Home Safety & Health

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CONTENTS

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INTRODUCTION

The modern home is composed of thousands of component parts, each resulting from the work of thousands of dedicated people. Home construction requires contributions by researchers, planners, manufacturers, designers, engineers, and tradesmen. For many families the home has become much more than shelter, evolving into a source of comfort, enjoyment, security, and entertainment. Advanced technologies have brought the home living environment to a level beyond anything our great-grandparents could have imagined. Technology has not only improved our living conditions and way of life, but it has also given us insight regarding associated hazards, some previously unknown, and usually which we have created ourselves. Today we face safety and health risks which were never experienced (or even known) to prior generations.

Safety and health considerations within the home have not always been of prime consideration. Due to growing awareness, many homebuyers and homeowners are searching for homes which afford improved safety and health. These concerns are becoming a greater part of the homebuyer's and homeowner's thought process. Will the presence of safety or environmental hazards have a negative impact on the health of the family or the value of the home? When hazards are identified and abated, will the process be manageably cost effective or alter the homeowner's lifestyle? These are prudent questions that all homebuyers and homeowners should investigate. As homebuyers or homeowners increase their knowledge of the home environment, their ability to make informed decisions also increases.

It is unrealistic to expect any home, old or new, to be free of all forms of potential hazards.

Prudent homebuyers and homeowners have many resources available to identify and remedy safety and health hazards which potentially threaten any home. Local, county, and state health departments, as well as numerous federal agencies and private entities, are sources of such information. Many private inspection companies, environmental consulting companies and engineering firms offer services which are helpful in detecting the existence of potentially hazardous substances and conditions.

If you are in the homebuying process, the home inspector you have secured to inspect your home may be qualified or licensed to inspect in one or more categories. However, home inspectors are usually generalists and seek to identify visible deficiencies in a limited number of structural and mechanical components. More than one type of inspection may be necessary to provide you with information to make an informed decision. As a prudent homebuyer you should inform yourself of potential hazards which may affect your home, health and lifestyle.

CHILD SAFETY

According to National Safety Council statistics, accidents are the number one health hazard resulting in temporary and permanent disabilities to children. Accidents kill more children than the five leading fatal diseases combined. Our children are our most precious assets and good parents are motivated to give them the love and protection they deserve.

Due to the potential for serious injury or death which accidents can inflict, parents should be vigilant regarding existing and potential dangers to their children. Safety awareness and the implementation of preventative measures should play an important part of normal household activities. Safe living conduct, in which hazards have been manageably reduced and children have been taught to recognize them, may help to avoid injuries and save lives.

IN CASE OF INJURY, CALL EMERGENCY SERVICES (911) AND GIVE FIRST AID UNTIL ARRIVAL.

INDOORS

- Never leave children unattended for long periods of time.
- Dispose of unused or outdated products such as household cleaners, solvents and medicines.
- Store non-prescription and prescription medicines and drugs out of sight and reach, in a locked cabinet, and separate from foods.
- Locate hazardous and poisonous plants out of reach.
- Make hazardous areas inaccessible to children by using door knob covers, cabinet locks, door safety latches, door locks, barrier gates and refrigerator-freezer locks.
- Install safety caps on unused electrical outlets.
- Always drain standing water from lavatories, sinks, buckets and bathtubs to avoid drowning.
- Ensure that railings are of sufficient height and railing balusters are spaced to prevent fall hazards.
- Install barrier gates to prevent children from playing on staircases.
- Identify all windows which may present a fall hazard and remove any items which may make those areas accessible. Employ the use of latch or locking devices to restrict access by children.
- When cooking use rear burners of the range if possible and keep pot handles out of reach.
- Provide guards or barriers to prevent access to space heaters, fireplaces, and other heat sources.
- Take proper precautions to prevent hot water scalding in bathtubs and showers.
- Always store hand tools and power tools in a safe location.
- Never allow a child to handle an electrical component of any kind. Disallow electrical appliances in children's bathrooms.
- Check your children's furniture to ensure that each piece presents no safety hazards. When buying new furniture identify safety standard listings.
- Disallow misuse and unsuitable use of toys. Repair or discard damaged toys.
- Ensure that sliding glass doors and floor length window panels are well marked for visibility when in the closed position.
- Discard any type of container which might trap a child or present a suffocation hazard.
- Ensure that all firearms are unloaded and stored in a safe or inaccessible location. Always store firearms and ammunition separately.
- Keep emergency services phone numbers at all telephone locations within the home.

OUTDOORS

- Ensure that children are always well attended when outdoors.
- Restrict play areas for children; use fence enclosures and keep gates closed and locked.
- Keep children away from areas where power equipment is being used. Ensure that power equipment is properly stored and unavailable for use by children.
- Avoid planting hazardous or poisonous plants in play areas. Identify plants for potential poisoning.

- Store chemicals and lawn tools in a locked or inaccessible location.
- Make sure that all play equipment is well maintained, free of sharp objects, and securely anchored.
- Ensure adequate adult supervision while children are swimming or using wading pools.

For detailed information concerning Child Safety contact:

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

American Academy of Pediatrics
141 Northwest Point Blvd.
Elk Grove Village, Illinois 60007
http://www.aap.org

CHILDREN DURING EMERGENCIES

Disaster may strike quickly and without warning. These events are frightening enough for adults, but they can be traumatic for children if they don't know what to do. Children easily become anxious, confused or frightened. Adults need to cope with the disaster in a way that will help children avoid developing a permanent sense of loss. It is important to give guidance that will help them reduce their fears.

Children depend on daily routines. When emergencies or disasters interrupt this routine, children may become anxious. When frightened, they look to parents and other adults for help. How you react to an emergency gives them clues on how to act. If you react with alarm, a child may become more scared. They see our fear as proof that the danger is real. If you seem overcome with a sense of loss, a child may feel his or her loss more strongly.

Children's fears also may stem from their imagination, and you should take these feelings seriously. A child who feels afraid is afraid. Your words and actions can provide reassurance. When talking with your child, be sure to present a realistic picture that is both honest and manageable. Life will return to normal. Your response during this time may have a lasting impact.

CHILDREN'S FEARS AFTER AN EMERGENCY OR DISASTER

- The event will happen again.
- Someone will be injured or killed.
- They will be separated from the family.
- They will be left alone.

You can create a Family Disaster Plan by taking a few simple steps. First, learn what hazards exist in your community and how to prepare for each. Then meet with your family to discuss what you would do, as a group, in each situation. Next, take steps to prepare your family for disaster.

- Develop and practice a Family Disaster Plan. Contact your local emergency management agency or Red Cross chapter for materials. Everyone in the household, including children, should play a part in the family's response and recovery efforts.
- Teach your child how to recognize danger signals. Make sure your child knows what smoke detectors, fire alarms and local community warning systems (horns, sirens) sound like.
- Explain how to call for help. Teach your child how and when to call for help. If you have 911 emergency service, teach your child to call.
- Help your child memorize important family information. Children should memorize their family name, address and phone number. They should also know where to meet in case of an emergency. Small children may be provided with a card or jewelry that lists emergency information to give to an adult.

RECOVERY

- Immediately after the disaster, try to reduce your child's fear and anxiety. Physical contact helps.
- Keep the family together. While you look for housing and assistance, you may be tempted to leave your children with relatives or friends. Instead, keep the family together as much as possible.
- Calmly explain the situation, telling children all you can.
- To whatever extent possible, explain what happens next.
- Encourage children to talk. Let children talk and ask questions as much and as long as they want.
- Include children in recovery activities. Give children chores that are their responsibility. This will help children feel they are part of the recovery and believe that everything will be all right.

You can help children cope by understanding what causes their anxieties and fears. Reassure them with firmness and love. Your children should realize that life will eventually return to normal. Consider getting assistance from a mental health specialist or a member of the clergy.

For info on Emergency Preparation contact your local, county or state emergency management agency, or

Federal Emergency Management Agency
500 C Street S.W.
Washington, D.C. 20472
(800) 621-3362
http://www.fema.gov

The American Red Cross
2025 E Street NW
Washington, D.C. 20006
(202) 303-4498
http://www.redcross.org

Central Texas Red Cross
2218 Pershing Drive
Austin, TX 78723
(512) 928-4271
http://www.centex.redcross.org

FAMILY DISASTER PLANNING

Disasters and emergencies strike quickly and without warning. They can force you to evacuate your neighborhood or confine you to your home. What would you do if basic services (water, gas, electricity or telephones) were cut off? Local officials and relief workers will be on the scene after a disaster, but they cannot reach everyone right away.

Families can cope with disaster by preparing in advance and working together as a team. Knowing what to do is your best protection and your responsibility. Where will your family be when disaster strikes? They could be anywhere – work, school or in the car. How will you find each other? Will you know if your children are safe? The following steps will help to create your family's disaster plan.

FIND OUT WHAT COULD HAPPEN TO YOU

Contact your local emergency management office or American Red Cross chapter — be prepared to take notes.

- Ask what types of disasters are most likely to happen. Request information on how to prepare.
- Learn about your community's warning signals – what they sound like and what they mean.
- Ask about animal care after disaster. Animals may not be allowed inside emergency shelters due to health regulations.
- Find out how to help elderly or disabled persons, if needed.
- Inquire about disaster plans at your workplace, your children's school and other places where you or your family spend time.

CREATE A DISASTER PLAN

- Meet with your family and discuss why you need to prepare for disaster. Explain the dangers of fire, severe weather and earthquakes to children. Plan to share responsibilities and work together.
- Discuss the types of disasters that are most likely to happen. Explain what to do in each case.
- Designate two places to meet:

1) Right outside your home in case of a sudden emergency, like fire.
2) Outside your neighborhood in case you cannot return to your home. Everyone should memorize the address and phone number.

