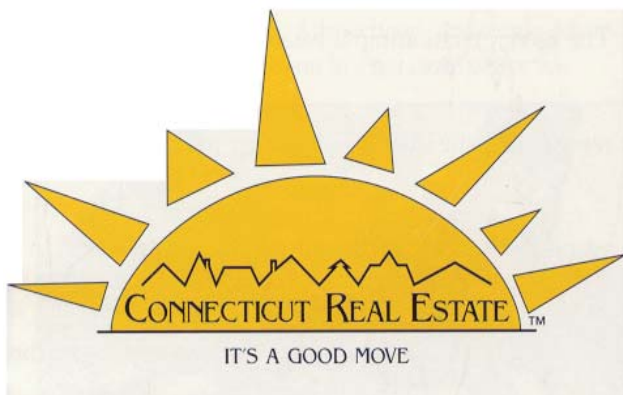


ENVIRONMENTAL HAZARDS IN THE HOME



**A GUIDE FOR
HOMEOWNERS, HOMEBUYERS,
LANDLORDS & TENANTS**



Keeping Connecticut Healthy

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Introduction

The Connecticut Department of Public Health (DPH), in cooperation with the Connecticut Association of REALTORS®, Inc., prepared this booklet to inform the homeowner and prospective homebuyer about environmental hazards that may affect residential property.

The information contained in this booklet is an overview of potential environmental hazards at residential properties and should be used only for general guidance.

In Connecticut, sellers are required to disclose the presence of any known environmental hazard. A statement that the homeowner is unaware of environmental hazards is not a guarantee that the property is free of such hazards. It is in the homeowner's and prospective homebuyer's interests to know what hazards are common, how they may be identified, and how they might be corrected or mitigated.

Home inspectors hired at the time of a house sale are not required to look for environmental hazards. They will make note of water damage that could lead to mold growth and may note other obvious environmental hazards. Lead and asbestos inspections can only be made by inspectors licensed for those contaminants and not all home inspectors have those licenses. It is recommended that qualified radon measurement providers listed by the DPH be hired to conduct radon testing in homes.

This booklet will provide homeowners and prospective homebuyers with the information needed to make an informed decision about environmental hazards that may be present on a property. Although the law requires the disclosure of known hazards, a prospective buyer may want an evaluation of the home environment to obtain further information. Interested parties may wish to obtain additional information on hazards of concern from the literature/websites cited in this booklet and other locations.

This publication is not meant to be all-inclusive. It deals only with environmental hazards that are more commonly found in residential properties. This material is presented with the understanding that the publisher is not engaged in offering legal or other professional advice. If legal or other expert assistance is required, the services of a skilled professional should be obtained.

The main sections cover topics that may come up during a real estate transaction at the time of inspection. Several other environmental concerns around the home are presented in the appendices as general information to any homeowner.



CHAPTER I: RADON

WHAT IS RADON?

Radon is a colorless, odorless and tasteless radioactive gas. It is formed from the radioactive decay of radium and uranium, which occurs naturally in bedrock worldwide. Radon is measured in units of radioactivity in both air and water as “picoCuries per liter” (pCi/L).

Studies of miners exposed to high levels of radon indicate that this gas is a lung carcinogen in humans. The U.S. Environmental Protection Agency (EPA) has set an *action level* for indoor air of 4.0 pCi/L. Radon levels in a home should be reduced if they are equal to or greater than the 4.0 pCi/L *action level*. The *action level* is a level at which EPA recommends action be taken.

WHERE IS RADON FOUND?

Radon is commonly found at low levels in soil gases but higher concentrations are possible near certain types of bedrock (granite, shale) that have high uranium content. This would suggest that radon potential in Connecticut could be predicted based upon the type of bedrock and soil in an area. However, test data indicates that high radon concentrations can occur sporadically in all parts of the state. The only way to know if you have an indoor air radon problem is to test your home.

SHOULD I BE CONCERNED ABOUT RADON IN MY HOME?

Yes, the U.S. Surgeon General has warned that elevated levels of radon in indoor air are the second leading cause of lung cancer in the United States following tobacco smoke. In 1999, the National Academy of Sciences (NAS) released estimates that between 15,000 and 22,000 lung cancer deaths each year in the United States are attributed to indoor air radon. If you smoke and reside in a home with high radon, your risk of developing lung cancer is especially high.

