may find enough water to gain a foothold. All bathrooms should have a way to vent or exhaust moisture. A window is one option, but if no window exists, then venting through an exhaust fan to the outside is required by most building codes. The fan must vent the moisture to the outside – not just into the attic or crawl space. A typical bathroom exhaust fan requires up to 45 minutes to remove the

amount of water vapor generated during a ten-minute shower. Use a timer to make sure that your fan stays on long enough to remove the moisture from the air.⁸



Another often-overlooked source of moisture in your house is the clothes dryer. This appliance creates a perfect environment for mold to grow. Think about it, lint is an organic material. The air temperature of a dryer vent is perfect for mold, typically between 70 and 100 degrees Fahrenheit and RH may exceed 70% in the duct.⁸ Do you remember how much moisture a dryer extracts during a single load of laundry? (Answer = 5 pints).

Clothes dryer rules for homeowners:

- Dryers must always vent to the outside. If you live in a mobile home, the dryer must vent beyond the skirting. Just like an exhaust fan, never vent dryer exhaust to a crawl space.
- Whenever possible, when running dryer ductwork, use smooth metal ducting and limit 90 degree elbows to no more than two.⁸
- Cleaning the ductwork regularly with a shop vacuum will limit the risk of fire and mold problems.

RESPONDING TO MOLD

The best way to respond to mold is to prevent it altogether. The three easiest ways to prevent mold are:

1. Use kitchen and bath fans.
2. Do not overuse humidifiers.
3. Fix exterior water and plumbing leaks promptly.

The New York City Department of Health and Mental Hygiene developed comprehensive instructions for mold cleanup and remediation.⁹ These guidelines describe

five levels of cleanup based on the square footage of the affected area(s). Generally speaking, the larger the area, the more expertise and specialized equipment required to clean up the mold. Specifically, isolated areas less than ten square feet are considered **Level 1** and can be cleaned by homeowners or residents. In the event that your home develops a Level 1 mold problem, then use the following five steps to address the situation.⁸

STEP 1: Identify the extent of the moisture damage, contamination, and the source. At this stage, determine the necessary amount of protection equipment to safeguard your health during containment and remediation. When dealing with mold, always wear protective clothing: gloves, eye protection, and a **respirator**.

► **Respirator** is a mask worn over the mouth and nose, or whole face that protects from dust, smoke, or other VOC. (Minimum suggested mask: N-95 or similar)

STEP 2: Dry the affected area in the short term.

STEP 3: Design a long-term plan for eliminating the source of moisture and procedures to clean up the mold.

STEP 4: Remove all contaminated material and dispose of it appropriately.

STEP 5: Implement the repairs to address the moisture and prevent future problems.

WHAT YOU WILL NEED:

- A properly fitted N-95 facemask (see <http://wxtvonline.org/2010/09/respirators-ppe/> for a demonstration on properly fitting a facemask)
- Rubber gloves
- Leak proof safety glasses.¹⁰
- Stiff bristle brush
- Commercially available biocides can be found at most hardware stores. **RF does not recommend using chlorine bleach because its chemical properties don't soak deep enough to kill the embedded "roots" of mold.** Always follow the biocide manufacturer's usage and application instructions. Be sure the surface is clean before applying.



► **Biocide** is a chemical proven to kill mold

Keep the work area well ventilated. If a person with allergies or asthma lives in the home, they should stay out of the home while the mold is cleaned up.



CLEANUP PROCEDURE

These steps are adopted from the New York City Health and Mental Hygiene Department's *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. These instructions are only for moldy areas that are less than ten square feet (approximately 2 feet by 5 feet).

1. Difficult to clean surfaces and entry/exit routes out of rooms or the house should be sealed with plastic and tape to minimize the spread of dust and mold spores.

2. Efforts should be taken to reduce the amount of dust generated during removal of contaminated building materials. Use a **HEPA vacuum** or household mister bottle filled with tap water to reduce the amount of airborne dust.

► **(HEPA)** High Efficiency Particulate Air filters removed at least 99.97% of the dust particles that pass through it.

4. For moldy materials that can be cleaned, such as windows, ceramic tile and some wood surfaces, use a mild soap or detergent and warm water. (You may also use a biocide or diluted bleach solution.) Materials that are not easily cleaned include drywall, silicone caulking or carpet. Materials that cannot be cleaned should be removed from the premises in sealed plastic bags. Plastic sheeting used during the remediation process should also be discarded.

There are no special requirements for disposing of moldy building materials in landfills.

5. After removal of all contaminated materials, clean the area with a HEPA vacuum or mop with a mild detergent (like Simple Green™) or soap and warm water.

6. All work areas should be dry and free of visible signs of mold, dust and debris before installing new building materials.

7. When completed, be sure that the underlying cause of the mold – the source of the moisture – is repaired, and all additional mold discovered during remediation was removed.



Since this chapter is geared towards the individual homeowner, only Level 1 remediation steps are summarized here. Cleaning areas larger than 10 sq. ft. requires more specialized respirators and equipment. For more information, see the NYC Department of Health guide found at <http://www.nyc.gov/html/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>.

STEP 2: KEEP YOUR HOME SAFE

WHY? Experts suggest that most injuries happen in and around the home. Taking a few simple precautions in your everyday activities can prevent most of those from ever occurring. Injuries are not accidents – they are preventable – accidents are not.