- Ask an out-of-state friend to be your family contact. After a disaster, it's often easier to call long distance. All family members should the contact and report their location. Memorize your contact's phone number.
- Discuss what to do in an evacuation. Plan how to take care of your pets.

DISASTER CHECKLIST

__ Post emergency telephone numbers by phones (fire, police, ambulance, etc.).
__ Teach children how and when to call 911 or your local emergency services number for help.
__ Show each family member how and when to turn off the water, gas and electricity at the main switches.
__ Check if you have adequate insurance coverage.
__ Keep, and teach each family member to use, an ABC-type fire extinguisher.
__ Install smoke detectors on each level of your home, especially near bedrooms.
__ Stock emergency supplies and assemble a Disaster Supplies Kit.
__ Take a Red Cross first aid and CPR class.
__ Determine the best escape routes from your home. Find two ways out of each room.
__ Find the safe spots in your home for each type of disaster.

PRACTICE AND MAINTAIN YOUR PLAN

- Quiz children every six months or more often to make certain they remember.
- Conduct fire and emergency evacuation drills.
- Replace stored water every three months and stored food every six months.

- Test and recharge your fire extinguishers according to manufacturer's instructions.
- Test your smoke detectors monthly and change the batteries at least once a year.

EMERGENCY SUPPLIES

Keep enough supplies in your home to meet your needs for at least three days. Assemble a Disaster Supplies Kit with items you may need in an evacuation. Store these supplies in sturdy, easy-to-carry containers.

- A three-day supply of water (one gallon per person per day) and food that won't spoil.
- One change of clothing and footwear per person, and one blanket or sleeping bag per person.
- A first aid kit that includes your family's prescription medications.
- Emergency tools including a battery-powered radio, flashlight and plenty of extra batteries.
- Sanitation supplies.
- An extra set of car keys and a credit card, cash or traveler's checks.
- Special items for infant, elderly or disabled family members. Spare eyeglasses.
- Keep important family documents in a waterproof container.
- Keep a smaller kit in the trunk of your car.

UTILITIES

Locate utility disconnects. Learn how and when to turn these utilities off. Teach all responsible family members. Keep necessary tools nearby. Turn off the utilities only upon instruction or if you suspect damage.

NEIGHBORS HELPING NEIGHBORS

Working with neighbors can save lives and property. Meet with your neighbors to plan how the neighborhood could work together until help arrives. If you're a member of a neighborhood organization, introduce disaster preparedness as a new activity. Know your neighbors' special skills (e.g., medical, technical) and consider how you could help neighbors who have special needs, such as disabled and elderly persons. Make plans for child care in case parents can't get home.

EVACUATION

- Evacuate immediately if advised to do so.
- Listen to your battery-powered radio and follow the instructions of local emergency officials.
- Wear protective clothing and sturdy shoes.
- Take your emergency supplies. Lock your home.
- Use travel routes specified by local authorities. Avoid shortcuts as certain areas may be impassable.

WHEN DISASTER STRIKES

- Remain calm and patient. Put your plan into action.
- Check for injuries. Give first aid and get help for seriously injured people.
- Listen to your battery powered radio for news and instructions
- Evacuate, if advised to do so. Wear protective clothing and sturdy shoes.
- Use flashlights. Do not light matches or turn on electrical switches, if you suspect damage.
- Check for fires, fire hazards and other household hazards.
- If you smell gas or suspect a leak, get everyone outside, disconnect the gas and open windows.
- Clean up spilled medicines, bleaches, gasoline and other flammable liquids immediately.
- Call your family contact, but avoid other non-emergency use of the telephone.
- Check on your neighbors, especially elderly or disabled persons.
- Make sure you have an adequate water supply in case service is cut off.
- Stay away from downed power lines.

For information about Disaster Planning contact your local, county or state emergency management agency, your local chapter of the American Red Cross, or

Federal Emergency Management Agency
500 C Street S.W.
Washington, D.C. 20472
(800) 621-3362
http://www.fema.gov

The American Red Cross
2025 E Street NW
Washington, D.C. 20006
(202) 303-4498
http://www.redcross.org

FIRE SAFETY

The United States has one of the highest fire death rates in the world. Fire, in the form of flames and smoke, is the second leading cause of accidental death in the home and can strike any home suddenly and without warning. Preparing fire evacuation plans, conducting fire drills and installing fire detection devices may help to avoid injury or death in the event of a fire emergency. Being aware and knowing how to identify and correct common causes of fire hazards may help decrease the potential for fires and fire-related injuries.

DOs:

⊕ Install smoke detectors throughout the home. Strategic locations include the kitchen, sleeping areas, near fireplaces and gas-fired appliances. Provide at least one per floor.

⊕ Affix the telephone number of your local fire department or primary emergency system services (911) to each telephone.

⊕ Prepare and implement a fire evacuation plan consisting of primary and secondary escape routes from each habitable room of the house.

⊕ Regularly check all escape routes for accessibility. Ensure that every family member is familiar with each escape route and conclude each route with a safe predetermined meeting place at the exterior of the home.

⊕ Teach children the "stop, drop, and roll" technique, should their clothing catch fire.

⊕ Service your smoke detectors frequently by replacing batteries, cleaning and testing the alarm.

⊕ Every home should be supplied with a multipurpose, dry-chemical fire extinguisher stored at an accessible location. Fire extinguishers are designed for use against fires which are small and contained. If a fire is beyond your control, evacuate the house and call the fire department from another location.

⊕ Keep doors to infrequently used rooms closed and close all doors when leaving home. Closing doors will help isolate rooms and contain small fires until help arrives.

⊕ Keep flammable liquids in approved storage containers outside the home and away from children.

⊕ Always keep kitchen ranges and ovens clean and free of grease. Maintain grease traps and filters regularly.

⊕ Keep combustibles and children away from the area when cooking.

⊕ Check all heat sources regularly to ensure proper operation and verify they are clear of combustibles.

⊕ Read and be familiar with manufacturer's instructions for use and maintenance of heating equipment.

⊕ Purchase wearing apparel and fabrics which are fire resistant or slow to burn. Follow manufacturer's instructions to maintain flame-resistant characteristics.

⊕ Keep lighters and matches out of reach of children. Even small children are capable of igniting matches.

⊕ Use an artificial, fire-retardant Christmas tree.

⊕ Request a fire prevention inspection from your local fire department.

DON'Ts:

⊗ Never reenter or allow any member of your family to reenter a burning structure for any reason. Notify firefighters of any person, pet, or possessions remaining in the house.

⊗ Never allow anyone to sleep in a room or area which was not intended to be habitable such as garages, basements and service rooms.

⊗ Never store flammable or combustible items in furnace or water heater service closets.

⊗ Never smoke in bed. Smoking in bed is the leading cause of accidental fire deaths in homes.

⊗ Never store combustible materials along the side or near your home.

⊗ Never disconnect a smoke detector. Relocate the detector if subject to false alarms.

⊗ Never place any item which may attract children over or near ranges, ovens or heaters.

For information concerning home Fire Safety contact your local fire department, or

U.S. Fire Administration
16825 South Seton Avenue
Emmitsburg, MD 21727
http://www.usfa.dhs.gov

The National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471
http://www.nfpa.org

ELECTRICAL SYSTEMS

The electrical system of the home provides many comforts and conveniences that are often taken for granted. With its everyday use we usually forget the potential hazards that exist or that we may create. An electrical system which is neglected or misused can be very dangerous, causing fire, electrical shock or death by electrocution.

- Before work commences on any electrical component, ensure that all surfaces are free of moisture.
- Ensure personal safety when working on any electrical component by disconnecting electrical power and locking the service panel to avoid accidental reconnection of power.
- While working with electricity avoid contact with any metal object.
- Install and use electrical appliances and devices tested and listed by a certified laboratory such as Underwriters Laboratories.
- Identify and label each circuit within the system for disconnection needs or in case of emergency.

DISCONNECT

The main disconnect, if provided, may be located indoors or outdoors at the main electrical panel or the meter. The disconnect may be a main service disconnect breaker, main fuse block, or main circuit breaker. Identify the main disconnect for emergency use.

SERVICE PANELS

- Ensure that all knock-outs and breaker spaces in the panel box barge cover are filled to eliminate intrusion.
- Always replace fuses and breakers of the same amperage to ensure breaker/conductor compatibility.
- Before disconnecting or replacing any metal plumbing pipe consult an electrician to ensure that the service ground wire will not be disconnected.
- Occasionally inspect the panel and ensure that it is dry and clean. Observe the interior for signs of over-heating or discoloration of wiring and breakers.
- When circuit breakers trip or fuses blow, check appliances and appliance cords for short circuits. If circuit interruption continues, DO NOT reset breakers or replace fuses. Call an electrician for assessment.
- Have any necessary repairs made only by qualified, licensed and experienced electrician.

FIXTURES

- When repairing a fixture or replacing light bulbs, ensure that the fixture is grounded using a voltage tester.
- Replace light bulbs only according to the fixture's wattage rating.

SWITCHES AND OUTLETS

- Replace units that are arcing or feel warm to the touch.
- Ensure that cover plates are in place, unused outlets are covered with safety caps and plug covers are used with each appliance.
- Never install grounded outlets on ungrounded 2-wire systems.

APPLIANCES

- Ensure all appliances are grounded properly.
- Disconnect or unplug small appliances when not in use.
- Turn off appliances when unattended or away from home.

