



INSPECTRUM HOME MAINTENANCE MANUAL

Provided by AHIT - American Home Inspector Training

The Smart Homeowner's Home Checkup Checklists

The frequency of inspection and service given in the charts reflect the minimum amount of time and service your house and various household appliances will require. Items may need to be checked more often or at other times depending on the number of occupants, types of materials, local conditions, household pets, and other variables.

Grounds and Yard	Spring	Fall	Annually	As Required
Drain and disconnect outside water lines and hoses.		X		
Clean area wells, window wells, and storm drains.	X	X		
Check driveways and sidewalks for cracks, yard for settlement and soil erosion.	X			
Check safety and reversing mechanism on electric garage door operators, and GFCI outlets adjust if needed.			X	

Doors and Windows	Spring	Fall	Annually	As Required
Check doors, windows, and trim for finish failure	X			
Check glazed openings for loose putty	X			
Check for broken glass and damaged screens	X			
Check and lubricate window hardware			X	
Check weather-stripping for damage and tightness of fit.	X	X		
Check caulking at doors, windows, and all other openings and joints between dissimilar materials (like wood and masonry).	X			

Exterior Walls	Spring	Fall	Annually	As Required
Check masonry for cracks and loose joints.	X			
Check painted surfaces for paint failure.	X			
Check siding and trim for damage and decay.	X			

Roof	Spring	Fall	Annually	As Required
Check for damaged or loose shingles, blistering roofing.	X			
Check underside of roof where accessible for water stains or dampness.	X			
Check for damaged flashing.	X			
Check for damaged gutters, downspouts, hangers, strainers, and rust.	X			
Clean gutters and downspouts.				X
Sweep debris from flat and low slope roofs.			X	
Evaluate roof for future replacement.			X	
Check vents, louvers, and chimney caps and housings for bird nests, etc.	X	X		
Check fascias and soffits for paint failure and decay.	X			
Check masonry chimneys.	X			

Interior Surfaces	Spring	Fall	Annually	As Required
Check all joints in ceramic tile, laminated plastic, and similar surfaces.	X	X		
Check grouting around tubs, showers, and sinks.	X	X		

Floors	Spring	Fall	Annually	As Required
Check for wear and damage, particularly where one material meets another.			X	
Evaluate for replacement or refinishing.			X	

Plumbing	Spring	Fall	Annually	As Required
Check flush valves, faucets, hose bibs, and supply and drainage piping, including those in basement and/or crawl space			X	
Check water heater.			X	

Electrical System	Spring	Fall	Annually	As Required
Check condition of lamp cords, extension cords, and plugs. Replace at first sign of wear or damage.	X	X		
Check exposed and overhead wiring for damage and missing insulation. Replace or repair as needed.			X	
If fuses blow or breakers trip frequently, call an electrician to locate the cause and make repairs.				X
Test ground fault circuit interrupters (GFCI's) and AFCI Breakers in panel and outlets	X	X		

Heating and Cooling System	Spring	Fall	Annually	As Required
Clean or change any air filters.				X
Clean from around	X	X		

furnaces and check for moisture.				
Have heating and cooling system checked by a qualified service person.			X	
Remove window air conditioners for winter. If High Efficiency, remove covers and check for leaks		X		
Service humidifier and/or dehumidifier.			X	

Foundations and Basement	Spring	Fall	Annually	As Required
Inspect exposed wood for signs of termite infestation.			X	
Check grading to assure that water will drain away from the foundation.			X	
Check basement or crawl space for dampness and/or leakage following wet weather.			X	

Checkup for the Exterior

Grading and Drainage

Any system of grading or landscaping that creates positive drainage (moving water away from the foundation walls) will help keep a basement dry. Flowerbeds, loose mulch areas, railroad ties, and other landscaping items close to the foundation trap moisture and contribute to a wet basement. To establish a positive grade, a proper slope away from the house is 1" per foot for approximately 5 to 6 feet. Dirt should be 6" to 8" below wood surfaces and/or sill plates. Trim back shrubberies that are close to the home.

Service Walks, Driveways, Patios

Any hard surface that is close to the house should be properly pitched away to direct water away from the foundation. Replacement or mudjacking may be necessary to gain proper pitch. Cracks should be filled to prevent damage from water and frost.

Exterior Wood Surfaces

All surfaces of untreated wood need regular applications of paint or special chemicals to resist rot. Porch or deck columns and fence posts, which are buried in the ground and made of untreated wood will rot within a year or two.

Balcony, Decks, Porches

It is recommended that any walking area that is over 2 feet off the ground have railings and balusters. The spacing between balusters should be 4" or less for safety reasons. Check floors and corner post for rot and proper installation.

RECORD OF MAINTENANCE

Description of Work	Repairs Done By	Permits Required	Date	Cost

Doors and Windows

These can waste an enormous amount of energy. Maintain the caulking around the frames on the exterior. Old caulk should be removed before applying new caulk. Windows that have leaky storm windows will usually have a lot of sweating. Well sealed storms that sweat indicate leaky windows. It is the tighter unit that will sweat (unless the home has excess humidity to begin with).

Inspect all doors and windows for proper fit, chipped or peeling paint, cracked or missing caulk, and loose or missing putty. Check for broken glass. Small cracks in corners can be patched with silicone. Inspect storms for weep holes, to allow water to drain from the sill. Floor tracks on sliding doors should be cleaned and waxed. Check weather-stripping at doors and windows for damage and to make sure it fits snugly.

Exterior Wall Surfaces

Brick and stone veneer must be monitored for loose or missing mortar. Some brick and stone are susceptible to spalling. This can be caused when moisture is trapped and a freeze/thaw situation occurs. There are products on the market to seal out the moisture.

Inspect all painted surfaces thoroughly for peeling or cracked paint. Wood that exhibits blistering or peeling paint should be examined for possible moisture sources such as roof leaks, bad gutters, interior moisture from baths, laundry rooms, or from a poorly ventilated crawl space. Some paint problems have no logical explanation but many are a symptom of an underlying problem. Localized blistering may be a clue to the cause.

Wood siding should not come into contact with the ground. It is recommended that a clearance of 6 to 8" be maintained. Metal siding will dent and scratch. Oxidation is a normal reaction in aluminum. There are good cleaners on the market, and it is recommended that they be used occasionally. Metal siding can be painted.