Did you know that young children and older adults are more likely to be injured in a home than in a car? In homes, the leading causes of death or disability come from falls, fires, poisoning, drowning, suffocation, choking, and guns.¹² In this section we suggest simple preventions for falls, slips and trips; burns and fires; and poisoning hazards in your home.

DID YA KNOW?

That in 2010 over 26,000 people died in the US from unintentional falls?

That over 33,000 people died of poisoning the same year in the US?

PREVENTING FALLS, SLIPS, AND TRIPS

Here are a few simple ways to protect yourself and your family from injury due to a fall.

- Keep the floor clear of excess clutter. Be sure to put away or recycle papers, boxes, groceries, toys, or anything else that might cause someone to trip or fall.
- To protect children when they fall, install protectors around sharp furniture edges.⁷
- CAUTION: WET FLOOR! Pick up liquids that spill to prevent a slip and fall.
- If children live in or visit your two-story home, use stair gates at the top and bottom of the stairs.
- When using a ladder, be sure to follow the 4:1 rule.¹³ The rule states that for every 4 feet of ladder rise, the base of the ladder has to be 1 foot from the wall surface. For example, a 12-foot ladder needs to be a

minimum of 3 feet from the wall. Whenever possible, ask a spotter to hold onto the base of the ladder to keep the ladder and you steady.

- For rugs in your home, use non-skid mats or tape to keep rugs securely in place.
- Bathroom mats should have nonslip rubber backs.¹
- Keep your home well lit so it's easier to see at night. Install night-lights in hallways and dark bathrooms.⁷

BURNS AND FIRES

Here are a few simple ways to safeguard your family from fire and burns.

- Store all flame sources (lighters, matches, etc.) in a locked drawer or storage area.¹²
- Don't let children play near the stove.¹²
- Set water heaters to 120 degrees F, or the middle setting to prevent burns and conserve energy.⁷
- Teach your children about fire and fire safety. Children should be aware of the family's **Fire Plan**. Most fire departments have resources to help you instruct your children about fire safety.
- If you use space heaters during the winter, place them out of heavy traffic areas and away from walls or curtains. Explain to your children how the heater can burn them.¹²

► **Fire Plan** is a plan for each family member to get out of the house in the event of a fire. Normally includes a meeting spot a safe distance from the home



Un-vented combustion space heater.

- Make sure your smoke alarm(s) is/are in good working order. Read the directions and become familiar with how your smoke alarm is supposed to function. Test your smoke alarm monthly and replace batteries at least annually. From time to time the smoke sensor

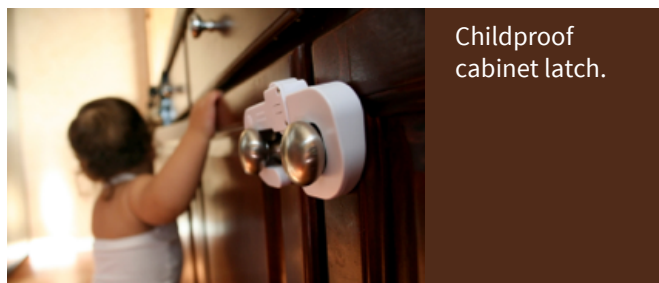
in a smoke alarm will fail. When this happens, even a new battery will continue to sound the “test” signal. It is time to replace your smoke alarm.

HAVE A FIRE PLAN:

No matter how many fire extinguishers and smoke alarms in your home, nothing can substitute for the most important safety tool: a fire plan. Make sure everyone in the family knows how to get out in a hurry, where to meet outside, and how to call 911. Even if you think you’ve put out a fire on your own, don’t cancel that emergency call. Leave it to the pros to decide if it’s really out.

POISONING HAZARDS

Commercially available products (like cleaning supplies, construction materials, automotive fluids, pesticides, and even medications) can harm you or the environment if they are not stored and disposed of properly. Children are especially at risk of accidental poisoning from these chemicals. They are often in decorative bottles that look like soft drinks to youngsters. Store these chemicals safely so children don’t decide to play with, eat or drink them. Use childproof cabinet latches in drawers and cabinets throughout your home.⁷



Childproof cabinet latch.

HOUSEHOLD CLEANERS AND OTHER CHEMICALS

How can I protect myself, family and home from the effects of chemically created products? The best way is to try and avoid products with labels that indicate harm.

For example, the most dangerous products are labeled with “DANGER.” These products can be very harmful or even fatal if not handled properly. Often times products labeled with “DANGER” can be flammable, highly toxic and even poisonous. Examples of these types of products include toilet bowl cleaners; drain openers, or oven cleaners.³



Products labeled with “CAUTION” or “WARNING” are less harmful than “DANGER,” but still may cause burns or breathing issues for sensitive people. These types of products should be used sparingly while following the manufacturers instructions for use.³

Some products like Old English™ and Mr. Clean™ warn consumers that their chemical make-up may cause irritation, injury or inflammation on contact.³ If you skin is sensitive to these chemicals, wear protective clothing to limit your irritation.

Another strategy for combating the effects of chemically intensive cleaning products is to choose green cleaning alternatives. For example, choose cleaning products that are:

- Unscented, concentrated, or biodegradable
- Non-toxic
- Low or No VOC (volatile organic chemical)
- *Green Seal Certified or Design for the Environment* (U.S. EPA)
- **OR** Homemade cleaners (see the “DIY Green Cleaner Recipes” section on page 15 for how to make homemade cleaners).