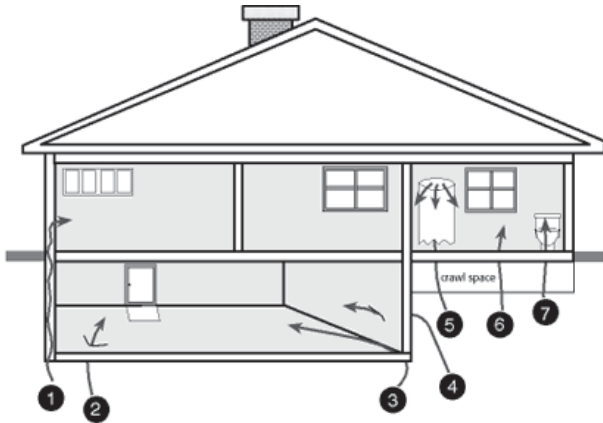
ARE THERE ANY SYMPTOMS ASSOCIATED WITH RADON EXPOSURE?

No, exposure to radon does not result in any immediate symptoms. The only known risk is associated with long-term exposure to high levels, which increases the risk of lung cancer. This cancer can take 20 to 30 years to develop. Because radon does not have an odor and does not produce immediate symptoms, you may not know that you are exposed. Therefore, it is especially important that you test your home and take action if high levels are found.

HOW DOES RADON ENTER THE HOME?

Radon is drawn into the home through cracks and other openings (e.g., sump pits) in the foundation. Air pressure inside the home is usually lower than the pressure in the soil around the foundation. This pressure difference draws radon gas into the home. This is especially true during the colder months of the year when the heating system is on and the home is closed-up. Radon levels are thus typically higher in the winter months.

Radon may also be present in well water and can be released into indoor air during tap water use such as showering, laundering clothes, and dishwashing. The transfer ratio for radon from well water to indoor air has been estimated as follows: 10,000 pCi/L in water may increase the level of radon in the air by 1.0 pCi/L. This means that concentrations greater than 40,000 pCi/L of radon in well water may substantially add to the indoor airborne radon level.



How Radon Enters A Home

1. Cavities inside walls
2. Cracks in solid floors
3. Construction joints
4. Cracks in walls
5. The water supply
6. Gaps in suspended floors
7. Gaps around service pipes

SHOULD I TEST MY HOME FOR RADON?

Yes. All homes should be tested for radon in indoor air. The EPA recommends that homes be tested for radon in air prior to their being placed on the market. If you are buying a home that has not been tested, you should have it tested early into the process to provide time to have the home mitigated in case elevated radon is detected. Testing for radon in water is not generally recommended unless the property is served by a well and testing for radon in the air has already occurred.

HOW IS A HOME TESTED FOR RADON?

There are two general testing procedures, a short-term test (lasting 2-90 days) and a long-term test (lasting 91 days-1 year). Short-term testing is conducted during real estate transactions according to EPA protocol, because it provides a quick result for potential buyers to make an informed decision. Testing typically involves the simultaneous or sequential placement of two test devices to measure radon in the air. Test devices must be left in place for a minimum of 48 hours. Testing during a real estate transaction varies slightly from testing one's own home. The protocol for real estate transactions is to test in the lowest level suitable for occupancy without renovations. The potential buyer usually makes this determination. The protocol for a homeowner is to test in the lowest lived-in area of the home.

Long-term testing is used to provide testing results that more accurately reflect year round airborne exposure to radon for occupants of a home. Long-term testing is also conducted to follow-up on short-term test results that are between 4.0-10.0 pCi/L. Several types of radon devices are available for both short-term and long-term testing procedures. The results of testing should be compared to the EPA action level of 4.0 pCi/L.

It is recommended that a qualified radon measurement provider conduct testing for a real estate transaction. Lists of qualified individuals can be located on the Internet at www.NRSB.org (National Radon Safety Board), www.radongas.org (National Environmental Health Association), or through the DPH Radon Program website at http://www.dph.state.ct.us/BRS/Radon/radon_program.htm.