EXTENSION CORDS

- Use only extension cords which are amperage compatible for portable appliances.
- Never use extension cords in high traffic areas, under rugs or carpets, or through walls, ceilings or floors.

POWER LINE DANGERS

- Consider any overhead line dangerous.
- Do not trim trees which have come in contact with power lines.

- Check for potential contact with overhead lines before working.
- Do not attempt to raise or move lines, call your electric supplier.
- Report any potential powerline hazard to your supplier.

HAZARD SIGNS

- Any permanently affixed or built-in appliance which is supplied with power by extension cords.
- Light flashes, sparks, or arc tracks (darkened areas) on or within any electrical component.
- Any unusual sounds emitted from the electrical system such as buzzing, humming, or crackling.
- Circuit breakers or fuses trip or blow repeatedly upon resetting or replacement.
- Wiring which has cut, burned, deteriorated, or discolored insulation.
- Lights dim or flicker when in use.
- Overheated or burned electrical components, which sometimes give off ill-smelling or malodorous fumes.
- Outlets which are loose, discolored or damaged in any way, or do not tightly hold plugs.
- Electrical system components such as switches, outlets, plugs and cords which feel hot.

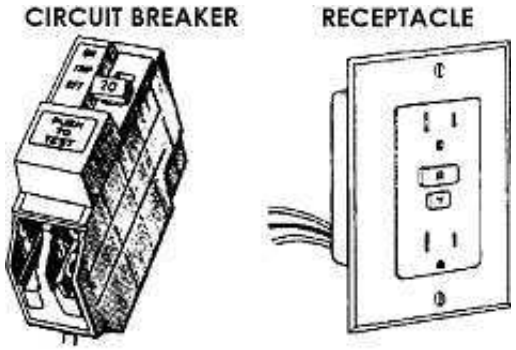
GROUND-FAULT CIRCUIT INTERRUPTERS

A Ground-Fault Circuit Interrupter (GFCI) is an electrical device which is designed to detect loss or leakage of electrical current when installed on a particular circuit. The GFCI compares supply and return current, opening the circuit almost instantaneously if the measurement indicates current loss. In the event electrical current flowing is flowing through a person to an external ground, the device stops the flow of current, usually avoiding serious injury or electrocution. GFCI's are available in the form of circuit breakers, receptacles and plug-in models for both grounded (3-wire) and ungrounded (2-wire) circuits.

In certain locations of the home conducive conditions can exist for electrical shock hazards. Ground-Fault Circuit Interrupters are required in the following locations:

- kitchen counter receptacles
- bathroom receptacles
- garages and finished utility area receptacles
- exterior receptacles, spas and pool lights.

Any electrical outlet or appliance used in close proximity to moisture must be protected by a GFCI.



TESTING

It is imperative that the GFCI be checked regularly for proper operation. If the device has malfunctioned it WILL NOT provide protection. To check the GFCI, push the "TEST" button. The device should trip and open the circuit disconnecting power. Use a test indicator or appliance to ensure the circuit has been disconnected. To restore power, push the "RESET" button.

If your home does not have Ground Fault Circuit Interrupters in required locations, consult a qualified electrician about installing this protection.

ALUMINUM WIRING

According to research obtained by the U.S. Consumer Product Safety Commission (CPSC), homes wired with "old-technology" aluminum wire are 55 times more likely to have one or more electrical connections reach fire hazard conditions than a home with copper wiring. Homes built, remodeled or having had changes made to electrical wiring between 1965 and 1973 may contain old-technology aluminum wiring. Hazards associated with old-technology aluminum wiring occur at outlets, switches, or at major appliances such as ovens, ranges, dishwashers and furnaces. Signs of trouble include warm-to-the touch face plates, flickering lights, non-functioning circuits and the smell of burning insulation, although, connections have been reported to fail without prior warning.

The optimum method of eliminating the risks associated with old technology wiring terminations is to eliminate the wire itself, replacing the existing system with a new copper wire branch circuit system. Excessive costs and impracticality, due to certain construction methods, may prohibit this alternative.

Another alternative, which is cost effective, is known as the "crimp connector repair method." It consists of power crimping a piece of copper wire to the existing aluminum wire branch circuit with a specially designed metal sleeve. An insulation sleeve is then placed around the crimp connection to complete the repair, making a permanent connection. This method is called the "COPALUM" crimp connection repair.

WARNING

Other aluminum wiring repair methods are often used and recommended by electricians. These include:

1) "Pigtailing" involves attaching a short piece of copper wire to the aluminum wire with a twist-on connector sometimes called a wire nut; the copper wire is connected to the switch, wall outlet or other termination device. The Commission staff has evaluated the effectiveness of pigtailing as a repair. In CPSC-sponsored laboratory testing some brands of twist-on connectors have performed very poorly. Over time, substantial numbers of these connectors have overheated in laboratory tests. Surveys of and statements made by electricians and electrical inspectors confirm the highly variable and often poor performance of these connectors when used with old technology aluminum wire. It is possible that some pigtailing repairs made with twist-on connectors may be even more prone to failure than the original aluminum wire connections. Accordingly, the CPSC believes that this method of repair does not solve the problem of overheating present in aluminum branch circuits.

2) Use of switches and outlets labeled "CO/ALR" by Underwriters Laboratories Inc. (UL). UL lists these devices especially for use with aluminum wire, although they can be used with copper or copper-clad wire. CO/ALR devices perform better with aluminum wire when installed carefully and according to best electrical practices than do the types of switches and outlets usually used in the original installations of old-technology aluminum branch circuit wiring. However, CO/ALR connectors are not available for all parts of the wiring system (for example, for permanently-wired appliances and ceiling mounted light fixtures). In the opinion of the Commission staff, CO/ALR devices must be considered to be, at best, an incomplete repair. Further, CO/ALR wiring devices have failed in laboratory tests when connected to aluminum wire typical of that installed in existing homes. The test conditions simulated actual use conditions; no overstress testing was used.

MOST VARIETIES OF CRIMP CONNECTORS CANNOT BE USED TO REPAIR ALUMINUM WIRING.

There are many types and brands of crimp connectors available, but only one manufacturer of the special connectors and equipment is recommended by the Consumer Product Safety Commission. Installers require special training and tools to install these devices.

For information concerning Electrical Safety or the COPALUM retermination program contact

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

NATURAL GAS SYSTEMS

Gas-fired appliances are an efficient and cost-effective means for cooking, heating and supplying hot water. Properly cared for, gas systems and appliances are safe and reliable, but if improperly used or neglected, they can cause toxic fume, asphyxiation, fire and/or explosion hazards. The importance of proper use and maintenance cannot be overemphasized.

- Become familiar with the smell of gas and make sure each family member can detect it. Most gas companies add a strong scent to gas which has the smell of rotten eggs.
- If for any reason your sense of smell is impaired, have a gas detector installed to warn you of gas leaks. Installation of carbon monoxide detectors can also provide additional protection.
- If at any time you smell the odor of gas, leave the house immediately and call the gas company or emergency services from another location. Wait until the cause of the odor has been located before returning to your home. Do not use any appliances, telephones, or light switches as electrical arcing may cause ignition of gas vapors.
- Ensure each appliance within the home is supplied with a shut-off valve and that it can be easily operated.
- Strictly adhere to operation and maintenance instructions of the appliance manufacturer. Never use an appliance for a purpose other than which it was intended.
- Allow only qualified service people to install, check and maintain gas appliances.
- If a pilot light goes out, turn off the gas valve to the appliance and wait several minutes before attempting to relight.
- When relighting the pilot, hold the flame of the match or lighter to the pilot and then slowly turn on the gas.
- When using unvented gas, oil, or kerosene-fired appliances, ensure a constant supply of air for the combustion process. Extended use of an unvented appliance in a tightly sealed area can cause oxygen depletion and high carbon monoxide concentrations, both of which may cause illness or death.
- Store gasoline or any other flammable liquids outside of the home and never in the same room with any gas-fired appliance.
- Never store combustible materials of any kind near a gas-fired appliance.
- If the water heater is located in the garage, an installed height of 18" (minimum) above the surface of the floor is recommended. This will reduce, but not eliminate, the risk of heavy flammable vapors being ignited by the pilot or main burner flames.
- Gas supply yard lines are the responsibility of the homeowner. Before any excavation commences, contact the supplier to determine if any underground supply lines might be threatened.
- Have a licensed plumber periodically inspect yard and house lines.

SUPPLY DISCONNECT

Locate, identify, and learn to use the main gas shut-off valve in case of emergency. It will typically be found at, or close to, the meter. To shut off the gas supply, close the valve by turning the flat handle perpendicular to the supply pipe. If the gas has been shut off because of a problem, allow the gas company to reconnect the supply to ensure there are no continuing safety problems.

ON-SITE STORAGE (Propane or Liquefied Petroleum Gas)

- Adequately secure any tank or cylinder before transporting and ensure valves are closed and protected from impact.
- Ensure that tanks or cylinders are located well away from any exterior wall of the house, clear of possible ignition sources and potential danger from impact.
- Each time the tanks or cylinders are recharged request the supplier to inspect the tank, valves, pressure regulator and metering devices.
- Supply Disconnect: Locate, identify, and learn to use the main gas shut-off valve in case of emergency. It will typically be found on the tank or cylinder.

For information concerning Gas System Safety contact your local gas company representative.

In case of Emergency contact your local fire department, Emergency System Services (911) and the Gas Company.