Why would a consumer choose homemade green products over traditional, commercially available cleaners? First, making your own cleaning products cost about half as much as what the store sells. On top of that, homemade cleaners are less harmful to the user (especially users with asthma or impaired breathing) and the environment.

The following section was adopted from the National Tribal Healthy Homes Action Steps and showcases how to use chemicals safely by following these simple rules:

- Read the label – ALWAYS
- Never buy more of a product than you need to complete the job. Try to buy the “safest” and least harmful chemical that will do what you need. Always buy chemicals with childproof containers. Give leftover chemicals to someone else who can use them.

- Keep the phone number for the Poison Control Center (PCC) near your phone. The phone number for every PCC in the United States is **800-222-1222**. Call this number 24-hours a day, 7 days a week to talk to a poison expert.
- Never mix products together, unless the labels indicate it is safe to do so. For example, chlorine bleach and ammonia should never be combined. The resulting mixture creates a poisonous gas. This gas killed hundreds of thousands of people during WWI.
- Keep pets and children away from the work area when hazardous chemicals are in use.
- Never leave harmful products where children might see or reach them.
- Keep products in their original containers with their warning and labels intact.
- If no one else can use your chemicals, find out where the hazardous chemical drop off point is in your community, and drop them off.

PESTICIDES

Common household items like flea collars, ant and roach sprays, rat poison and garden weed killers are examples of pesticides you might find at home.¹² It is important to use pesticides the right way because they can be very dangerous when not used according to the manufacturer's instructions. Some chemicals in pesticides have been associated with asthma and allergy complications, nerve damage, birth defects, and even cancer.¹² Avoid breathing fumes or dust from pesticides.¹² Even touching a floor where pesticides were used can be dangerous.¹²



Children are the most at risk of complications from pesticides. While crawling and playing in the house and outside, they may come into contact with pesticide residue. Young children like to put things in their mouths that have been on the ground and may come into contact with a pesticide or residue. To use pesticides safely:

- Keep these products out of reach of children
- Keep children away from an area where pesticides were applied per the manufacturer's instructions.
- Take precautions to protect your lungs, eyes and skin when applying pesticides.

- Always wash your hands after applying and storing a pesticide. Never smoke, eat, or drink when using any chemicals.

Insecticidal Soap Spray

Combine 1 – 2 tablespoons of liquid soap (**RF recommends liquid Pure Castile Soap**) with 1 quart of water in a bucket. Mix together then transfer to a labeled spray bottle as needed.

MEDICINES

Taking medicines that have not been prescribed for you can be very harmful and even fatal. Keep all medicines, including vitamins, out of the reach of children. For example, children can often overdose on the iron found in children's vitamins – iron can be highly toxic requiring emergency medical treatment. Only purchase products with childproof caps.¹ Explain to children that while medicine may look, and even taste like candy, it is not. Ask your children to always ask permission from a parent or guardian before taking any pills. Take expired medications to the local disposal site, usually a police or fire department.



STEP 3: KEEP YOUR HOME WELL-VENTILATED

WHY? A well ventilated home reduces moisture and removes other airborne contaminants that can lead to mold or mildew or invite pests in, which in turn can complicate health issues such as asthma or allergy attacks.

“Ventilation refers to the exchange of indoor and outdoor air. Without proper ventilation, an otherwise insulated and airtight house will seal in harmful pollutants, such as carbon monoxide, and moisture that can damage a house.”¹⁴

It is important to ventilate your home because gases from combustion appliances (gas furnaces, stoves or wood burning fireplaces) can accumulate in the living area and threaten your well-being and health. In addition, a home that is not properly ventilated can increase the amount of moisture in the residence that can lead to mold problems. Ventilating your home combines the physical characteristics of your home and procedures you perform to make sure moisture and poisonous gases have a way to exit the home.

There are three ways to ventilate a home. First, **natural ventilation** is the unregulated exchange of air by opening windows, doors, and through air leaks. Next, **spot ventilation** moves air by using exhaust fans to remove allergens, pollutants, and moisture from the air in a particular room, like the bathroom or kitchen. Make sure that exhaust fans vent outside and not just into attics or out into the living area.⁷ Finally, **whole-house ventilation** entails using fans and/or duct systems to either remove the stale air or bring in fresh air to a home.¹⁴

► **Natural Ventilation** is opening windows to allow wind and air pressure to exchange the indoor air

► **Spot Ventilation** is the mechanical air movement controlled by localized exhaust fans

► **Whole House Ventilation** uses ducts and fans to remove stale air from the indoor environment and replace it with fresh air

STEP 4: KEEP YOUR HOME PEST FREE

WHY? Reduces allergens from pests and minimizes the need for pesticides.