Inspect siding for nail pops, warped boards, missing or broken mortar, and paint flaking or peeling.

CAUTION! Homes built before 1978 are likely to have lead in the paint. Check with your paint store for proper removal. All contractors must now be lead certified.

Windowsills are subject to severe exposure to sun and rain. These should be maintained to prevent rot.

Roofing and Surface Water Control

Roof and surface water must be controlled to maintain a dry basement. This means keeping gutters cleaned out and aligned, extending downspouts, installing splash blocks, and building up the grade so that roof and surface water is diverted away.

Inspect the roof, chimneys, etc. from the ground with binoculars or from a ladder against the eaves. Do not get on the roof if the pitch or weather conditions present a safety hazard. If you spot problem areas, it is recommended that you hire a professional home inspector to evaluate the situation.

Roof covering should be visually checked in spring and fall for any visible missing shingles, damaged coverings, moss buildings, nail pops, or other defects. Before re-roofing, the underside of the roof structure and roof sheathing should be inspected to determine that the roof structure can support the additional weight of the shingles and that the roof sheathing is in good condition.

Trim back any tree branches that overhang the house. This will prevent branches from rubbing against the roof during heavy winds or ice buildup. This will also allow sun to get at the roof, preventing mildew and moss from attacking and damaging the shingles. There are zinc products on the market that will provide a deterrent to moss.

Wood shakes and shingles will vary in aging, due to the quality of the material, installation, maintenance, and surrounding shade trees. Ventilation and drying of the material is critical in extending the life expectancy of the wood.

Commercial preservatives are available on the market, which could be applied to wood to impede deterioration.

Tile and slate roofs should be inspected occasionally to determine if any are missing or cracked. A roofer who specializes in this type of roof should be contacted. Do not walk on this type of roof.

Look for problems such as damage around a masonry chimney, particularly at mortar joints, caps, and flashings. All roof penetrations such as skylights, plumbing vents, and bath vents should be checked from the rooftop. Check the interior of the roof for any evidence of leaks around each penetration.

Blocked gutters and downspouts are a major cause of paint failure and decay of fascia, soffits, and the roof's outer edge. When gutters and downspouts become clogged, overflowing water finds its way to joints in fascia and soffits. Gutters should be cleaned in the spring and the fall. Look for leaks at seams, corners, end caps, etc. These can usually be sealed with a proper caulk material. Galvanized gutters rust from the inside out, and painting the inside of the gutter may extend its life. Factory primed or painted gutters are recommended. Aluminum gutters hold paint well and do not rust. Downspouts need to be properly supported and cleaned, along with the gutters. Downspout extension should be properly attached (screwed or pop riveted) and extend four feet or more from the property.

Natural Enemies

Roof coverings don't last forever. Their natural enemies work against them over time to wear out any roof covering.

- **Sun:** The constant exposure to ultra-violet radiation degrades organic ingredients in roof coverings. The covering heats up and dries out over and over again. Too much sun on wood roofs dehydrates the shingles, causing them to become brittle. Thermal expansion and contraction can destroy adhesion materials in asphalt shingles, for example, and cause cracking in other roofing materials. The southern or southwestern exposures on a home often wear out faster than the northern or eastern.
- **Rain:** Although roof covering systems are designed to protect the roof's structure from water penetration, rain eventually takes a toll on any roof covering. Some ingredients used in roof coverings are soluble and will dissolve over time. Rain washes away granular or gravel finishes in roofing such as asphalt shingles and built-up roofing. Constant wetting of wood shingles can cause them to rot. Metal roofs are susceptible to rust.
- **Wind:** Strong winds can lift shingles off a building. Wind blows rain against a roof and can drive water under the edges of shingles and tiles. Wind can also blow sand against the roof's surface, causing erosion of the covering. With wood shingles, for example, sand erosion can remove enough of the top layer so they no longer protect the shingles underneath.
- **Trees:** We love the cozy effect of trees overhanging the house, but they can do a great deal of damage to a roof. Branches that scrape back and forth over the roof's surface can remove the granules from an asphalt shingle roof. Trees can provide too much shade and, as a consequence, can keep a roof from drying out properly after a rain. Wood shingles that

are not allowed to dry out properly become rotted. Leaves block up drainage systems, causing water damage. Falling branches are an obvious danger to any roof.

- **Moss:** Moss reacts with the organic materials in wood and hastens its breakdown. Wood and built-up roofs are especially vulnerable to the decaying effects of moss. Its root system penetrates the surfaces and creates paths for water to get into and under the roof surface. On other roofing systems, it rusts nails and impedes water runoff.
- **Snow and ice:** A phenomenon called ice damming can occur in northern climates when melting snow on the roof refreezes at the roof's overhang. This causes an ice dam to form. Water from melting snow higher up on the roof becomes blocked by the ice dam and cannot escape to the gutters. This water backs up under shingles and seeps into the interior. Ice dams occur when enough heat escapes from the attic at the upper part of the roof to melt the snow at the same time the lower part of the roof at the eave is below freezing. Better attic insulation and ventilation would remedy this situation.
- **Time:** No roof covering lasts forever. We just haven't figured out how to make the ideal roof covering that would never have to be replaced. This chart shows the estimated natural lifetime of various types of roof coverings.

**Ice damming* is a phenomenon that occurs when melting snow refreezes at the eaves and traps water from snow melting from the upper part of the roof behind it. Ice damming is caused by the temperature differential between the eave, where the temperature is below 32 degrees, and the upper part of the roof, where the temperature is above 32 degrees.

Roof Covering	Life Expectancy
Asphalt Shingles	15-20 years
Asphalt multi-thickness shingles	20-30 years
Asphalt interlocking shingles	15-25 years
Roll roofing	10 years
Built-Up roofing	10-20 years
Wood shingles	10-40+ years
Clay tiles	20+ years
Cement tiles	20+ years
Slate shingles	30-100+ years
Asbestos cement shingles	30-75 years
Metal roofing	15-40+ years
Single ply membrane	15-25 years

Checkup for Interior Surfaces

Walls and Ceilings

Under normal circumstances, the interior surfaces need little maintenance, other than an occasional washing and repaint job. Pay attention to these areas, periodically taking a close look at areas that might be vulnerable to leaks such as outer walls, below bathrooms, around light fixtures, and so on. If any stains suddenly appear, you need to do further investigating to determine the cause.