FIREPLACES AND WOOD-BURNING STOVES

There are a huge variety of configurations for wood-burning appliances in homes. Used and cared for properly, a fireplace or wood burning stove can enhance interior comfort. Alternately, poorly-built and/or improperly maintained wood-burning appliances are indoor pollution generators at best and deadly fire hazards at worst. Wood-burning appliances account for about 40,000 residential fires and more than 200 deaths annually.

It is important that homeowners understand the type and intended use their fireplace or stove. Even well-built and properly installed equipment, when used inappropriately, becomes a risk to the home and its occupants. All-metal, "zero-clearance" or "factory-built" fireplaces are usually not intended to serve as sources for space heating. Gas-fired artificial logs are a preferred option for these units. Masonry fireplaces are only as good as the mason who built them and the homeowner who has maintained them. A complete inspection by a qualified specialist, including removal of the chimney crown and verification of the smoke chamber, should be part of any homebuyer's purchase decision.

- Visually examine the firebox for separated, cracked or loose firebrick and the chimney for soot or creosote build-up. Do this at least twice per month during regular use.
- Never use a wood-burning appliance which you suspect requires repair or maintenance.
- Ensure that only qualified tradesmen perform repair or maintenance.
- Always build modest-sized fires based on the size of the fire box. Large fires may burn out of control and flames reaching the smoke shelf or flue may ignite soot and creosote deposits.
- Do not use fast-burning softwoods (e.g., cedar or pine) as these generate excessive heat and sparks.
- Never burn garbage in the firebox as some materials create toxic gases while burning.
- Never burn a Christmas tree in a fireplace or stove.
- Use well-seasoned wood to reduce the amount of soot and creosote deposits on the flue. Never use pithy, wet, or "green" firewood as it burns inefficiently and causes excessive build-up of deposits at the flue.
- Never close the flue damper until you are sure the fire has exhausted itself. Carbon monoxide gases may be diverted into the home, causing severe illness or death.
- Open combustion air dampers (if provided) fully during use.
- Always use an appropriate method for fire starting such as kindling or, if available, a gas log lighter. Never use flammable liquids which, through rapid combustion, may burn out of control.
- Use doors, metal fire screens or glass fire doors to prevent sparks and embers from leaving the firebox. Ensure that the hearth is in good condition and clear of combustibles.
- Remember that an unattended fire is an attractive hazard for children.
- Never leave home with the fireplace or stove in use.
- Frequently look for signs of structural failure, such as cracks in chimneys, surrounds or footings.
- Always store firewood outdoors, in a dry, well ventilated location. Firewood can be a harborage for insects and if stored indoors may present a potential fire hazard.
- Chimneys should have spark arresters installed to prevent sparks from touching off fires on roofs, in yards or in leaves that accumulate in gutters.
- A chimney flue cap, if installed properly, will eliminate the possibility of birds and animals entering the flue and keep rain from entering the chimney and firebox.
- During the heating season, regularly clean ashes out of the fire box, ensuring that all embers have been extinguished before removal.
- Non-seasonal maintenance includes having the firebox and flue (whether of masonry or metal) professionally cleaned and inspected.

For more information on Fireplace Safety contact a qualified chimneysweep, your local fire department, or

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

The Chimney Safety Institute of America
2155 Commercial Drive
Plainfield, IN 46168
(317) 837-5362
http://www.csia.org

PLUMBING SYSTEMS

The plumbing system of the home is divided into two separate and distinct subsystems for distribution and conveyance of potable and non-potable water. The potable water system supplies a fresh source of hot and cold water for cooking, drinking, bathing, and cleaning, while the non-potable water system provides drainage and disposal of the septic by-products of these activities.

Neglect and improper use of the plumbing systems can cause unnecessary need for repairs and in some cases system damage and health hazards. If you suspect a problem or are in doubt of a particular components operability, consult a master plumber. Remember, your plumbing system is most important for providing sanitary conditions in the home.

WATER SUPPLY

- Ensure that the open end of hose attachments are never left in standing water such as sinks, bath tubs, mop buckets, or swimming pools. If back-siphonage occurs contaminated water may enter the fresh water supply lines.
- Ensure that chemical spraying attachments on hoses are equipped or supplied with a backflow prevention device.
- Check attics, crawlspaces, garages, and outdoors for any water supply piping in need of insulation from extreme temperatures. Note: Use caution when thawing frozen pipes by applying only a moderate amount of heat.
- Replace antiquated commode tank valves (ballcocks) with anti-siphon valves to avoid the possibility of back-siphonage or backflow.
- If at any time you are suspect of the quality of the water supply, have it tested by the local public health department or a certified laboratory. Be aware of any changes in taste, color, or odor and have it checked for the presence of lead.
- Never connect water lines originating from two different supply sources, to avoid cross-contamination.
- Contact the water supplier before any excavation commences to avoid damage and disruption to water supply lines.

SUPPLY DISCONNECTS

The main shut-off valve for the water supply is typically found at or close to the water meter. To shut the water supply off, turn the handle of the valve clockwise until it stops. If no main valve is provided, the only option will be to shut the water off at the curb cock, which is the supplier's valve on the street side of the meter.

If the water is supplied by a private on-site well, locate the shut-off valve at the well head or near the supply tank. The valve should be on the house side of the supply line from the tank. To shut the water off, turn the handle of the valve clockwise until it stops.

WATER HEATER

In the typical home hot water is supplied by either an electric or gas-fired water heater. Most water heaters require only a modest amount of attention to ensure continuous and safe performance.

- Set thermostats for water temperature at fixture taps between 115ºF and 130ºF. Water supplied at temperatures higher than 130ºF may burn or scald.
- Test the temperature and pressure (T&P) relief valve regularly (once every three months) to ensure it is operable. Before testing see that the drain line is connected and terminates at the exterior of the house. Lift the test lever to unseat the valve and release water from the tank. If no water is released or the valve fails to reseat, have the valve replaced. Regularly check the housing for indications of rust and check all fittings for any indications of leaking or corrosion.
- On gas-fired water heaters check the burner compartment for signs of excessive scale build-up and the vent for proper drafting of flue gases. Any evidence of inadequate drafting should be investigated immediately as concentrations of carbon monoxide can cause illness or death.

SEWAGE DRAINS

- Ensure that the dishwasher drain line is provided an air gap or backflow prevention device to prevent waste water from entering the washer cabinet.

- Never introduce food, grease, hair or solid waste into sewage drains. Install and use drain strainers in all plumbing fixtures. Remove debris from strainers regularly and dispose with household waste.
- Never use caustic chemicals to unclog drains. Use a plunger or auger to dislodge debris or disassemble traps for cleaning.
- Locate the main building drain clean-out (typically found within 3 feet of the foundation) and ensure continued accessibility. This is normally the first place the plumber will investigate for causes of blockage.

SEPTIC TANKS

Septic tanks should be pumped clean when solids reach two thirds of the liquid depth of the tank. Leave this job to the professionals as septic tank wastes must be disposed of according to state health regulations.

DRINKING WATER

Most people take for granted and give little thought to the source of our drinking water, its overall quality, and its vulnerability to contamination. Advanced methods of analysis, greater health and environmental awareness, and increased reports of drinking water contamination have contributed to a greater scrutiny regarding drinking water quality. Water is much more than a simple liquid. Chemists refer to water as the "universal solvent" because of its ability to dissolve and convey other compounds (or pollutants).

The U.S. Centers for Disease Control report an approximate annual average of 7500 cases of illness associated with drinking water caused by contamination. The actual figures are probably higher because water contaminations are often unreported and are rarely considered when diagnosing or treating illness.

Surface water and groundwater are the main sources for our drinking water. Surface water contains plant and animal life including bacteria and algae. It is easily contaminated by sewage and synthetic chemicals. Groundwater generally contains a low percentage of animal and plant life but has higher levels of dissolved minerals such as iron, sulfur, and salts. In-ground water contamination can occur when hazardous chemicals, such as pesticides, fertilizers and improperly discarded consumer products percolate through the soil into underground water supplies. Damaged or improperly operating private septic systems, municipal sewer systems, or improperly managed industrial by-products can also contribute to ground water contamination. Landfills, injection wells, surface impoundments, mining wastes, and underground pipelines and storage tanks all contribute to this problem.

Since 1977, federal law has required water suppliers to periodically sample and test the water supplied to homes. The Safe Water Drinking Act (SDWA) Amendments of 1986 require the EPA to regulate some eighty potential contaminants, including Inorganic Chemicals, Microbiological Contaminants, Organic Chemicals, Radionuclide Contaminants, Volatile Organic Chemicals and Turbidity.

WATER SUPPLY QUALITY

If the home has a public water supply source, federal law requires the provider to correct any contamination problems. The only way to know whether or not the water in a home is contaminated is to have it analyzed. When tests reveal that a drinking water standard has been violated, the supplier must correct the situation, notify the consumer and report the violation to the appropriate state agency.

If the home is supplied with water from its own private well, laboratory testing of a drawn sample is the only way to determine water quality. Decontamination costs depend on the kinds and amounts of contaminants present. Some wells are not feasible to decontaminate. Local environmental and water quality officials may be able to provide additional information and assistance for decontamination. If you suspect contaminated well water, or prior to buying a home you wish to test water quality, contact local, county, or state health officials for information about testing services.

- Have the water tested for possible contamination by plumbing materials.
- Never allow water hoses or hose attachments to remain in standing water.
- Use anti-siphon valves in commode tanks. Never allow diaphragm-type valves to be submerged.
- Install backflow prevention devices on all hose bibs.
- Have water supplied by a private well regularly tested for contamination.