Cockroaches, mice and other rodent infestations in homes affect many residences. “Exposure to pests can also exacerbate asthma and has been associated with the development of asthma.”¹⁵ Oftentimes, homeowners will use an over the counter pesticide or hire a professional to apply a controlled pesticide to rid the structure of pests – without realizing the potential health risks these chemicals can have on their health. A better way to handle these types of infestations is through an **Integrated Pest Management (IPM)** approach.¹⁶



► **Integrated Pest Management (IPM)** – an approach to pest infestations; whereby the resident works with professionals to keep pests out and not inviting them in

Like people, pests need three things to survive: water, food, and shelter. IPM requires the coordinated efforts of both the homeowner or resident and the IPM contractor in order to protect your family’s health and safely control pests. In effect, IPM treats both symptoms (the pests) and the source (the trash or mess) that attracts the pests.³ These simple steps are adopted from the EPA’s publication, “Preventing Pests at Home” and describes starving pests out, dry them out, and keep them out.¹⁷

STARVE THEM OUT!

“Pests will eat just about anything, but they might leave you alone if they don’t have easy access to food.”¹⁷

- Roaches love cardboard boxes and can climb into these items with ease – Seal up boxes and bags of food.
- Store open foods (e.g. cereal, flour or sugar) in containers or plastic bags.
- Immediately clean up spills and crumbs.
- Like the family dog, pests love to eat the stuff off your plate. Clean dirty dishes right after a meal.
- Keep a tight lid on trash and empty it often. Place trashcans far away from any entrance.
- Don’t leave pet food out overnight.



DRY THEM OUT!

Roaches can live for up to one month without food, but without water roaches can die in a week's time.¹⁷

- Always drain dishwater from the sink. Roaches can swim and you might wake up to a roach pool party.
- Wipe up water and other spilled liquids off the counter as soon as you first see it.
- Fix (or report to the housing manager, if you live in managed housing) leaky faucets, radiators, dishwashers, washing machines, toilets, or drain lines.
- Limit the use of humidifiers. If you have a damp area, such as a crawl space, use a dehumidifier to reduce the moisture level.⁷
- Empty excess water in flowerpots and plant stands. Even a small amount of water can be enough for a roach.

KEEP THEM OUT!

By keeping pests out of your home you can prevent them from ever endangering your family's health.¹⁷ Think small – rodents and roaches can squeeze in almost anywhere.

- Seal cracks and openings along baseboards, behind sinks, around pipes, and windows.
- Repair holes in door and window screens to prevent insects and other pests from entering your home.
- Check boxes and bags for roaches before bringing them inside the living area.
- Set traps to control rats and mice. If you use baits, be sure to place them where children and family pets can't touch them.

FOR MORE INFORMATION about IPM, refer to the EPA's Pesticides program website at <http://www.epa.gov/pesticides/>. Or call the national pesticide information center at: 1-800-858-7378.

STEP 5: KEEP YOUR HOME CONTAMINANT FREE

WHY? Reduces the risk of serious illness, injury, or even death. Reduces the possibility of injury or death from fire. Reduces risks of lung cancer, mesothelioma, and lead poisoning. Consider implementing a "smoke-free" housing rule.¹⁸

Tobacco smoke

hurts everyone, but is especially harmful to children. Second hand smoke affects people differently, depending on their age and health. There is no risk-free level of exposure.¹⁹ Second-hand smoke is so dangerous to little ones because their bodies and lungs are still developing. Because children are smaller, they breathe more quickly and take in more harmful chemicals for their size than adults do. In addition, their immune systems are less developed and are less likely to have built up an immunity to smoke's harmful substances.²⁰ Smoke outside, at least 20 feet away from doorways and open windows, and ask your visitors to do the same.^{3, 18}



If your home was built before 1978, you should assume it was painted with **lead paint**. The older your home, the more likely your home was painted with lead-based paint. Don't disturb old paint that may cause lead dust to become airborne. Exposure to lead dust in children can lead to lower IQ's, learning and behavior problems, hypertension and other neurological impairments.¹ If you are unsure if the paint in your home is lead-based, inexpensive test kits are available at your local hardware store that will confirm your suspicions immediately with surprising accuracy. If your home tests positive for lead paint, then follow lead safe work practices during repair or repainting to control, contain and cleanup lead dust.¹⁸ Read the EPA's Lead Renovation, Repair, and Painting Program Rule for additional information about working with lead paint.²¹ Available at <http://www2.epa.gov/lead/renovation-repair-and-painting-program>.

Even if you are not repainting or renovating you can still protect your family from lead hazards. Wash children's hands and faces with warm water and soap often, but especially before eating. Keep lead dust down with good housekeeping. Wipe down floors, windowsills and other surfaces with warm water and soap once a week. Never sweep, vacuum or dry dust in a room that has lead dust – you won't be able to pick up the dust and worse you could stir it up. Keep cribs away from windowsills.¹¹ Don't let children chew or bite windowsills.

Asbestos was a common component of many insulation and wallboard materials before it was banned in 1978. If your home was built before 1978, then it is likely your home has asbestos either in the insulation or drywall components. Be careful when renovating, insulation on pipes and vermiculite attic insulation can contain asbestos.⁷ Asbestos is mainly hazardous in the dust form, when it can enter your lungs. If you feel you have asbestos in your home, use wet cleaning techniques that keep dust to a minimum. Avoid disturbing walls or insulation or doing anything that might stir up dust. You can also try to minimize the number of flat surfaces for dust to land. Consider installing wire shelving to reduce dust in closets and pantries.



Removing black mold from a home in Rocky Boy.