Mildew or mold on ceilings and in closets is an indication that excessive moisture is present. This may also be evident by sweating windows. Excessive moisture can cause extensive damage to the house. Moisture problems can occur for many reasons, a few being improper venting, blocked vents, a tightly built home, high efficiency gas furnace, etc. Condensation problems that are persistent should be checked out by a professional home inspector. Windowsills are very susceptible to damage from the sun, moisture, conditions are too dry, etc. It is necessary to keep a good coat of paint or varnish on these areas to prevent rot?

All painted and natural-finished surfaces should be inspected for coating failure and damage. Check floor material for wear and damage.

Inspect grouting and caulking joints around sinks, tubs, showers, and other damp locations for damage or failure. These areas must be maintained or damage can be done to areas adjacent or below. Grouting between ceramic tile in showers and tub areas needs to be checked frequently, especially around areas where faucets are present. Rap gently on the tile and if loose, this may indicate damaged wall board behind the tile.

Attic Area

If you have an attic area that is accessible, it is imperative that you inspect this area several times a year. In cold weather climates, the roof sheathing and nail heads should be checked for excessive frost buildup. This is an indication that venting may be inadequate. Black or darkened sheathing may also be an indication of excessive moisture due to improper venting. It is also recommended that you inspect the attic in the summer. If on a warm, windless day the temperature that is being maintained is more than 10 to 15 degrees warmer than the outside temperature, then more ventilation is needed.

While in the attic, check the insulation. The recommended insulation in the attic area is R-49 to R-60, or approximately 15-20 inches.

Checkup for Mechanical Systems

Electrical System

There are a few basic things the homeowner should be aware of and examine occasionally. Locate and tag the location of the electrical main turnoff for the house. All adult occupants should know this location. Trip circuit breaker every 6 months and ground fault circuit interrupters (GFCI's) ever month. Check the condition of lamp cords, extension cords, and plugs. It's a good idea to test outlets near water for the proper polarity and grounding. Most hardware stores carry inexpensive testers. If fuse blow or breakers trip frequently, have a licensed electrician determine the cause.

It is recommended that GFCI's be installed where outside outlets exist and for outlets within 6 feet of water. Outlets for sump pumps, refrigerators, and washing machines should not have a GFCI, as the surges from these motors will trip the breaker.

It's a good idea to mark each breaker or fuse in the main panel, naming the outlet and switches they control.

ELECTRICAL SAFETY RULES
<ul style="list-style-type: none">• Never work with or near electricity when hands or feet are damp.• Never remove service panel covers.• Avoid using extension cords whenever possible.• Never replace blown fuses with larger fuses.• When in doubt, call a licensed electrician.

Plumbing System

Identify and tag the water supply turnoff valve for the entire system. Then look for the turnoff for each fixture. There should be a turnoff for each toilet, one for the cold water inlet for the water heater, and there may be turnoffs under the sinks. Identify the main gas valve turnoff and each appliance.

Periodically, all faucets, hose bibs, and other valves should be checked for leaks. Run the water, look under the sink cabinets for leaks, and then go into the basement or crawl space to determine if any leaks exist there.

Water closet flushing systems are frequent wasters of water. Remove the top of the flush tank of the toilet periodically to check its operation. These leaks are usually inexpensive to repair.

Check the toilet bowl to see that it is tight to the floor. If the toilet bowl is loose, a new wax seal may be required.

In cold climates, drain exterior water lines, hose bibs, and sprinklers. Turn the valve to the hose bib off on the inside of the house and turn the outside hose bib valve on. Locate the water heater and read the instructions in the booklet or on the side of the water heater. Depending on the manufacturing specifications, drain 2 or 3 gallons of water from the heater every 3-4 months to remove sediment that may have accumulated in the bottom of the tank. The pressure relief valve located near the top of the water heater should be opened periodically to see that it is in operating condition. If either of these values has not

been opened in some length of time, they may not seal properly when closed and a new washer may be required.

All valves in the home should be operated periodically. If these valves appear corroded, they should be cleaned and checked for leaks. If they are corroded, there is a good chance that they may leak after you clean and operate them. Therefore, it would be wise to start at the main water turnoffs to the house and water heater, and then approach the individual valves.

Water Softener

If you have hard water, it is recommended that a water softener be installed. This will extend the life of water heaters and pipes in addition to providing soft water for washing clothes and bathing.

Sump Pumps

You may or may not have a sump pump in your home. There are different uses for sump pumps. A *clear water sump pump* removes ground water that accumulates around the house. There is usually a drain tile system that runs into a sump pump crock. The sump pump discharges water through a pipe to the exterior of the house. Most communities do not allow this water to be discharged into a sewer system. A *sanitary sump pump* is used to discharge gray water into a septic or sewer system. This is usually water from a washing machine or basement sink. This type of sump pump system is most likely to be present when a home uses a septic system.

Heating System

It is recommended that the mechanical heating equipment be serviced on an annual basis. Oil furnaces have nozzles and strainers that need to be replaced on an annual basis or the efficiency of the furnace drops dramatically. Newer gas units can be serviced every couple of years. Once a gas unit gets to be 10 years old, it should have annual maintenance checkups.

In a forced air heating and/or cooling system, the blower and motor must be protected from dirt and dust. For this reason, filters are located in the return air side of the blower unit. A standard filter should be changed on a monthly basis. Some filters can be changed or cleaned less frequently, depending on the manufacturer's specifications and usage of the equipment. Clogged or missing filters can do serious damage to the heat exchanger and air conditioning evaporators.

The blower, blower motor, or hot water circulating pump motor should be oiled twice a year, unless they have sealed bearings. Refer to the owner's manual for how much and what type of oil to use. Check the fan belts and pulleys for wear and proper tension. (Make sure the unit is turned off when you do this).

If you have an oil heater, periodically check the oil tank for leaks. If you notice oily smoke smells or soot, have the unit serviced. Oil furnaces must be serviced on an annual basis.

Keep bleaches, paint, and other materials sealed and away from heating systems. Damage to the heat exchanger can occur if fumes from these products are drawn into the heating unit.

Humidifiers

Humidifiers should be inspected for leaks and lime buildup. Filters should be changed on an annual basis.