WHAT DO THE RESULTS MEAN?

For Short-Term Testing Conducted During a Real Estate Transaction:

1. If the average of two short-term test results taken during a real estate transaction is below 4.0 pCi/L, then follow-up testing is not necessary. However, radon levels change over time. A homeowner may want to test some time in the future, especially if living patterns change (e.g., a lower level of the home is renovated and used more frequently).
2. If the average results from short-term testing are greater than 4.0 pCi/L, then it is recommended that a homeowner or homebuyer reduce the levels of radon in the home by having a radon reduction (mitigation) system installed by a qualified contractor.

For Testing That is NOT Conducted During a Real Estate Transaction:

1. If the long-term or short-term test result is below 4.0 pCi/L, then follow-up testing is not necessary. However, radon levels change over time. A homeowner may want to test some time in the future, especially if living patterns change (e.g., a lower level of the home is renovated and used more frequently).
2. If the initial test result is greater than 10.0 pCi/L, then short-term follow-up testing should be conducted under closed-building conditions. If the average of the initial and follow-up test is 4.0 pCi/L or greater, it is recommended that a homeowner reduce the levels of radon in the home by having a radon reduction (mitigation) system installed by a qualified contractor. If the home is served by a private well, then the well water should also be tested for radon.
3. If the long-term test result is between 4.0-10.0 pCi/L, then follow-up testing is recommended. If the result of the follow-up test (either short-term or long-term) is greater than or equal to 4.0 pCi/L, then it is recommended that a homeowner reduce the levels of radon in the home by having a radon reduction (mitigation) system installed by a qualified contractor. If the home is served by a private well, then the well water should also be tested for radon.

HOW CAN RADON BE REDUCED IN A HOME?

To decrease airborne radon levels to below 4.0 pCi/L, a homeowner should hire qualified radon professionals. A *radon diagnostician* evaluates buildings found to have levels of radon gas that exceed the EPA action level of 4.0 pCi/L. A *radon mitigation contractor* takes steps including, but not limited to, installing ventilation systems, sealing entry routes for radon gas and installing sub-slab depressurization systems to reduce radon levels in homes. The DPH compiles a list of qualified contractors who can evaluate affected properties and install radon reduction systems. These contractors have attended specialized courses and successfully passed an examination provided by NEHA or NRSB-approved radon training providers. Contractors listed on the DPH website also maintain a Home Improvement Contractor's license through the Department of Consumer Protection. The list of contractors can be found on the Radon Program website under the "Radon Professionals" heading at: http://www.dph.state.ct.us/BRS/Radon/radon_program.htm.

Radon removal systems are usually fairly simple involving tubing and a fan that vents radon away from a home before it has a chance to enter the home. The typical cost for a residential radon mitigation system is approximately \$1200-\$1800.

IS RADON IN DRINKING WATER A CONCERN?

Drinking water that contains radon is not believed to be a significant health risk compared to inhaling radon in air. Thus, the concern with radon in tap water is that some of it can enter the air and be inhaled. Although radon in water may contribute to airborne radon levels, radon-in-water testing should not occur until after radon in the air has been tested.



The DPH recommends testing a home's water for radon when the following two conditions are met: 1) the home is served by a private well; and 2) the indoor air radon level is equal to or greater than 4.0 pCi/L. The water sampling technique is critical in obtaining accurate results and should only be performed by a qualified individual listed by NEHA or NRSB as a measurement specialist. Qualified individuals can be located on the Internet at the DPH Radon Program website: http://www.dph.state.ct.us/BRS/Radon/radon_program.htm. It is also important to have the water sample analyzed by a laboratory that is approved by the DPH to test for radon in the water. Results reported by laboratories that are not approved by the DPH to conduct radon testing in the water are not considered *confirmatory* results.

AT WHAT LEVEL SHOULD ACTION BE TAKEN FOR RADON IN WATER AND HOW IS RADON IN WATER REDUCED?

The DPH has set a *guideline* of 5,000 pCi/L for radon in water. The homeowner should consider reducing radon levels from well water if the average of two or more *confirmatory* water tests are equal to or greater than 5,000 pCi/L. The analysis of water samples should be conducted by a laboratory that has been approved by the DPH Environmental Laboratory Certification program for testing radon in water.