Construction materials are often manufactured using hazardous chemicals and processes. Products such as orientated strand board (OSB), carpeting, paint, countertop laminates, and even concrete produce some amount of **off-gassing**. In new homes, these chemicals can aggravate asthma and allergies. These VOCs will dissipate over time, usually during the first year.

➤ **Off-gassing** is the evaporation of VOCs at normal temperature and atmospheric pressure

The construction process also generates more moisture than you could possibly imagine, approximately 6 tons must evaporate or otherwise exit the structure during the first year.²² Therefore, during this time it is important to ventilate your home often and stay alert for signs of moisture, like dark spots, peeling paint, or a puddle. If you notice any of these signs then take steps to dry up the area or contact a professional or your homebuilder.

Carbon monoxide (CO) is an odorless, colorless gas caused by combustion of fuels. If your home's furnace and cooking appliances are improperly vented then you could suffer carbon monoxide poisoning. Symptoms such as light-headedness, dizziness, nausea or passing out are examples of carbon monoxide poisoning. If left exposed to the gas, death could result. Never use your stove or oven to heat your home.¹ To mitigate the risk of CO poisoning, place an alarm on each floor and outside of sleeping areas.⁷ Also, test the alarm once a month and change batteries at least once a year. **Red Feather recommends that a trained HVAC professional inspect gas appliances once a year to ensure they do not release excessive CO during the combustion process into the living area.**



Plug in carbon monoxide detector.

Test your home for **radon**, a naturally occurring radioactive gas caused by decay in the ground that enters homes from the soil and has been linked to lung cancer and other diseases. Do it yourself kits are available at most hardware stores. Also, some state agencies offer free test kits. When using the kit, you will put the test sample up in your home for 3 to 90 days, and then send off the collector to a laboratory for analysis. Once the level is determined you can decide what course of action is necessary to remediate the risks from this gas.

TO LEARN MORE about radon and how to receive a discounted radon home test kit, contact your state radon office at www.epa.gov/radon or call 1-800-SOS-RADON.⁷

STEP 6: KEEP YOUR HOME CLEAN

WHY? Clean surfaces reduce asthma triggers, allergens from dust, and bacterial cross-contamination. Food and dirt can also attract pests. Dusting and vacuuming more regularly and shaking out carpets can improve your home's Indoor Air Quality.

Throughout this chapter on Healthy Homes, the importance of a clean and clutter free home is showcased as a major factor in reducing allergens, indoor contaminants, and discouraging pests from invading your home. The following section offers several simple suggestions to maintain a well kept home.

DID YA KNOW?

Asthma Stats:

- American Indian/Alaska Native adults are 30% more likely to have asthma as non-Hispanic White adults
- American Indian/Alaska Native children are 20% more likely to have asthma as non-Hispanic White children

Trashcans should have a tight fitting lid and be emptied before they overflow.¹¹

Pests need food. Here are a few suggestions for keeping a clean home related to food: first, store food in tightly sealed containers. Make sure guests and residents eat meals at the table – don't let them walk around with food. Spills and crumbs should be picked up promptly and the area cleaned thoroughly. Don't let dirty dishes sit in the sink.¹¹

DID YA KNOW?

...that cockroaches live in paper bags or boxes and may even eat glue?

...that allergic reactions and asthma episodes can be triggered by exposure to dust mites, cockroaches, pets, and rodents?

...that pests, such as cockroaches, fleas, and rodents can carry and spread disease

Clutter such as newspapers, cardboard, papers or bags create a perfect home for pests. Recycle these items if you can.¹¹

Place a track-off mat or boot scrubber at every door that leads to the outside to keep dust and environmental allergens on the bottom of your shoes from entering the home.



Track off mat.

Regularly clean floors, windows, and other flat surfaces. Minimize the use of harsh cleaning products that give off strong odors – homemade cleaning solutions are just as effective, cost less and are less harmful to the environment than store bought cleaners. Whenever possible, use non-toxic “homemade” cleaning supplies to clean your home, as they are cheaper than commercial products and easier on the environment.



All Purpose Green Cleaner¹²

For cleaning countertops, floors, walls, etc.

- ¼ cup white vinegar
- 5-10 drops of liquid dish soap
- 1 tbsp. baking soda
- 2 cups of warm water

Mix vinegar and water first, then add the baking soda and soap. For best results, and to avoid a big mess, mix in a clean bucket then pour into a spray bottle.

Estimated cost = \$6 / month

Green Window Cleaner¹²

For cleaning windows and other glass surfaces

- ¼ cup of white vinegar
- 2 cups of water
- Or
- Juice from 1 fresh lemon
- 1 tsp. cornstarch
- 2 cups water or club soda

Mix all ingredients in a labeled plastic spray bottle and shake well.

Spray Disinfectant Cleaner¹²

Wipe down surfaces in need of disinfecting.

- ½ cup borax
- 1-gallon hot water.

Dissolve borax in hot water. Wipe onto infected areas.

Counter Top Abrasive Cleaner¹²

To remove stuck on stains on counters.

Sprinkle baking soda or borax on area. Add juice of ½ a lemon

Scrub both ingredients on area until clean.

Drain Opener/ Cleaner¹²

To unplug slow drains. (This solution will not unclog a drain. If your drain is clogged, try using a plunger to loosen the obstruction.)