Air Conditioning, Heat Pump Systems

It is recommended that these systems be serviced each spring before starting up. The circuit breakers to these units should be on for a minimum of 24 hours and the outside temperature should be at least 60 degrees for the preceding 24 hours or damage could occur to the compressor. Refer to the manufacturer's operating instructions before turning on the unit. The condensing unit, which is located outside, should be cleaned periodically. Pollen, leaves, and other debris should be hosed off. Keep the area around the unit open so as not to impede air movement.

The area of the country you live in will determine the types of mechanicals that you will encounter and conditions that will affect the air conditioning unit. Be present when your unit is serviced, and find out the maintenance that will be required to prolong its life.

Checkup for Structure

Many of the items above can have an impact of the overall structural condition of your home. Items such as negative grade, blocked gutters and downspouts, and hard surfaces pitched towards the property can contribute to affecting the integrity of the structure.

The structure needs to be monitored on an ongoing basis. Walk around the house, looking for sags in the roof, loose bricks on siding of chimney, buckling siding, and windows or doors that have shifted. Some of these situations may have occurred over a number of years and may have stabilized. If you are concerned or uncertain, hire a professional home inspector to evaluate the situation. Document areas of concern, then monitor them to see if changes are occurring. If things have stabilized, you can maintain the integrity by performing the maintenance we've talked about in this booklet.

More Useful House Tips

Exterior

Building exteriors are exposed to all the elements of nature, such as sun, wind and ice. The primary function of the external siding is to keep out the elements, as well as the critters. Different parts of the country present different challenges. The hot sun on the south and west faces of a building will cause greater wear, while the north and shady sides are more susceptible to moss and other moisture related problems.

Common problems with wood sidings:

- Rot behind window flower boxes
- Splitting wood and nail pops
- House covered with plants, ivy and other vines
- Fading paint, peeling paint, and stains

Recommended maintenance:

- Inspect each summer and was any dirt, moss, etc., from the siding. Replace or repair any areas that are damaged or rotting.
- Pressure washing can be effective if done properly. Excessive pressure can damage wood.
- Re-paint or stain as needed to protect the surface of the siding.

Common problems with imitation wood siding

- This type of siding has a tendency to delaminate and swell. Several of these products are involved in litigation. (www.badsiding.com)

Common problems with vinyl siding

- Loose or missing planks
- Courses not level
- Bad installation causes joints to separate
- Becomes brittle in temperature at or below freezing and can break on impact
- Siding becomes buckled or bowed (improper nailing)

Recommended maintenance

- Replace any broken, bowed or buckled pieces or corners. Clean annually.

Common problems with metal siding (aluminum or steel)

- It will oxidize over time
- Color will fade
- It will dent

Recommended maintenance

- Wash annually and replace bowed or buckling siding with proper nailing techniques.

Common problems with Stucco

- Cracks in surface of stucco
- Bulging from wall
- Separation from lath

Recommended maintenance

- Ensure that cracks are sealed, to prevent moisture penetration
- Repair bulging or loose stucco
- Maintain proper flashings

Common problems with Synthetic Stucco (Exterior Insulated Finish System)

- Traps moisture, which causes extensive rot to framing members, especially in the southeast.

Recommended maintenance

- Retain an EIFS specialist to inspect and make recommendations. Litigation is ongoing.

Common problems with Brick, solid or veneer

- No weep holes for veneer brick
- Mortar joints crumbling on older brick structures
- Brick pulling loose from walls

Recommended maintenance

- Power wash as needed (do NOT sandblast)
- Have mason repair any mortar that is loose or pulling away

Common problems with windows and storms from exterior

- Rotted window sills
- Storms leak air
- Putty missing, glass cracked
- Window frames need paint

Recommended maintenance

- Ensure that storms fit tight
- Keep weatherstripping in good condition
- Protect sills from ice and snow damage
- Keep window frames and storms well painted

WINDOW CONSTRUCTION

All exterior window components are inspected during the exterior inspection. Although most standards of practice state that a representative number of windows must be checked for operation, that's left to be done once the home inspector actually goes inside the house.

The components showing on the exterior of the window are the sashes (upper and lower in the traditional window), the head and jambs, the sill and the subsill, and the casings around the window.

For a weatherproof opening in the exterior wall, building paper is laid around the window. Ideally, flashings are present at the top of the window. Vinyl and aluminum siding may be installed with J channels around openings that the siding fits into, forming a weatherproof seal. If not, caulking is required around windows the same as it is with other siding materials.

There are many styles of windows. The most common is the double hung window with two sashes that move. The upper sash is on the outside; the lower on the inside. Windows may be single hung where only the lower sash moves. A slider window is one with a sash that moves horizontally.

Sashes can be hinged into window framing to open in a variety of ways. The awning window is hinged at the top and opens outward. A hopper window, often found in basements, is hinged at the bottom and opens inward.

The casement window is hinged at the side to open outward. The pivot window pivots from a center hinge. The jalousie window contains narrow strips of glass in a device that allows the strips to move together, lifting out from the bottom.

A fixed-pane window is one that does not open or close. A picture window is basically a large fixed-pane window. Combination windows can be made up of a large fixed-pane window in the center between two smaller casement windows. Another configuration might be a fixed-pane window in the center with a slider at each end. Fixed-pane windows may have snap-in muntins (a grid of crossed pieces of wood or plastic) that fit into the window. A true multi-pane window has small pieces of glass set into wood or lead muntins.

SLIDING WINDOWS

- Single Hung
- Double hung
- Horizontal sliders

HINGED WINDOWS

- Awning
- Casement
- Hopper
- Jalousie
- Pivot

MULTIPLE WINDOWS

- Combination
- Bays and box bays
- Bow windows

Bay windows are made up of three windows set at angles with each other in a bay hat protrudes from the structure. There is usually a larger fixed-pane window on the length of the bay with standard size, opening windows at each side. In a box bay, the windows are at right angles. A bow window is similar to a bay, but has more than three windows, each at angles from the others.

LANDSCAPING AND GRADING

The basic concern for landscaping and grading is to determine whether they can cause damage to the exterior and the foundation. The principles are simple:

- **Principle #1:** Vegetation and grading should not encourage water to flow toward the house.

- **Principle #2:** Vegetation should not be allowed to damage siding, trim, and roofing or pose the potential of doing so.

A proper slope is 1" per foot over 5' of 6' from the house. Land with a reverse slope sends excess water toward the foundation and eventually ends up in the basement.