For information concerning Water Quality, contact your local, county, or state health department, or

U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Safe Drinking Water Hotline (800) 426-4791
http://www.epa.gov

STORM AND FLOOD SAFETY

Thunderstorms are formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air upward, such as a weather front or geographical features. In an average year there are 100,000 thunderstorms in the United States, producing lightning, heavy rain, wind, hail and tornadoes. Lightning causes more injuries than any other weather-related hazard. Hail can be smaller than a pea or larger than a softball, causing tremendous damage to vehicles, buildings, crops and livestock. Tornadoes are small but violent, twisting storms with wind speeds approaching 300 miles per hour.

Some thunderstorms can be seen approaching, while others hit without warning. It is important to learn and recognize the danger signs and to plan ahead. Dark, towering clouds and distant lightning and thunder may indicate a storm approaching. A greenish tint in the sky usually indicates hail formation. Tornadoes are often preceded by hail, brief reductions in wind speed, visible debris and funnel clouds. Flash floods usually occur with no warning.

NATIONAL WEATHER SERVICE WATCHES AND WARNINGS

A watch means conditions are right for dangerous weather. For events that come and go quickly, such as severe thunderstorms, tornadoes or flash floods, a watch means that the odds are good for the dangerous weather, but it's not yet happening. For longer-lived events, such as hurricanes or winter storms, a watch means that the storm isn't an immediate threat. For both types, a watch means you should keep up with the weather and be ready to act. When a severe thunderstorm, tornado or flash flood watch is in effect, it means you should watch the sky for signs of dangerous weather. Hurricane or winter storm watches mean it's time to prepare by stocking up on emergency supplies and making sure you know what to do if a warning is issued. For those who live near the ocean, a hurricane watch may mean it's time to prepare for evacuation.

A warning means that the dangerous weather is threatening the area. For severe thunderstorms, tornadoes and flash floods, a warning means the event is occurring. A tornado warning means be ready to take shelter immediately if there are any indications a tornado is approaching. Severe thunderstorms are larger, and a warning means to prepare for the storm. A hurricane warning means either evacuate or move to safe shelter. A winter storm warning means not to venture out or travel.

Sometimes a severe thunderstorm, a tornado or a flash flood happens so quickly that warnings can't be issued in time. People who live near streams that quickly reach flood levels should be ready to flee at the first signs of a flash flood.

- Have disaster supplies on hand and prepare a Disaster Plan.
- Designate a safe place within an interior room on the lowest level of the building.
- Remove dead or rotting trees and branches.
- Teach family members how and when to turn off gas, electricity and water.
- Teach children how and when to call 911, police, or fire department, and which radio station to tune for emergency information.
- Do not attempt to drive through low-water crossings in a vehicle.
- Stay away from tall objects if you hear thunder. Attempt to get indoors or into a car.
- Never attempt to outrun a tornado in a vehicle.
- If a lightning strike causes the victim's heart and breathing to stop, give cardiopulmonary resuscitation until medical professionals arrive and take over.
- Pets and livestock are particularly vulnerable to hail.

Mobile homes and manufactured housing are particularly vulnerable to severe thunderstorms and tornadoes. If a tornado approaches, take shelter in a strong building. If not available, lie in a ditch or low-lying area a safe distance away from the unit.

HOMEBUYERS

Find out if prospective properties lie in flood plains. If so, investigate and understand the special insurance and construction requirements for housing in flood plains.

For information about Storm and Flood Safety contact your local emergency management agency, or

Federal Emergency Management Agency
500 C Street S.W.
Washington, D.C. 20472
(800) 621-3362
http://www.fema.gov

INDOOR AIR POLLUTION

With increased awareness of the necessity for energy conservation, homeowners and builders alike have been taking greater measures to reduce the migration of conditioned air from the interior of homes. Tightly sealing the house results in lower ventilation rates and fewer air changes, thereby reducing heating and cooling costs. Although this is a good energy conservation policy, the practice can lead to higher concentrations of air pollutants within the home and as a result can cause uncomfortable, malodorous and/or unhealthy conditions.

Indoor air pollutants include dioxides, respirable suspended particles, tobacco smoke and volatile organic compounds. Carbon dioxide and nitrogen dioxide are gaseous compounds produced as a result of combustion. Health effects of carbon dioxide include fatigue and shortness of breath at moderate concentrations; headaches, dizziness, nausea and impaired vision and coordination at high concentrations; and coma or even death at very high concentrations. Health effects of nitrogen dioxide include eve, nose and throat irritation, respiratory problems and chronic lung diseases. Sources include wood burning appliances, unvented gas and kerosene space heaters, gas stoves and tobacco smoke.

Respirable Suspended Particles (RSPs) are minute particles which remain suspended in indoor air and can be inhaled into the respiratory system. Health effects include eye, nose, and throat irritations, respiratory infections, bronchitis and lung cancer. Sources of RSPs include organic dusts, tobacco smoke, unvented heating appliances, wood burning appliances, and dirty heating and air conditioning systems.

Tobacco smoke when contained indoors can be a major source of indoor air pollution emitting carbon monoxide, nitrogen dioxide, and respirable suspended particles. Health effects of tobacco smoke include allergic reactions, bronchitis, chest colds, ear infections, pneumonia, lung disease, and lung cancer, along with a number of non-apparent but associated adverse health effects.

Volatile organic compounds are organic chemical compounds capable of gassing or vaporizing at room temperatures and intermixing with indoor air. Health effects include eye, nose and throat irritation, nausea, headaches, and coordination loss at low concentrations. Fatigue, memory impairment, mental confusion, and liver, kidney and nervous system damage can occur at high concentrations or prolonged exposure.

- Verify that gas- and kerosene-fired appliances are adjusted with regard to proper fuel-air mixture.
- Keep appliance vents unobstructed and undamaged. Verify terminations to the exterior of the house.
- Regularly change return air filters in heating and cooling systems. Allow only a professional technician to inspect, clean or repair heating and air-conditioning systems. Have these systems serviced regularly.
- Use household products such as paints, thinners and cleaners according to manufacturer's directions with special regard to ventilation requirements.
- Eliminate or reduce tobacco smoke by quitting or smoking outdoors.
- Control indoor air contamination by removing pollution sources or reducing the amount of pollution generated.
- Lower contamination levels by utilizing natural and mechanical means of ventilation to provide a constant fresh air source.
- If a self-contained environment is necessary, have an air treatment device installed. Consult with your physician and a reputable indoor air expert before investing in one of these products.

OTHER INDOOR AIR POLLUTANTS

Other indoor air pollutants include asbestos, carbon monoxide, formaldehyde, radon and biological pollutants. These are discussed in subsequent sections.

For information regarding Indoor Air Pollution contact

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

American Lung Association
61 Broadway, 6th Floor
New York, N Y 10006
http://www.lungusa.org

U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Indoor Air Quality Information Clearinghouse (800) 438-4318
http://www.epa.gov

ASBESTOS

Asbestos is an incombustible fibrous mineral form of impure magnesium silicate found in rocks and soil throughout the world. Asbestos has been used for fireproofing building materials because it is strong, durable, fire retardant, and an efficient insulator. Asbestos and asbestos containing materials (ACMs) have been used to manufacture a variety of products, such as floor coverings, ceiling tiles, siding tiles, roofing shingles, insulation, soundproofing and fire retardant materials for heating and electrical systems.

Asbestos has been identified as a carcinogen or potential cancer-causing agent. When inhaled, airborne particles of asbestos fibers become lodged in the lungs attaching to lung tissue and as repeated exposures occur over time, concentration levels rise. Statistical information indicates asbestos has caused cancer of the lungs and stomach among those who have been subjected to extended work related exposure. Health risks and effects of low exposure within the home are not fully known; however, experts are unable to provide assurance that any level of exposure to asbestos fibers is safe. Health risks can be present when age, damage, cleaning, construction, remodeling or other activities cause microscopic asbestos particles to be released into the air. Asbestos fibers can cling to unprotected skin, clothing and interior surfaces.

According to the EPA, most homes built after the mid-1970s probably do not contain products manufactured with asbestos materials. If the home was built or remodeled prior to the mid-1970s, it most likely will contain some asbestos materials. Suspect areas where asbestos is found include pipes and furnaces (insulating jackets and sheathing); vinyl and linoleum flooring materials; ceiling tiles; exterior roofing, shingles and siding; wallboard; patching compounds or textured paints; and door gaskets on stoves, furnaces and ovens. It can also be mixed with other materials, or troweled or sprayed around pipes, ducts, and beams.

If you suspect any material contains asbestos, have it inspected by a qualified professional. The asbestos inspector will know where to look for asbestos, how to take samples properly, and what corrective actions will be the most effective. Also, the product manufacturer may be able to provide information regarding asbestos content based on the model number and age of the product. If ACMs are found, it should be determined whether they are in good condition with no physical damage or deterioration.

An asbestos risk assessment may recommend the following:

(1) Regular inspections only,

(2) Abatement by enclosure or encapsulation, or

(3) Abatement by total removal.

The immediate necessity of abatement is determined by the location, usage, type, and condition of the material.

- Never saw, sand, cut, file, scrape or drill any material suspected of being asbestos or an asbestos-containing material, as particulates may be released into the air.
- Use extreme care when handling any material suspected of being asbestos or an ACM. Avoid personal contact if at all possible.
- If construction necessitates disturbing the material, hire a qualified contractor for abatement. Secure alternative housing until the abatement process is completed to limit your exposure.

The repair or removal of asbestos or ACMs from a home is generally a complex and time-consuming process depending on the amount present, the percentage contained, and how the asbestos product was manufactured. Total removal of even small amounts is usually the last alternative. Contact local, state, or federal health departments before deciding on a course of action. To ensure safety and elimination of health hazards caused by asbestos, repair or removal should be performed only by properly trained contractors.