- 1 cup white vinegar
- ½ cup baking soda
- ¼ cup table salt

While warming the vinegar on the stove, pour the dry ingredients down the drain. Heat the vinegar on the stove until steaming. Then pour down the drain. Wait 15 minutes (or longer), it will show you it is working by bubbling. Let the mixture stand for a few minutes and rinse with hot tap water for at least 20 seconds. Repeat as necessary.

Counter Top Abrasive Cleaner¹²

To remove burnt on food from the oven.

- Castille soap
- Borax
- Water

Mix equal parts of the ingredients and let the mixture set for 20 minutes. Apply to the walls of the oven. Scrub off any residue with a clean cloth.

CLEANING FLOORS AND FLAT SURFACES¹²

1. Everyday sweep or use a dust mop. **WARNING: if you suspect lead dust is in your home, never sweep dry – only use wet cleaning techniques.**
2. Wet mop at least once a week; use a damp cloth with mild dish soap or all-purpose green cleaner (from page 15). DO NOT use diluted CLOROX or bleach as a cleaning solution, it works best only on hard, non-porous surfaces. Be careful not to use excessive amounts of water or soap.
3. Use a damp cloth to wipe dust off of surfaces.
4. Wipe up grease or other fluids immediately.
5. If you have carpet, use a vacuum with a HEPA filter and **beater bar**.

► **Wet Cleaning** techniques are a style of cleaning where brooms, mops and rags are damp in order to reduce the possibility of airborne dust

► **Beater bar** is the bristly brush on the bottom of an upright vacuum that agitates the dirt out of carpet



DID YA KNOW?

When testing for lead paint each product is different. Follow the manufacturer's guidelines exactly when testing paint for lead. RF recommends selecting an immediate test kit. Meaning you know the results immediately after placing.

CLEANING THE OVEN¹²

Most ovens are self-cleaning, meaning they use extreme heat (900 degrees F+) to burn off spilt, baked-on food inside the oven. Always follow the instructions from your oven's owner's manual.



Because of the extreme heat, a small amount of smoke will be generated during the cleaning process. **For that reason Red Feather recommends opening a window near the oven or turning on the vent over the appliance to exhaust the smoke to the outside of the house.** If weather permits, use a fan to encourage the smoke out of the home.

1. Remove the oven racks and clean by hand.
2. Wipe out any messes or spills inside the oven with a damp cloth and warm soapy water.
3. Lock the oven door.
4. Open a window near the oven.
5. Set the oven to "Clean" and set the timer for 2 to 5 hours, depending on the manufacturer's instructions.
6. After the cleaning runs its full cycle, wait for the oven to cool, then open the door and wipe out any ash inside.

CLEANING THE STOVE¹²

1. For an electric stove, remove the burners from the stove. Wash everything with warm soapy water (dishwashing liquid works great) and a soft cloth.
2. Rinse everything thoroughly and allow at least 30 minutes to dry.



3. For stubborn leftovers that have been cooked onto a burner or stuck-on grease use the **Oven Cleaner** recipe from page 15. Using a clean cloth, scrub this solution onto the burner until the debris is gone. If the stain does not come up, then you can re-apply the solution and allow it to sit on the burner for at least 20 minutes, then scrub off with a clean rag.

CLEANING THE REFRIGERATOR¹²

1. Keep a box of baking soda in the fridge to absorb smells. Change baking soda boxes every 30 days. Used baking soda can be used to make the homemade cleaners.
2. Wash the food compartment with a solution of two tablespoons of baking soda to every pint of warm water.

STEP 7: KEEP YOUR HOME WELL- MAINTAINED

WHY? As you can see from the above examples, the primary benefit of a well-maintained home is living in a healthy home with reduced chances of major chronic and even terminal illnesses. A well maintained home would keep out water and pests. Further, keeping up on your home maintenance in the long run will minimize the likelihood of expensive repairs down the road.

Without regular maintenance your home is probably headed for trouble and costly repairs in the future. Often these costly repairs can be avoided altogether if regular, routine maintenance is kept up. It is recommended to inspect, clean, and repair your home routinely so minor problems don't become more expensive and problematic later on. **Red Feather suggests that homeowners set-up a monthly, every other season, and yearly inspection and maintenance schedule.** In addition to the suggestions in earlier sections of this chapter, every homeowner or resident can take a few simple steps to keep your home in top shape:

- **Repair cracks and holes** that appear in the foundation. Seal these crack so pests and moisture cannot enter your home.⁷
- **Regularly replace furnace filters.** Don't "trade-up" to a higher-grade filter if your furnace does not call for it.²³ These types of more dense filters may require your unit to work harder and therefore be less efficient. A typical replacement schedule will depend upon how many people live in the home, but usually every 3 – 4 months is sufficient. Monitor filters to know when to replace them.
- **Clean out dryer lint** from the in-wall vent to outside.
- Every month, **check your smoke alarms** by pushing the 'test' button.
- If you home has **Ground Fault Current Interrupted (GFCI)** receptacles, then test them once a month to be sure they will protect you and your family in an emergency.

► **Ground Fault Current Interrupters (GFCI)** are a device that protects the user of an electrical tool or appliance from electric shocks and faults

- **Inspect your attic** for signs of water or damage from water.