In some cases, adding additional backfill to slope the land away from the house solves the problem. That may pose an additional problem at the basement windows, which would then be below grade. Window wells may be recommended to prevent water penetration through the windows.

If window wells are already in place, make sure they drain properly, have a good gravel base, there is no corrosion of the metal well siding, and that debris buildup is not present. Make sure that plastic domes are not cracked or broken. Also, make sure that metal grills that appear over the window well are not corroded or broken.

Trees too close to the house can lead to root problems with the foundation and sewer lines, messy gutters, and falling overhanging branches. If trees are too close, they should be trimmed back or removed.

Vines on the house can hold moisture and promote insect damage. English ivy has a very strong grip and can puncture paint surfaces, grow behind siding and loosen it, and even grow under sills. Vines also keep siding from drying out. If there are vines on the house, it is a good idea to monitor the situation.

Shrubbery near the house should be trimmed back so there is about a foot clearance from the house to prevent moisture retention. Loose and mulched soil in flowerbeds should not touch wood siding or cover the top of the foundation. Leaves and plant debris should be raked away from the house.

RETAINING WALLS

- **Wooden retaining walls:** Horizontal walls of wood are fairly common in residential construction. The walls are usually built to lean back toward the high side. Wood members are connected to each with metal spikes. Gravel fill is added behind the wall; the soil above meets the wall to allow water to run over. Weep holes are present or the wood joints themselves allow water to drain through the wall.

The wall is anchored to the soil through the use of tie-backs with an anchor post and a deadman cross piece. The tie-backs occur staggered between every second or third vertical pier. Vertical anchors are used with walls over 30" high. These anchors are placed about every 10' along the wall and extend about 4' into the soil.

- **Precast concrete:** There are new wall systems on the market made of interlocking concrete sections that also make use of tie-backs. These blocks come with various sizes and shapes with decorative stone-like surfaces.
- **Poured concrete:** A retaining wall made of poured concrete reinforced with steel can be like an inverted T, where the cross piece is buried below the soil to prevent the wall from tilting forward. Such a wall would have its

- footing below the frost line to prevent heaving.
- **Masonry walls:** The home inspector will find masonry retaining walls too. Often times, these types of walls, especially those of stone, are dry laid and move out of position rather easily.
 - **Pile walls:** Normally, vertical steel members are driven into the ground until able to resist the pressure of the soil behind them. Wood pile walls can work in sandy soil or gravel.

Water is the main cause of retaining wall problems. When inspecting retaining walls, first look behind the wall for holes or depressions in the soil that can pool water. The soil should come to the top of the wall to allow the water to go over the top. Water-saturated soil pushes against a wall, causing movement and bowing. Sight down the wall and use a level to determine the lean of the wall and to inspect it for bowing. Most walls are tilted back, so a plumb wall can be an indication of a developing problem.

BASEMENT AND CRAWL SPACE

Pay particular attention to structural items in these areas. Monitor any cracks in walls, areas of previous moisture, and flooring below plumbing fixtures. It's common to have some cracks in masonry walls. All cracks should be monitored for further cracking and movement. If additional movement or cracking occurs, contact a professional.

GARAGE

The garage should be inspected and maintained the same as the house. Check the garage door opener occasionally to determine if the safety reverse is working. Put a board under the door, then operate the door. The overhead garage door needs ongoing maintenance. The inside and outside edges should be primed and painted. Follow the manufacturer's specifications. Check the rollers, track, and weatherstripping several times a year.

There are two main safety concerns with the garage. One is fire resistance and the other is protecting the living area of the house from car exhaust fumes and gasoline vapors. Any surface of the garage that abuts the house—abutting walls and the garage ceiling if a room is built above it—should be insulated to the same degree as the external walls of the home.

To avoid problems from gasoline fumes, passage doors from the garage to the house or basement should be at least 4" above the level of the garage floor.

SAFETY HAZARDS

- Absence of firewall
- Passage door not fire rated
- Exposed flammable insulation
- Garage floor less than 4" below basement or living space floor
- Heating or water heater less than 18" above garage floor

Walk-Through Checklist Before Closing

Your home was most likely inspected when the house was occupied. Therefore, furniture, storage and other items prevented the inspector from full access. It is highly recommended that you contact your real estate agent to arrange a walk-through several days before closing. Bring your Purchase Agreement and copy of the Inspection Report so you can refer to all items that are included in your home purchase as well as what conditions were pointed out by the Inspector. Use the following checklist as a guide:

1. Walk around the exterior looking for any change in condition from the time the home inspection was completed, such as missing or broken storm and screens/windows, damaged siding, or other physical damage.
2. Check the garage door opener operation and controls.
3. View the roof from the ground to ensure that all shingles are intact.
4. Check the operation of all appliances that are staying.
5. Check for signs of water leaks in ceilings, basements, water-heater, and plumbing.
6. Check for visual mold in closets, basement walls and other areas that are readily accessible.
7. Smell for gas or sewer odors.
8. Walk around interior, looking behind curtains, blinds, etc., for damage to walls or windsills.

Environment and Safety Concerns

Many issues have come to the forefront over the years that need the attention of the homeowner. Following are comments on the most common.

RADON

Radon comes from the natural (radioactive) breakdown of uranium in soil, rocks, and water and gets into the air you breathe. Radon can be found all over the United States. It can get into any type of building, home, office, school, and can result in high indoor radon levels. But you and your family are most likely to get your greatest exposure at home. That is where you spend most of your time.

How does Radon get into your home?

Radon is a radioactive gas. It comes from the natural decay of uranium that is found in nearly all soils. It typically moves up through the ground to the air above and into your home through cracks and the other holes in the foundation. Your home traps radon inside, where it can buildup. Any home may have a radon problem. This means new and old homes, well-sealed and drafty homes, and homes with or without basements.

Radon from soil gas is the main cause of radon problems. Sometimes radon enters the home through well water. In a small number of homes, the building materials can give off radon, too. However, building materials rarely cause radon problems by themselves.

How to Test Your Home for Radon

Short-Term Testing:

The quickest way to test is with short-term tests. Short-term tests remain in your home for two days to 90 days, depending on the device. “Charcoal canisters,” “alpha track,” “electret ion chamber,” “continuous monitors,” and “charcoal liquid scintillation” detectors are most commonly used for short-term testing. Because radon levels tend to vary from day to day and season to season, a short-term test is less likely than a long-term test to tell you your year-round average radon level. If you need results quickly, however, a short-term test followed by a second short-term test may be used to decide whether to fix your home.