Your EPA regional office can provide information on qualified asbestos contractors and laboratories.

For information regarding Asbestos and ACMs contact your local, county, or state Health Department, or

U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Toxic Substances Control Act Hotline (202) 554-1404
http://www.epa.gov

The Environmental Information Association
6935 Wisconsin Avenue, Suite 306
Chevy Chase, MD 20815-6112
(301) 961-4999
http://www.eia-usa.org

CARBON MONOXIDE

Often called “the silent killer,” carbon monoxide is a colorless, odorless, and highly poisonous gas formed by the incomplete combustion of carbon or carbon compounds. The gas is produced whenever fuel does not burn completely during the combustion process.

Low levels of carbon monoxide are often present in the environment and typically do not warrant concern. However, exposure to abnormally high levels or even moderate levels for prolonged periods of time can result in illness or possibly death. Carbon monoxide disables and kills by displacing the body’s ability to absorb oxygen. Without adequate oxygen, major body organs are unable to function properly.

Concentrations of health-threatening carbon monoxide can be released from any (also faulty or improperly used) fuel-burning appliance. Sources include gas ovens and ranges, charcoal grills, kerosene lamps, gas and kerosene space heaters, gas furnaces, gas-fired water heaters, wood burning stoves and fireplaces. The most threatening situations occur when carbon monoxide levels rise in enclosed areas within the home, such as habitable rooms and garages. Statistics indicate that the majority of people who die in fire-related accidents usually die from asphyxiation by carbon monoxide poisoning rather than from burns.

A dangerous aspect of carbon monoxide poisoning is the subtlety with which the gas affects the victim such that the victim may be unaware of the danger. Physical symptoms may include a severe headache, dizziness, fatigue, agitation, confusion, rapid breathing, chest pains, vomiting and fever. Since many of these symptoms are associated with common viruses, victims who experience symptoms may not recognize them as carbon monoxide poisoning. Symptoms are typically more pronounced and noticeable when the affected person awakes from sleep and subside rapidly upon introduction of an uncontaminated fresh air supply. In severe cases of carbon monoxide poisoning the victim totally succumbs to its oxygen-depleting effects.

- Never allow anyone to sleep in an area which was not intended for sleeping, such as a garage.
- Provide adequate ventilation when using wood stoves or gas and kerosene space heaters.
- Ensure that all fuel burning appliances are properly installed, adjusted and maintained by a qualified service technician.
- Install carbon monoxide detectors near sleeping areas, gas-fired appliances and garage entrances.
- Service your carbon monoxide detectors frequently by replacing batteries, cleaning and testing the alarm.
- Never use a fuel-burning appliance for any purpose other than which the manufacturer intended. Do not use gas ovens or ranges for heating purposes.
- Make sure your furnace has an adequate intake of outside air.
- Ensure that combustion gas vents and flues terminate at the exterior of the home.
- Have your furnace serviced yearly and make sure the burners are kept clean to prevent incomplete combustion.
- Never burn charcoal for cooking or heating inside a home.

IF YOU SUSPECT CARBON MONOXIDE POISONING

- Immediately relocate the affected person from the contaminated area to a fresh air source.
- Call 911, the local hospital or local fire department to dispatch emergency services personnel. Check the victim’s pulse. If you feel a pulse but the victim is not breathing, begin mouth-to-mouth resuscitation.
- If you cannot feel a pulse and the patient is not breathing, begin cardiopulmonary resuscitation (CPR) until emergency personnel arrive.
- Advise emergency personnel or the attending physician that carbon monoxide poisoning is suspected.
- Call the Gas Company or the appropriate professional repairman to assess and correct the contamination problem before occupying the contaminated area.

For information concerning Carbon Monoxide Poisoning contact your personal physician.

For information regarding Carbon Monoxide Safety contact your local gas company, or

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

FORMALDEHYDES

Formaldehyde is a colorless, gaseous compound used in the production of building materials, consumer products and other chemicals and is one of the large family of chemicals called volatile organic compounds (VOCs). It is released into the air by the process of combustion and is released or emitted from materials manufactured with it. Sources of formaldehyde include insulation, pressed wood products, tobacco smoke, consumer products such as cosmetics and paints, and unvented fuel burning appliances such as gas stoves and kerosene space heaters.

The most significant sources of formaldehyde are urea-formaldehyde foam insulation (UFFI), adhesives used to bond pressed wood building materials and in plywood used for interior and exterior construction. Urea-formaldehyde (UF) resins are found in wood products that are intended for indoor use. Phenol-formaldehyde (PF) resins are used in products intended for exterior uses. UF resins emit significantly more formaldehyde gas than PF resins.

Formaldehyde has been shown to cause cancer in animals, but there is no conclusive evidence linking the chemical to cancer in humans. Individuals can be affected differently by the gas, some being very sensitive while others may have no noticeable reaction. Higher than normal levels of formaldehyde in the home environment can cause asthma attacks, skin rashes, watery eyes, burning sensations in the eves, throat, and nose, breathing difficulties and allergic reactions. Some individuals acquire a reduced tolerance to formaldehyde following an initial exposure to the chemical. In these cases, subsequent exposures to even small amounts of formaldehyde can cause reactions.

In the home, subflooring, wallboard or foam insulation between inner and outer walls may be sources of formaldehyde gas. If increased ventilation does not lower these emissions to acceptable levels, the only abatement alternatives will be to enclose or encapsulate the material or to remove the formaldehyde bearing material altogether. In most cases, abatement procedures will be costly, time consuming, and temporarily disruptive to the occupants.

Buyers of new homes should consult with the builder prior to purchase if a family member is sensitive to the gas and the presence of formaldehyde-containing materials is suspected. The builder should be able to identify if construction materials contain formaldehyde by providing product labels, or the information may be obtained directly from the manufacturers of specific products.

Regarding older homes, formaldehyde-emitting materials may not be visually evident and the current owner may not have product information available. Because formaldehyde emissions from building materials decrease as the materials age (particularly over the first two or three years), older urea-formaldehyde building materials most probably will not be a significant source of formaldehyde gas emissions.

- Reduce indoor use of cigarettes, cigars, etc.
- Avoid using unvented kerosene or gas fired appliances.
- Ensure wood burning appliances are adequately vented to exterior.
- Use alternative products such as lumber or metal.
- Avoid using foamed insulation containing formaldehyde. Wash durable press fabrics before use.
- Increase the ventilation of the livable areas of the home.
- Reduce humidity levels indoors.
- Remove all known formaldehyde-emitting products.
- Purchase low-formaldehyde-emitting products for use in construction or remodeling of homes.

HOMEBUYERS

If you suspect the presence of formaldehyde, you may wish to hire a qualified inspector to examine the home for the presence of formaldehyde emitting materials. Also, home monitoring kits are currently available for testing formaldehyde levels. Prior to purchase, ensure that the testing device monitors for at least 24 hours to obtain a reasonable representative measurement. The methods used to reduce formaldehyde vapors or materials will depend on the situation present in your home. Your local, county or state health departments or indoor air professional can help you select the appropriate abatement methods.

For information concerning formaldehydes contact your local, county or state health department, or

The Formaldehyde Institute
1330 Connecticut Ave., N.W.
Washington, DC 20036

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

RADON

Radon is a colorless, odorless, tasteless, heavy gas emitted as a by-product of uranium during its decaying process. Radon can be found in the atmosphere, soils, and groundwater in varying quantities throughout the world. As the gas migrates from underground to the surface it can be absorbed by groundwater and can accumulate and become trapped under house foundations. If there is a source of entry into the home, radon gas can remain and circulate in enclosed areas.

Decay products of radon gas are microscopic radioactive particles. These particles can become suspended in the air and, as you inhale, attach to the tissues of the lungs. As the particles continue to decay, radiation energy is released which can cause tissue damage potentially resulting in lung cancer. Research indicates that the health risk increases as the level of radon gas concentration and duration of exposure increases. It has been determined that short term exposure to higher concentrations does not present as much risk as prolonged inhalation of low concentrations of the gas. It is estimated that radon exposure leads to 7000 to 30,000 deaths per year.

The proportion of radon to air is measured in units of picocuries per liter of air (pC/L). Statistical estimates indicate that the average home will contain from one to two pC/L of radon. If radon levels of four pC/L or greater are found in habitable areas of the home, it is recommended by the EPA that extended tests be conducted. The EPA has estimated the risk of dying from lung cancer as a result of exposure to an annual radon level of four pC/L is equal to the risk of smoking ten cigarettes a day or being exposed to 200 chest x-rays during one year. Outdoors, radon gas is not considered a problem. As the gas reaches the atmosphere it diffuses and is no longer considered a health threat.

Sources of radon within the home include contaminated well water and soils surrounding the foundation. As water is dispensed from shower heads and fixture taps, aeration of the water allows the gas to be released into the surrounding air Homes with water supplied from a municipal water supply are less likely to experience a radon contamination problem within the water due to special treatment procedures. Radon can also enter a home through cracks in concrete, plumbing traps, sub-grade wall and floor joints, and any porous construction material. Increases in the rate of migration can be caused by negative atmospheric pressure within the home. Radon, being a heavier-than-air gas, will seek the areas of the home which are closest to the ground and concentration levels of the gas will typically decrease at the higher elevations within the home. Contamination levels can vary from home to home depending on construction type and soil composition.