Two systems are currently available for decreasing radon levels in private wells. The whole house granular activated carbon (GAC) filter system can be used to treat radon in water at levels up to 10,000 pCi/L. Although GAC systems are less expensive to install (\$1,000 to \$1,500), the filter unit can become radioactive if it is not routinely replaced. The carbon filter must be changed each year to avoid radioactive waste disposal concerns and also to prevent a decrease in filter efficiency. The alternative is an aeration system (\$3,000 to \$4,500). It is effective for all levels of radon in water, while not having the concerns of radioactivity buildup or efficiency loss. This is because the radon is stripped from the water and vented outside the home. Both of these systems are under constant development and a number of variations of each system are on the market. Radon mitigation contractors listed by a National Radon Proficiency Program are trained to install radon reduction systems for drinking water. A list of contractors compiled by the DPH Radon Program can be located at: http://www.dph.state.ct.us/BRS/Radon/radon_program.htm.

DOES CONNECTICUT HAVE LAWS THAT REQUIRE RADON TESTING AND MITIGATION?

No. The EPA and the DPH recommend and encourage the testing of all homes for radon and the mitigation of those with elevated levels. The same applies for real estate transactions. Mitigation during a real estate transaction is negotiated between the buyer and seller.

FOR MORE INFORMATION, CONTACT:

*The CT Department of Public Health
Environmental Health Section
Radon Program
450 Capitol Avenue, MS# 51AIR
Hartford, CT 06134-0308
860-509-7367*



WEBSITES:

Connecticut Department of Public Health:
General information, lists of radon testers and contractors
http://www.dph.state.ct.us/BRS/Radon/radon_program.htm

U.S. EPA:

<http://www.epa.gov/iaq/radon>

Radon Professional Training Programs:

<http://www.NRSB.org>
<http://www.radongas.org>



CHAPTER II: ASBESTOS

WHAT IS ASBESTOS?

Asbestos is a mineral fiber that had been used in over 3,000 products. Because of this common use and its occurrence in nature, asbestos is present in the air most of the time. Breathing in small amounts of asbestos does not usually cause health problems. However, asbestos is a known human carcinogen (cancer-causing substance), capable of causing severe health conditions including lung cancer, asbestosis and mesothelioma. This occurs when exposure to asbestos fibers occurs over prolonged periods of time (months to years). Smoking greatly magnifies the danger of breathing in asbestos fibers. Many older homes contain some type of asbestos-containing material (ACM). A visual inspection cannot tell whether a product contains asbestos. The material must be analyzed by a certified, accredited laboratory.

WHAT TYPES OF PRODUCTS MIGHT CONTAIN ASBESTOS?

- Joint Compound
- Acoustical Plaster
- Textured Paint
- Glue Daubs
- Transite Siding (Shingles)
- Vinyl Wall Paper
- Floor Tile/Linoleum
- Stucco
- Roofing Products
- Thermal System Insulation

WHAT IS REQUIRED IN REAL ESTATE TRANSACTIONS?

Information regarding the presence of ACM in the home must be included by the seller in the seller's property disclosure report if its presence is known to exist. It is not always obvious whether any of the materials listed above contains asbestos. Homes built after 1975 are less likely to have asbestos, but still may have some asbestos containing products.

The Connecticut Department of Public Health (DPH) does not require that ACM be removed prior to a real estate transaction. If there has been abatement, the DPH regulations require that the property owner retain records for 30 years. The prospective buyer can request to see such records.

The DPH does not require an inspection for the presence of ACM prior to the sale of a home. If the prospective buyer (or seller) requests an inspection, it must be conducted by a licensed asbestos consultant in the discipline of inspector or inspector/management planner. A written inspection report will summarize the inspection findings and usually will provide recommendations. A building or home inspector is not qualified to make statements concerning the presence or condition of ACM unless he or she is licensed by the DPH in one of these consulting disciplines.

WHAT SHOULD I DO IF ASBESTOS IS IDENTIFIED?