Long-Term Testing:

Long-Term tests remain in your home for more than 90 days. “Alpha track” and “Electret” detectors are commonly used for this type of testing. A long-term test will give you a reading that is more likely to tell you your home’s year-round average radon level than a short-term test.

EPA Recommends the Following Testing Steps:

1. Take a short-term test. If your result is 4 pCi/L or higher (0.02 Working Levels ((WL)) or higher) take a follow-up test (Step 2) to be sure.
2. Follow-up with either a long-term test or a second short-term test. For a better understanding of your year-round average radon level, take a long-term test. If you need results quickly, take a second short-term test.
3. The higher your initial short-term test result, the more certain you can be that you should take a short-term rather than a long-term follow-up test. If your first short-term test result is more than twice EPA’s 4 pCi/L action level, you should take a second short term test immediately.
4. If you followed up with a long-term test: Fix your home if your long-term test result is 4 pCi/L or more (0.02 Working Levels ((WL)) or higher). If you followed up with a second short-term test: The higher your short-term results, the more certain you can be that you should fix your home. Consider fixing your home if the average of your first and second test is 4pCi?L or higher (0.02 Working Levels ((WL)) or higher).

ASBESTOS

Asbestos was often used in building materials until the 1970s. However, the mere presence of asbestos in your home is not hazardous. The danger is that asbestos materials may become damaged over time; damaged asbestos may release asbestos fibers that present a health hazard.

Studies show that people exposed to high levels of asbestos fibers have an increased risk of cancer and asbestosis. The risk increases with the number of fibers inhaled. Smokers are also at increased risk.

You may asbestos fibers in pipe and duct insulation, resilient floor tiles, cement

sheeting and shingles, soundproofing, joint compounds, and many fireproof or fire-resistant materials. The only way to determine whether a building material contains asbestos is to have it sampled and tested by a qualified lab. If you think you have asbestos in your home, don't panic. Usually the best thing you can do with asbestos materials in good shape is to leave them alone. Repairs or remodeling must be done properly to avoid disturbing these materials. Do not sweep, dust or vacuum debris that may contain asbestos; these steps may release asbestos fibers into the air.

For more information on asbestos, contact:

- Consumer Product Safety Commission
- Environmental Protection Agency
- American Lung Association
- Your state and local health departments

INTRODUCTION TO MOLDS

Molds produce tiny spores to reproduce. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. There are molds that can grow on wood, paper, carpet, and foods. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or un-addressed. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.

Basic Mold Cleanup

The key to mold control is moisture control. It is important to dry water-damaged areas and items within 24-48 hours to prevent mold growth. If mold is a problem in your home, clean up the mold and get rid of the excess water or moisture. Fix leaky plumbing or other sources of water. Wash mold off hard surfaces with detergent and water, and dry completely. Absorbent materials (such as ceiling tiles and carpet) that become moldy may have to be replaced.

Ten Things You Should Know About Mold

1. Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory complaints.
2. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.
3. If mold is a problem in your home or school, you must clean up the mold and eliminate sources of moisture.
4. Fix the source of the water problem or leak to prevent mold growth
5. Reduce indoor humidity (59-60%) to decrease mold growth by: venting bathrooms, dryers, and other moisture-generating sources to the outside; using air conditioning and de-humidifiers; increasing ventilation; and using

- exhaust fans whenever cooking, dishwashing, and cleaning.
6. Clean and dry any damp or wet building materials and furnishings within 24-48 hours to prevent mold growth.
 7. Clean mold off hard surfaces with water and detergent, and dry completely. Absorbent materials such as ceiling tiles, that are moldy, may need to be replaced.
 8. Prevent condensation: Reduce the potential for condensation on cold surfaces (i.e., windows, piping, exterior walls, roof, or floors) by adding insulation.
 9. In areas where there is a perpetual moisture problem, do not install carpeting (i.e. by drinking fountains, by classroom sinks, or on concrete floors with leaks or frequent condensation).
 10. Molds can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. There are molds that can grow on wood, carpet, and foods.

CARBON MONOXIDE

Carbon Monoxide is produced by the incomplete combustion of the fossil fuels—gas, oil, coal, and wood used in boilers, engines, oil burners, gas fires, water heaters, solid fuel appliances and open fires.

Dangerous amounts of CO can accumulate when as a result of poor installation, poor maintenance or failure or damage to an appliance in service, the fuel is not burned properly, or when rooms are poorly ventilated and the Carbon Monoxide is unable to escape.

Having no smell, taste or color, in today's world of improved insulation and double glazing, it has become increasingly important to have good ventilation, maintain all appliances regularly and to have absolutely reliable detector alarms installed giving both a visual and audible immediately when there is a build up of CO to dangerous levels.

No Smell and No Taste and No Color

It is for these reasons that CO detectors are the only way to alert you to increasing dangerous levels of CO before tragedy strikes.

Effects of Carbon Monoxide:	
Concentration of CO in air 50 parts per million (ppm)	Inhalation time and toxic development Safety level as specified by the Health and Safety Executive
200 PPM	Slight headache within 2-3 hours
400 PPM	Frontal headache within 1-2 hours, becoming widespread in 3 hours
800 PPM	Dizziness, nausea, convulsions within 45 minutes, insensible in 2 hours

Carbon Monoxide poisons by entering the lungs via the normal breathing mechanism and displacing oxygen from the bloodstream. Interruption of the normal supply of oxygen puts at risk the functions of the heart, brain and other vital functions of the body.

The above information is for a healthy adult. Persons suffering from heart or respiratory health problems, infants and small children, unborn children, expectant mothers and pets can be affected by CO poisoning more quickly than others in the household and may be the first to show symptoms.

The best protection is to have your heating system tuned every year and to use CO detectors in your home. For maximum protection, CO alarms are required within 15 feet of bedrooms and at all levels of the home.

LEAD IN PAINT, DUST, AND SOIL

Lead is a highly toxic metal that was used for many years in products found in and around our homes. Lead may cause a range of health effects, from behavioral problems and learning disabilities to seizures and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

EPA is playing a major role in addressing these residential lead hazards. In 1978, there were nearly three to four million children with elevated blood lead levels in the United States. In the 1990s, that number had dropped to 890,000 kids, and it continues to decline. While we still have a significant challenge, EPA is very proud of how federal, state, and private sector partners have coordinated efforts with the public to better protect our children.