Inexpensive test kits, for preliminary testing, can be purchased at most hardware and grocery stores. Prior to buying the detection kit, ensure the kit and supplier have been approved by federal or state health, environmental health, or consumer protection agencies. Follow label directions to ensure that accurate measurements are obtained. Short term (carbon canister) and long term (alpha tract) test kits are available and relatively easy to use. Short-term testing can provide preliminary results in just weeks. Long-term testing is more accurate but may take months or up to a year to deliver results.

If radon is found in excessive concentrations, abatement methods and costs will vary as a result of construction type and location. The method employed for abatement will depend on the source of the gas and the means in which it is entering the house. The cost factor will depend on the number of sources, amount of gas entering the home, and the construction type. Normal costs of reduction may range from several hundred to several thousand dollars.

The extent of the contamination and necessary abatement procedures will determine whether the homeowner can rectify the problem or a qualified contractor is needed. Prior to securing a contractor for assessment or abatement, consult your local, county, or state health department for recommendations of qualified radon reduction contractors.

- Prior to purchasing a new home, have it tested for radon gas contamination. If you already own a home, test or have your home tested for radon gas.
- If excessive concentrations are found to exist after testing, keep the home well ventilated until abatement procedures are completed.

For information concerning indoor air contamination by Radon Gas contact

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
(630) 285-1121
Radon hotline (800) 767-7236
http://www.nsc.org

BIOLOGICAL POLLUTANTS

Biological pollutants are by-products of living organisms. They cause poor indoor air quality and contribute to illness and lost productivity. Biological pollutants can become suspended and circulated through indoor air and are most often undetectable by sight. Common indoor biological pollutants include animal dander, bacteria, viruses, insect parts, sewer gas, pollen, molds, algae and fungi.

Health risks depend upon the type and amount of biological pollutants and the sensitivity of the individual person. Some people do not experience health reactions from certain biological pollutants, while others may experience allergic, infectious or toxic reactions. Common sources of biological pollutants in the home include dry plumbing traps (where water seals have evaporated), humidification and dehumidification equipment, poorly ventilated bathrooms and kitchens, refrigerator condensate drip pans, laundry rooms with unvented dryers, unventilated attic spaces, interior vent terminations, damp or dirty carpets and bedding, heating and air-conditioning systems, pets, and water-soaked building materials.

Nutrients, along with moisture and poor air circulation, are major factors which contribute to biological growth and contamination. Every home should have proper attention to moisture control, general cleaning and dust reduction.

- Maintain water-tight integrity of the exterior at all times.
- Maintain all plumbing, especially in baths, kitchens and utility rooms.
- If the structure is supported by pier and beam, provide sufficient crawlspace ventilation and if necessary cover soils with a plastic vapor barrier to prevent moisture migration.
- Use exterior exhaust vents and fans to remove moisture from kitchens, bathrooms and driers.
- Use dehumidifiers and air conditioners to reduce indoor humidity.
- To avoid condensate build-up, maintain surface temperatures by increasing air circulation.
- Have furnaces, air-conditioners and ducts professionally cleaned and inspected before seasonal use.
- Change or clean filters on heating and cooling systems monthly (or more often).
- Clean humidifiers and de-humidifiers regularly and in accordance with manufacturer's recommendations.
- Clean refrigerator drip pans regularly and ensure proper sealing of door gaskets.
- Regularly clean surfaces in contact with moisture such as bath tub and shower surrounds, commodes, bath vanity counter tops and kitchen counter tops.
- Eliminate mold growth from walls, ceilings, and floors with cleaning agents as soon as possible.
- Regularly clean shower curtains and replace when needed.
- Dust and vacuum often to remove surface dust from sofas, stuffed chairs, carpets, bedding, open shelves, wall coverings, decorations, and Venetian blinds.
- Wash linens and clothes in hot water at a temperature of 130 degrees to kill dust mites.
- Ensure airtight seals in infrequently used plumbing traps by regularly replacing evaporated water.
- Make sure all plumbing vents terminate at the exterior of the house away from windows.

HOMEBUYERS

- Hire a professional to inspect central air ducts for dust and biological growth.
- Ensure that all exhaust vents terminate at the exterior of the house and not in attics or crawlspaces.
- Where exhaust vents are not provided, verify alternate means of ventilation.
- Inspect throughout the structure for evidence of mildew or mold growth.
- Inspect ceilings, walls, floors, floor coverings, and windows for evidence of past or current moisture problems, decay or dampness.
- Check for general cleanliness of all interior surfaces.
- Inspect exterior and interior for infestation of insect pests.

For more information concerning biological pollutants contact

American Lung Association
61 Broadway, 6th Floor
New York, N Y 10006
http://www.lungusa.org

LEAD

Lead is a soft, bluish-white, and heavy metallic element found worldwide in soils. Recent research shows lead is a greater hazard at lower levels of concentration than previously thought. These findings, combined with more than 50 million tons of lead introduced into the North American environment over the last century, has led to widespread concern about contamination.

Lead poisoning is an immediate environmental health threat to children in the United States. Almost two million children have blood lead levels above safe limits.

Lead quickly accumulates in the blood, bones, nerves and soft tissues of the body. High concentrations of lead can cause death or permanent damage to the nervous system, brain, kidneys, and red blood cells. Even low levels of lead can cause high blood pressure in adults. Infants, children, pregnant women, and fetuses are more vulnerable to health risks associated with lead exposure than others because lead is more easily absorbed by growing bodies and the tissues are more sensitive to the effects of lead. The result is reduced intelligence and increased behavioral and health problems. Sources of lead in and around the home include drinking water, deteriorated paint, dust and soil.

- Test children under age six for blood lead levels regardless of apparent physical condition.
- Have a state-certified Risk Assessor perform sampling and risk assessment.
- Wash children's hands, bottles, pacifiers and toys often.
- Feed children healthy, low-fat foods.
- Regularly clean floors, window sills, play areas and other surfaces.

LEAD IN DRINKING WATER

In 1986 the U.S. Environmental Protection Agency banned further installation of lead-containing materials in public water supplies and in residences connected to public water supplies. In 1988 the U.S. Congress banned the use of lead-based solder in plumbing applications within homes and buildings. However, many homes built prior to 1988 contain plumbing systems that use lead-based solder in pipe connections. In such systems, lead can enter drinking water as a corrosion by-product when plumbing fixtures, pipes, and solder are corroded by drinking water. Concentration increases over time as lead dissolves into the water within the plumbing system. Under typical circumstances, lead levels in water at faucet taps can be far greater than those found in water at the treatment plant.

Visual inspection of pipe joints and solder lines is not an efficient nor accurate means of determining whether or not decaying solder is a source of lead. A simple chemical test can determine whether the solder used in a home contains lead or not. Also, the majority of faucets and plumbing fixtures used today are made of leaded materials and contribute some lead to home water supplies.

- Have the water tested if it is supplied from a private well, if supply pipes are suspected of containing lead or lead solder, or if the water supplied is corrosive.
- Run water from the faucet tap for 30 seconds or longer before using it for drinking or cooking.
- Do not use water from the hot water tap for drinking or cooking, as heat helps to dissolve lead.
- Regularly remove and clean faucet tap strainers to remove potential leaded debris.
- Ground electrical wiring to soil rods rather than plumbing pipes to help prevent galvanic corrosion.

LEAD IN PAINT, DUST AND URBAN SOILS

The manufacture of consumer lead-based paint was banned by the Federal government in 1978, but according to the U.S. Department of Housing and Urban Development 75% of all housing built before 1980 possibly contains lead paint. EPA estimates indicate lead-based paint is present in approximately 14% of U.S. homes:

Build Date	before 1940	1940-1960	1960-1980
Lead Paint (est.)	2/3	1/3	< 1/3

The health risk to children as a result of eating lead-based paint chips has been known for years. However, the prevalence of exposure to leaded dusts and soil have been documented only recently. Airborne lead particles and fumes are introduced within a home when lead-based paint is scraped, sanded, or heated during normal usage or repainting. Exterior urban soils are often leaded due to weathering of exterior lead-based paint,

leachate from exterior lead components, industrial sources and vehicle exhaust. Some urban surface soils are 10% leaded dust. Dust may be tracked into the home or conveyed by wind through open doors and windows. Once present in the home environment, lead particles are recirculated by normal household activities, leading to eventual inhalation or ingestion.

- Never sand, scrape or heat paint which may contain lead.
- Do not try to remove or abate paint which might be lead-based yourself.
- If lead-based paint is found, proceed with professional risk assessment immediately.
- During abatement or remodeling seek alternate housing. Pregnant women and women of child-bearing years should not expose themselves or participate in the abatement process in any way.
- Keep yard areas well vegetated to minimize potential exposure to contaminated dust and soil.

HOMEBUYERS

The Residential Lead-Based Paint Hazard Reduction Act of 1992 requires disclosure by sellers, provides buyers with opportunity to conduct risk assessment and/or paint inspection and regulates persons performing these services. Lead paint inspections are a surface-by-surface investigation to determine lead content. Certified paint inspectors can designate leaded surfaces, but are not allowed to conduct dust or water sampling, quantify hazards or recommend abatement. Certified risk assessors can conduct paint inspections, collect samples, quantify hazards and recommend methods to manage or abate the hazard.

- Read and understand the lead information provided by your realtor and/or home inspector.
- Procure a risk assessment including water, dust and soil testing. Have any paint you believe may have been applied before 1978 inspected.

Contact local, county, or state departments of health for references of qualified testing laboratories.