HEALTHY HOME VOCABULARY

Relative humidity – describes the amount of moisture in the air at a given temperature. Relative humidity (RH) greater than 50% can cause structural damage to homes and encourage mold to grow

Integrated Pest Management (IPM) – an approach to pest infestations; whereby the resident works with professionals to keep pests out and not inviting them in

Volatile Organic Chemicals (VOCs) – include both human made and naturally occurring chemical compounds. Most scents or odors are VOCs. Can be harmful to humans, animals and the environment

Carbon Monoxide (CO) – an odorless, colorless, poison gas produced by the combustion of fossil fuels

Indoor Air Quality (IAQ) – the quality of air inside your home after pollutants like pollen and man-made chemicals build up

Environmental Allergens – anything from pollen to cleaning supplies to pesticides to carpet can cause lung irritation in an asthma sufferer

Penetration point – any hole in the exterior of the building

ridge vent is the engineered gap at the peak of your roof that allows air to pass through

Air barrier/ boundary – an attached membrane or other weatherization measure that reduces or eliminates air movement into and out of a building

Thermal barrier/ boundary – restricts or slows the loss/gain of heat in a building

Biocide – a chemical proven to kill mold

Drainage/ Grading – a hill that slopes away from your home in all directions to allow for above ground water from precipitation events to runoff and drain away

Respirator – a mask worn over the mouth and nose, or whole face that protects from dust, smoke, or other VOC. (Minimum suggested mask: N-95 or similar)

High Efficiency Particulate Air (HEPA) filter – remove at least 99.97% of the dust particles that pass through it.

Beater bar – the bristly brush on the bottom of an upright vacuum that agitates the dirt out of carpet.

Wet cleaning – a style of cleaning where brooms, mops and rags are damp in order to reduce the possibility of airborne dust

Fire Plan – a plan for each family member to get out of the house in the event of a fire. Normally includes a meeting spot a safe distance from the home

Natural Ventilation – Opening windows to allow wind to exchange the indoor air

Spot Ventilation – Mechanical air movement controlled by localized exhaust fans

Whole-house ventilation – Using ducts and fans to remove stale air from the indoor environment and replace it with fresh air

Off-gassing – is the evaporation of VOCs at normal temperature and atmospheric pressure

Ground Fault Current Interrupter (GFCI) – is a device that protects the user of an electrical tool or appliance from electric shocks and faults

WORKS CITED:

- ¹ U.S. Dept. of Health and Human Services. Centers for Disease Control. (2010). *A Healthy Home for Everyone: The Guide for Families and Individuals*. Atlanta, GA: U.S. accessed online at http://www.cdc.gov/nceh/lead/publications/final_companion_piece.pdf (Downloaded June 3, 2013).
- ² U.S. Dept. of Housing and Urban Development. Office of Healthy Homes and Lead Hazard Control. (2013). *Seven tips for keeping a healthy home*. Washington DC: U.S. accessed online at http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_11882.pdf (Downloaded June 3, 2013).
- ³ Enterprise Community Partners. (2013). *Green and Healthy Living: Easy Improvements for Your Home* [PowerPoint Slides]. Retrieved from Enterprise Green Communities Tools to Engage Residents in Green & Healthy Living online website: <http://www.enterprisecommunity.com/solutions-and-innovation/enterprise-green-communities/resources/resident-engagement> (Downloaded April 5, 2013).
- ⁴ US Dept. of Energy. (July 2012). *Weatherization Energy Auditor Single Family: Building Assessment* [PowerPoint slides]. Retrieved from Weatherization Assistance Program Technical Assistance Center Online Web site: <http://waptac.org/WAP-Standardized-Curricula/Energy-Auditor-002D-Single-Family-2002E0.aspx> (Downloaded February 24, 2013).
- ⁵ US Dept. of Energy. (July 2012). *Weatherization Energy Auditor Single Family: Indoor Air Quality* [PowerPoint slides]. Retrieved from Weatherization Assistance Program Technical Assistance Center Online Web site: <http://waptac.org/WAP-Standardized-Curricula/Energy-Auditor-002D-Single-Family-2002E0.aspx> (Downloaded February 24, 2013).
- ⁶ US Dept. of Energy. (July 2012). *Weatherization Energy Auditor Single Family: Moisture Assessment* [PowerPoint slides]. Retrieved from Weatherization Assistance Program Technical Assistance Center Online Web site: <http://waptac.org/WAP-Standardized-Curricula/Energy-Auditor-002D-Single-Family-2002E0.aspx> (Downloaded February 24, 2013).
- ⁷ National Center for Healthy Housing. (2013). *Steps for Creating a Healthier Home – Costs for a Typical Two-Story, Single Family Home*. Retrieved from http://www.nchh.org/Portals/0/Contents/Steps_for_Creating_a_Healthier_Home2009.pdf (Downloaded May 6, 2013).
- ⁸ National Tribal Healthy Homes Assessment, Training and Technical Assistance Support Center. (June 2010). *Tribal Healthy Homes* [PowerPoint Slides]. Bozeman, MT: Montana State University Extension: Housing and Environmental Health Program.
- ⁹ New York City Dept. of Health & Mental Hygiene. (2008). *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. New York, NY: U.S. accessed online at <http://www.nyc.gov/html/doh/downloads/pdf/epi/epi-mold-guidelines.pdf> (Downloaded June 27, 2013).
- ¹⁰ Cichowski, B. (Writer), & Cusomato, V. (Director). (2010). *Health and Safety Series: Respirators and Personal Protective Equipment* [Online series episode]. In M. Vogel (Producer), *WxTV*. Bozeman, MT: Montana Weatherization Training Center. Accessed at <http://wxtvonline.org/2010/09/respirators-ppe/> on May 6, 2013.
- ¹¹ National Tribal Healthy Homes Assessment, Training, and Technical Assistance Support Center. (2013). *Take Action*. Bozeman, MT: U.S. accessed online at http://tribalhealthyhomes.org/action_steps.html on May 6, 2013.
- ¹² National Center for Healthy Housing. (2013, May 6). *Keep You, Your Family, and Your Home Healthy! A Resident Manual for Wheeler Terrace Residents*. Retrieved from http://nchh.org/Portals/0/Contents/Wheeler_Terrace_Resident_Manual_R2.pdf on May 28, 2013.
- ¹³ Huth, M. (2011). *Residential Construction Academy: Basic Principles for Construction*. Clifton Park, NY: Delmar-Cengage Learning.
- ¹⁴ U.S. Dept. of Energy. Energy Efficiency & Renewable Energy. (2010). *Guide to Home Ventilation*. (DHHS Publication No. DOE/EE-0345). Washington DC: U.S. accessed online at http://energy.gov/sites/prod/files/guide_to_home_ventilation.pdf (Downloaded June 27, 2013).