Since the 1980s, EPA and its federal partners have phased out lead in gasoline, reduced lead in drinking water, reduced lead in industrial air pollution, and banned or limited lead used in consumer products, including residential paint. States and municipalities have set up programs to identify and treat lead poisoned children and to rehabilitate deteriorated housing. Parents, too, have greatly helped to reduce lead exposures to their children by cleaning and maintaining homes, having their children's blood lead levels checked, and a promoting proper nutrition. The Agency's Lead Awareness Program continues to work to protect human health and the environment against the dangers of lead by developing regulations, conducting research, and designing educational outreach efforts and materials.

Contractors must now be lead paint certified to work on older, pre-1978 homes.

Performing periodic home checkups and providing the ongoing maintenance discussed in this booklet will protect and enhance the value of your property. Remember that good maintenance records are a plus if you're planning to sell your home in the future.

Good luck and enjoy your home.

PREVENTING POISONINGS IN THE HOME

What is a Poison?

Millions of people are unintentionally poisoned every year. A poison is any substance that can cause an unintended symptom.

Poisons come in four different forms:

- Solid Poisons- medicine, plants, powders (like laundry soap and automatic dishwasher detergent), granular pesticides and fertilizers.
- Liquid Poisons- lotion, liquid laundry soap, furniture polish, lighter fluid and syrup medicines (liquids may be thick or thin). Pay special attention to liquids – a large quantity can be swallowed in a short period of time and they are absorbed rapidly.
- Sprays- insecticides, spray paint and some cleaning products. Aerosol sprays may be flammable, explode and cause damage to the heart and lungs if inhaled.
- Invisible Poisons- Gases or vapors. Carbon monoxide from hot water heaters and furnaces, exhaust fumes from automobiles, fumes from gas or oil burning stoves, and industrial pollution in the air.

If a Poisoning Occurs:

- First of all, remain calm!
- Call the Poison Control Center or your doctor. Have the following information ready:
 1. Child's condition
 2. Name of the product and ingredients
 3. How much of the product was taken
 4. Time poisoning happened
 5. Your name and phone number
 6. Age of the poisoned child
- The Poison Control Center or doctor will tell you what to do next.
- Be sure you know how to give first aid if a poisoning occurs.

Did you know that.....

- Every 30 seconds a child is poisoned in the United States. Sixty percent of all poisonings occur to children under that age of six. Many poisonings occur when the daily household routine has been disrupted. An example of this would be having a babysitter. The most common products involved in poisonings are drugs (prescription and over-the-counter), household and chemical products, plants and cosmetics. Be aware that childproof caps are not really child proof. They are only child resistant and if a child is given enough time, they will open the container.
- Keep in mind that products may have incorrect or out-of-date first aid instructions. It is very important to call the Poison Control Center or a doctor and to follow the instructions on the Poison Control Centers Emergency Action Card.

Contact your Regional Poison Control Center

If you would like more information or would like a telephone sticker and Emergency Action Card, contact your local Poison Control Center. There may also be a babysitter course offered in your area.

WHY CALL THE POISON CONTROL CENTER

1. Poison Control Centers are staffed with pharmacists and registered nurses, and they are available 24 hours a day, 7 days a week, 365 days a year. They give emergency information and may refer you to a hospital or doctor's office, but most poisonings can be treated at home. There is no charge for calling the Poison Control.
2. Specialists in Poison Information can provide treatment recommendations for a variety of questions concerning:
 - a. Treatment for poisoning
 - b. Bites and stings
 - c. Food poisoning
 - d. Occupational poisoning
 - e. Drug overdose
 - f. Pill identification
 - g. Plants
 - h. Drug interactions and adverse reactions
 - i. Animal poisoning
 - j. Poison prevention
 - k. Public education programs
 - l. Others

Most Dangerous Poisons:

- Medicines, including iron pills
- Cleaning products that can cause burns; drain opener, toilet bowl cleaner, oven cleaner, rust remover
- Antifreeze
- Windshield washer solution
- Hydrocarbons; furniture polish, lighter fluid, lamp oil, kerosene, turpentine, paint thinner
- Carbon monoxide
- Pesticides
- Wild mushrooms

POISON PREVENTION TIPS TO KEEP CHILDREN SAFE

Children under the age of six are at the greatest risk for unintentional poisoning. They are curious by nature and investigate their world by putting most things in their mouth. They will eat or drink anything, regardless of how it tastes. Children like the attractive packaging, good smells and are drawn to the colorful substances of many of the products found around the home.

Household and Chemical Products

- Use safety locks on all cabinets. Store potential poisons out of reach of small children.
- Store all poisonous household and chemical products out of sight of children.
- If you are using product and need to answer the telephone or doorbell, take the child with you. Most poisonings occur when the product is in use.
- Store all products in their original containers. DO NOT use food containers, such as milk jugs or soda bottles to store household and chemical products.
- Store food and household and chemical products in separate areas. Mistaken identity could cause a serious poisoning. Many poisonous products look alike and come in containers very similar to drinks or food. An example of this is apple juice and pine cleaner.
- Return household and chemical products to safe storage immediately after use.
- Use extra caution during mealtimes or when the family routine is disrupted. Many poisonings take place at this time.
- Pesticides can be absorbed through the skin and can be extremely toxic. Keep children away from areas that have recently been sprayed. Store these products in a safe place where children cannot reach them.
- Discard old or outdated household and chemical products.
- Take time to teach children about poisonous substances.
- Keep the telephone number of your local Poison Control Center on or near your telephone.

Why call the Poison Center:

- Poison centers are staffed with pharmacists and registered nurses who provide emergency information. They may refer you to a hospital or doctor's office, but most poisonings can be treated at home.
- Experts are available 24 hours a day, seven days a week.
- Specialists in poison information provide treatment recommendations for all kinds of poisonings, drug interactions and poison prevention.
- The poison center will send you poison prevention information and phone stickers.

Medicine

- Keep medicines out of sight, locked up and out of reach of children.
- Make sure that all medicines are in child-restraint containers and labeled properly. Remember that child resistant does not mean child proof.
- Never leave pills on the counter or in a plastic bag. Always store medicines in their original container with a child-resistant cap.
- Keep purses and diaper bags out of reach of children.
- Avoid taking medicines in front of children. Young children often imitate "grown-ups."