For information concerning Lead contact your local, county, or state health department, or

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
(630) 285-1121
National Lead Information Center Hotline (800) 424-LEAD
http://www.nsc.org

U.S. Department of Housing and Urban Development
451 7th Street S.W., Washington, DC 20410
(202) 708-1112
http://www.hud.gov/offices/lead/index.cfm

ELECTROMAGNETIC FIELDS

During recent years, awareness of the presence of electronic and magnetic field radiation within the home environment has garnered some concern. Electric and magnetic fields occur wherever electrical current flows or is generated. These fields are created by power lines, home wiring and appliances. Magnetic fields can pass through most objects without being significantly affected, while electric fields are affected by objects that conduct electricity.

After extensive scientific and epidemiological research, physiological effects of fields upon humans, if any, are unknown. Laboratory research indicates that fields can produce physiological changes, but any effect on health has not been established. Early epidemiological studies suggested an association between field exposure and certain cancers, but more detailed follow-up studies have not verified any association.

The typical home can partially shield electric fields generated from an exterior source. Research indicates that the typical house can shield about 90% of electric fields generated outdoors. If a house is adjacent to a power line, the field strength inside the house will be approximately 10% of that outside. At the interior of the home, electromagnetic fields are emitted by transformers, computers, televisions, appliances – anything powered by electricity. Field intensity drops dramatically over distance and disappears altogether when electrical components are not in use.

- Increase your personal distance from appliances which are in use when manageable and practical.
- Turn off or disconnect appliances not in use.

HOMEBUYERS

- Locate electrical distribution and transmission lines and consider their proximity to the home.
- Contact the local electric utility or a qualified engineering firm to perform field strength measurements.

For information about potential health risks associated with Electromagnetic Radiation contact

U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, DC 20585
(800) DIAL-DOE
http://www.doe.gov

Electric Power Research Institute
3420 Hillview Ave.
Palo Alto, CA 94303
http://www.epri.com

PESTICIDES

Pesticides are used to control microorganisms, plants, insects, vermin and animals which are a nuisance, health hazard or structural pest. EPA regulations require all pesticides to undergo testing and that the product label must include the EPA registration number, target pest, active ingredients, instructions for proper application and use, precautionary statements, and Statement of Practical Treatment. It is imperative that applicators read and understand all information prior to purchase and use.

Many available pesticides can potentially cause adverse health effects, toxic poisoning, and death. Following the manufacturer's instructions for application will help to reduce contamination and health hazards while maintaining the desired effect of pest management. Extreme care should be taken when applying pesticides outdoors near water or water wells. If application of pesticides requires spraying, avoid down-wind contamination of non-targets such as your neighbor and his possessions, vehicles, water sources, and nondestructive insects and animals.

- Identify the pest, understand its habitat requirements and use non-toxic interventions, such as mechanical barriers, lifestyle modifications, pheromone or bait traps before resorting to chemical pesticides.
- Purchase pesticides only in quantities to be used for a single application. Avoid storage if possible.
- Prior to application read and understand the entire label including Directions For Use and the Statement of Practical Treatment in case of accidental poisoning.
- Ensure that everyone, including children and pets, are clear of the area to be treated.
- Avoid application where food preparation takes place. Remove all food, cooking and storage utensils prior to application and wait until chemicals have dried before returning them to treated areas.
- Employ the use of protective clothing and equipment as advised by the pesticide manufacturer.
- Ensure adequate ventilation of areas during the treatment process.
- Leave treated areas immediately after application, thoroughly clean equipment and reenter only as advised by the manufacturer's instructions.
- Dispose of pesticides and pesticide containers strictly according to manufacturer's instructions.
- Always store unused pesticides in their original containers with labels attached. Ensure that the storage area is well ventilated and locked to prevent unauthorized access.
- Wash clothing used during pesticide applications separately from normal household wash. Clean foot wear, head gear and gloves to remove any chemical residues.
- After treatment and equipment clean-up, shampoo hair and scrub any skin exposed during application.

At some time the homeowner may require the services of a commercial exterminating company. Request bids and references from at least three exterminating companies. Compare prices, check references and qualifying credentials, check the company's insurance coverage including workmen's compensation, terms of the treatment proposal and terms of the guarantee. Do not be afraid to ask as many questions as you like and be comfortable with the answers you receive before signing a contract.

IF YOU SUSPECT PESTICIDE POISONING

- Immediately wash external contamination with soap and water.
- Take the patient to the nearest doctor, hospital, or clinic. Do not allow the patient to drive.
- Advise the attending physician that the patient is suspect of being poisoned by pesticides.
- If possible, provide the pesticide product label for the physician.

For emergencies concerning pesticides, contact

National Poison Control Hotline (800) 222-1222

For information regarding Pesticide Safety contact your local, county, or state health department, or

U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
http://www.epa.gov

For general information concerning pesticides, contact

National Pesticide Telecommunications Network (800) 858-7378

For information regarding Integrated Pest Management contact your state pest control board.

SWIMMING POOL & SPA SAFETY

Swimming pools and spas can be great sources of relaxation and recreation, but when mixed with misuse, neglect or improper care, they can become deadly safety hazards. Unlike some home appliances, they require constant care and vigilance.

- Restrict access to the pool or spa areas by creating barriers which will discourage unauthorized entry. The barrier closest to the pool should be at least 4 feet high, free of any means of climbing over and equipped with a self-closing and self-latching gate.
- Provide an unobstructed view of the pool or spa from indoors.
- Procure owner's manuals and learn proper operating procedures.
- Maintain proper water chemistry at all times to avoid contamination and possible chemical burns. Note: Some algae, if allowed continued growth, can cause damage.
- Establish and enforce safety rules. Post rules and emergency telephone numbers in a well lit, visible, and accessible location.
- Provide and maintain rescue equipment such as ring buoys, rescue hooks, lifelines, and life preservers.
- Regularly check deck equipment such as handrails, diving boards, and water slides for secure anchoring and proper operation.
- Ensure that mechanical equipment such as pumps, motors, heaters, controls, and chemical feeders are inaccessible.
- Provide ground fault circuit interruption devices (GFCI) for pool area electrical use.
- Ensure that drain covers and strainers are securely in place to avoid underwater entrapment.
- Keep hair, jewelry and dangling clothing away from inlets. Entanglement can kill quickly.
- Check deck surfaces regularly to ensure that a non-skid surface is provided and that no trip hazards are present.
- During vacations, have a neighbor watch for unauthorized use.
- Never mix alcohol with pool and spa use.
- Those with special medical conditions should obtain their doctors' approval before pool and, especially, spa usage.
- Never soak in a spa for more than 15 minutes in 104°F water.
- Homeowners are advised to have one or more family members trained in lifesaving procedures, including mouth-to-mouth resuscitation and cardio-pulmonary resuscitation (CPR).

For information concerning Swimming Pool and Spa safety contact

Association of Pool & Spa Professionals
211 Eisenhower Ave.
Alexandria, VA 22314
(703) 838-0083
http://www.nspi.org

RESOURCES

American Academy of Pediatrics
141 Northwest Point Blvd.
Elk Grove Village, Illinois 60007
http://www.aap.org

American Council on Science and Health
1995 Broadway
Second Floor
New York, NY 10023-5860
(212) 362-7044
http://www.acsh.org

American Lung Association
61 Broadway, 6th Floor
New York, N Y 10006
http://www.lungusa.org

American Public Health Association
800 I Street, NW
Washington, DC 20001
(202) 777-2742
http://www.apha.org

The American Red Cross
2025 E Street NW
Washington, D.C. 20006
(202) 303-4498
http://www.redcross.org

Carnegie Mellon University
Department of Engineering and Public Policy
Baker Hall 129
Pittsburgh, PA 15213
(412) 268-2670
http://www.epp.cmu.edu

The Chimney Safety Institute of America
2155 Commercial Drive
Plainfield, IN 46168
(317) 837-5362
http://www.csia.org

Electric Power Research Institute
3420 Hillview Ave.
Palo Alto, CA 94303
http://www.epri.com

The Environmental Information Association
6935 Wisconsin Avenue, Suite 306
Chevy Chase, MD 20815-6112
(301) 961-4999
http://www.eia-usa.org

Federal Alliance for Safe Homes
1427 E. Piedmont Drive, Suite 2
Tallahassee, FL 32308
(877) 221-SAFE
http://www.flash.org

Federal Emergency Management Agency
500 C Street S.W.
Washington, D.C. 20472
(800) 621-3362
http://www.fema.gov

The Formaldehyde Institute
1330 Connecticut Ave., N.W.
Washington, DC 20036

The National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471
http://www.nfpa.org

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
(630) 285-1121
http://www.nsc.org

National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230
(703) 292-5111
http://www.nsf.gov

Association of Pool & Spa Professionals
211 Eisenhower Ave.
Alexandria, VA 22314
(703) 838-0083
http://www.nspi.org

Safe Buildings Alliance
Washington, DC
(202) 879-5120

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(800) 638-2772
http://www.cpsc.gov

U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, DC 20585
(800) DIAL-DOE
http://www.doe.gov

U.S. Department of Health and Human Services
Centers for Disease Control
1600 Clifton Road N.E.
Atlanta, GA 30333
(404) 639-3311
http://www.cdc.gov

U.S. Department of Housing and Urban Development
451 7th Street S.W., Washington, DC 20410
(202) 708-1112
http://www.hud.gov

U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
http://www.epa.gov

U.S. Fire Administration
16825 South Seton Avenue
Emmitsburg, MD 21727
http://www.usfa.dhs.gov

The University of Texas Health Science Center at San Antonio
7703 Floyd Curl Drive
San Antonio, Texas 78229-3900
(210) 567-7000
http://www.uthscsa.edu

Water Quality Association
4151 Naperville Road,
Lisle, IL 60532
(630) 505 0160
http://www.wqa.org