- ¹⁵ Alliance for Healthy Homes. (2008). *IPM Policy Options for Residential Real Estate*. Boston, MA: Malone, J.
- ¹⁶ U.S. Environmental Protection Agency. (2013). *Integrated Pest Management (IPM) Principles*. Washington DC: U.S. accessed online at <http://www.epa.gov/pesticides/factsheets/ipm.htm>
- ¹⁷ U.S. Environmental Protection Agency. (2013). *Preventing Pests at Home*. (DHHS Publication No. EPA 735-F-07-002). Washington DC: U.S. accessed online at <http://www.epa.gov/oppfead1/Publications/preventpest.pdf>
- ¹⁸ National Center for Healthy Housing. (2009, August). *Healthy Homes Priorities for Homeowners*. Retrieved from http://www.nchh.org/Portals/0/Contents/Healthy_Home_Priorities_for_HomeBuyers.pdf (Downloaded April 9, 2013).
- ¹⁹ U.S. Dept. of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006. Accessed December 18, 2007.
- ²⁰ Health Canada. Tobacco Control Programme. (2008). *Make your Car and Home Smoke free: A Guide to Protecting your Family from Second Hand Smoke*. (H.C. Publication No. 4278). Ottawa, Ontario: Minister of Health.
- ²¹ U.S. Environmental Protection Agency. (2013). *Renovation, Repair, and Painting Program: Do-it-Yourselfers*. Washington DC: U.S. accessed online at <http://www2.epa.gov/lead/renovation-repair-and-painting-program-do-it-yourselfers>
- ²² US Dept. of Energy. (July 2012). *Weatherization Installer/ Technician Fundamentals: Moisture Barriers* [PowerPoint slides]. Retrieved from Weatherization Assistance Program Technical Assistance Center Online Web site: <http://waptac.org/WAP-Standardized-Curricula/Weatherization-Installer-Fundamentals-2002E0.aspx> (Downloaded May 7, 2013).
- ²³ Cichowski, B. (Writer), & Cusomato, V. (Director). (2011). *10 Steps to Energy Efficiency* [Online series episode]. In M. Vogel (Producer), *WxTV*. Bozeman, MT: Montana Weatherization Training Center. Accessed at <http://wxtvonline.org/2011/12/consumer-10steps/> on May 6, 2013

REFERENCES:

- National Tribal Healthy Homes Assessment, Training, and Technical Assistance Support Center. (2013). *Help Yourself to a Healthy Home Room-by-room Checklist and Remedies*. Bozeman, MT: U.S. accessed online at <http://tribalhealthyhomes.org/Website/FilesForWebsite/Room-By-Room%20Checklist.pdf> (Downloaded May 24, 2013).
- National Center for Healthy Housing. (2013, May 6). *Healthy Homes Maintenance Checklist*. Retrieved from http://www.nchh.org/Portals/0/Contents/Maintenance_Checklist2009.pdf
- National Center for Healthy Housing. (2013, May 6). *Science Supports Action Now to Make High-Risk Homes Healthier*. Retrieved from <http://www.nchh.org/Portals/0/Contents/I-Science%20Supports%20Action.pdf>
- Sporetech Mold Investigations, LLC. (2013, July 31). *Chlorine Bleach and Mold Cleanup (Let's Set the Record Straight)*. Retrieved from: <http://www.spore-tech.com/viewCategory.asp?idCategory=78>
- U.S. Dept. of Health and Human Services. Office of Minority Health. (2013). *Asthma and American Indians/Alaska Natives*. Washington D.C. accessed online at <https://minorityhealth.hhs.gov/templates/content.aspx?vl=3&vlID=532&ID=6172> (Viewed July 30, 2013).
- U.S. Department of Health and Human Services and U.S. Department of Housing and Urban Development. (2006). *Healthy housing reference manual*. Atlanta, GA: accessed online at http://www.cdc.gov/nceh/publications/books/housing/housing_ref_manual_2012.pdf (Downloaded July 31, 2013).