- Don't call medicine candy. Medicines and candy look alike and children cannot tell the difference.
- Vitamins are medicine. Vitamins with iron can be especially poisonous. Keep them locked up and out of reach of children.
- Keep a bottle of Ipecac Syrup in your medicine cabinet. Make sure the babysitter knows where you store your Ipecac Syrup. Do not use the syrup unless instructed by the Poison Control Center or your doctor.
- Keep the telephone number of your local Poison Control Center on or near your telephone.

Plants

Below are safety tips regarding plants. If you need more information about plants in your area or would like a list of poisonous and non-poisonous plants, contact your local Poison Control Center.

- Know the name of the plants in your home and in your yard. Label all of your plants. If you are having difficulty identifying a plant, take a sample to a nursery for identification.
- Keep poisonous plants out of reach of children and pets.
- Teach your children not to eat mushrooms growing in the yard. Some of these mushrooms can be poisonous. Be aware that mushrooms are abundant after rainy weather.
- Teach your children not to eat leaves and berries that grow in the yard. Do not assume a plant is safe to eat if you see wild animals eating it.
- Keep children and pets away from plants that have recently been sprayed with weed killer, bug killer or fertilizer.
- Have your local Poison Control Center send you a list of poisonous and non-poisonous plants.

POISON PREVENTION TIPS FOR ADULTS

It is not uncommon for adults to become victims of an unintentional poisoning. Follow the tips below and prevent needless poisonings.

Household and Chemical Products

- Keep potential poisons in their original containers. Do Not use food containers, such as cups or bottles to store household and chemical products.
- Store food and household and chemical products in separate areas. Mistaken identify could cause a serious poisoning.
- Read and follow the directions and caution labels on household and chemical products before using them.
- Never mix household and chemical products together. A poisonous gas may be created when mixing chemicals.
- Turn on fans and open windows when using household and chemical products.
- When spraying household and chemical products, make sure the spray

nozzle is directed away from your face and other people. Wear protective clothing—long-sleeve shirts, long pants, socks, shoes and gloves—when spraying pesticides and other chemicals.

- Pesticides can be absorbed through the skin and can be extremely poisonous. Stay away from areas that have recently been sprayed.
- Never sniff containers to discover what is inside.
- Discard old or outdated household and chemical products.
- First aid instructions on product containers may be incorrect or outdated. Call your local Poison Control Center or doctor if an exposure occurs.
- Keep the telephone number of your local Poison Control Center on or near your telephone.

Medicine

- Read and follow the directions and warnings on the label before taking any medicine.
- If you have any questions about the intended use of your medicine, contact your doctor.
- Some medicines are dangerous when mixed with alcohol. Consult your doctor or pharmacist.
- Be aware of potential drug interactions. Some medicines interact dangerously with food or other medicines. Your doctor should be made aware of all medicines, prescription or over-the-counter, you are currently taking. Talk to your doctor before taking any natural or herbal supplements.
- Never take medicines in the dark.
- Old and outdated medicines should be flushed down the toilet. Some medications can become dangerous or ineffective over time.
- Never share prescription medicines. Medicines should be taken by the person prescribed and for the reason prescribed.
- Keep the telephone number of your local Poison Control Center on or near your telephone.

Important Checklist for a Poison-Proof Home

- Keep all household poisons and medicines in their original, labeled, child-resistant containers.
- Lock poisons and medicines out of the reach and sight of small children.
- Be as careful with non-prescription medicines as you are with prescription medications. To avoid confusion, do not refer to medications as “candy” to take them in front of children.
- Keep purses and diaper bags out of children’s reach. Also be aware of visitor’s purses and suitcases.
- Never leave children along with household products or medications. If you are using a product, take a child with you when stopping to answer the telephone or the door. Most poisonings occur when the product is in use.
- Return household and chemical products to safe storage immediately after use.
- Know which plants in and around your home can be poisonous, and keep them away from children.
- Take the time to teach children about poisonous substances.
- Keep the number of your poison center on or near your telephone.

AAPCC U.S. Poison Center Educator List

ILLINOIS

Illinois Poison Center
222 S. Riverside Plaza, Suite 1900
Chicago, IL 60606
Emergency Phone: 800/222-1222
Health Educator: Shannon Kenney, MPH
Phone: 312/906-6125
E-mail: skenney@ilpoison.org

Illinois Poison Center
Advocate Illinois Masonic Medical Center
836 W. Nelson Floor 1, Suite 183

Illinois Poison Center
Alton Memorial Hospital Education Center
One Memorial Drive
Alton, IL 62002
Health Educator: Helen Long
Health Educator Phone: 681/463-7474

Illinois Poison Center
Carle Foundation Hospital Education Center
611 W. Park Street
Urbana, IL 61801
Health Educator: Patty Metzler, RN, MS
Health Educator Phone: 17/326-6601
E-mail: Pat.Metzler@carle.com

Illinois Poison Center
Freeport Health Network Education Center
1045 W. Stephenson Street
Freeport, IL 61032
Health Educator: Roxann Blackbourn
Health Educator Phone: 815/599-6890
E-mail: rblackbourn@fhn.org

Illinois Poison Center
Loyola University Health System Education Cntr
2160 S. First Avenue
Maywood, IL 60153
Health Educator: Christine Chaput, RN, BSN
Health Educator Phone: 708/327-2544

Illinois Poison Center

Memorial Hospital of Carbondale –Ed. Center
c/o Emergency Department
405 W. Jackson Street
Carbondale, IL 62902
Health Educator: Linda Angarola, RN
Health Educator Phone: 618/549/0721
E-mail: Linda.angarola@sih.net

Illinois Poison Center
Mount Sinai Hospital
Poison Prevention Education Center
1500 S. California Street
Chicago, IL 60608
Health Educator: Obdulia Sotelo
Health Educator Phone: 773/257-5169
E-mail: soto@sinai.org

Illinois Poison Center
St. John's Hospital Education Center
800 E. Carpenter Street
Springfield, IL 62769
Health Educator: JoAnn Lemaster, MS, CHES
Health Educator Phone: 217/544-6464 x62769
E-mail: jlemaste@st-johns.org