If the seller's disclosure report identifies the presence of asbestos, or if an inspection is conducted and it finds asbestos, careful consideration should be given before a decision is made to remove the asbestos.

The handling or disturbance of ACM is subject to various regulatory agencies, including the DPH, the Connecticut Department of Environmental Protection (DEP), the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), and the U.S. Department of Environmental Protection (EPA).

It is the recommendation of the EPA and the DPH that ACM be left alone as long as there is no apparent damage to the ACM and no planned renovation that may disturb the material. There is more likely to be a hazard if the ACM is disturbed by an unlicensed party than if left in place. In general, ACM that can be easily crushed or pulverized by hand pressure (friable ACM, such as pipe insulation) presents a greater health hazard than ACM that is bound in a material that does not easily break (non-friable ACM, such as floor tile).



HOW CAN DAMAGED ASBESTOS MATERIAL BE REPAIRED?

If there is damage to the ACM, such as tears, abrasions, or water damage, the ACM should be repaired or removed. Repairing involves the use of either encapsulation or enclosure, but is still considered to be "abatement" by the DPH and should be conducted by a licensed contractor. *Encapsulation* of ACM involves applying a substance to the surface to prevent fibers from becoming airborne. *Enclosure* involves building a permanent, airtight barrier around the ACM.

WHEN IS REMOVAL APPROPRIATE?

Removal is generally a more expensive option and creates the greatest potential for fiber release. However, removal may be necessary when the ACM is significantly damaged or when remodeling activities may disturb ACM. Airtight barriers are always required for abatement. The abatement work is conducted within this contained area to prevent the escape of fibers. Projects that involve more than three square or three linear feet of ACM must use additional engineering controls during the abatement. A licensed contractor may not be needed for the removal of certain exterior non-friable ACM such as roofing or siding. Contact the DPH Asbestos Program at (860) 509-7367 for more specific information.

Disposal of ACM is not allowed in the State of Connecticut unless permitted by the Department of Environmental Protection (DEP). For questions regarding the disposal of asbestos waste, your asbestos removal contractor should contact the DEP Waste Engineering and Enforcement Division at 860-424-3366.


WHO IS LICENSED TO CONDUCT ASBESTOS ABATEMENT OR INSPECTIONS?

Asbestos professionals are licensed by the DPH as contractors or consultants. Contractors are licensed to perform abatement, whether it is repair or removal. Licensed contractors are required for abatement involving more than three linear or three square feet of ACM. Consultants perform inspections,

design abatement projects and monitor abatement projects. Consultants also assist property owners who wish to have a management plan for the ACM.

All licensed entities must provide current licenses and current certification prior to engaging in any type of consulting or abatement services. The DPH can be contacted to verify the status of a license. The Asbestos Program has lists of licensed companies available for the public.

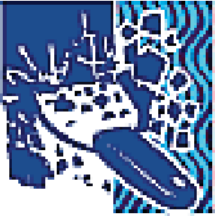
FOR MORE INFORMATION, CONTACT:



*The CT Department of Public Health
Environmental Health Section
Asbestos Program
450 Capitol Avenue
Hartford, CT 06134-0308
860-509-7367*

WEBSITES:

Connecticut Department of Public Health:
http://www.dph.state.ct.us/BRS/Asbestos/asbestos_program.htm



CHAPTER III: LEAD

WHAT IS LEAD?

Lead is a toxic metal that is poisonous to humans. It is particularly hazardous to children because it can cause serious and long-lasting physical and nervous system problems. Young children are more likely to be poisoned in the home than adults. The most common source of lead in the home is lead-based paint. Most homes built prior to 1978 have some lead paint inside the home or on the house exterior. Homes built prior to 1950 contain lead paint in even higher concentrations. Normally homes that were built after 1978 do not have lead paint. If your house was built after 1978, this section does not apply to you and most of the information below does not apply to your house.

HOW DO PEOPLE GET LEAD POISONING?

- **Lead contaminated dust and soil:** The most common way for young children to become lead poisoned is by ingesting lead contaminated dust or soil. This occurs because young children are likely to put their hands and toys in their mouths during play, and these objects may be coated with lead dust.
- **Paint chips:** Although less likely, children can also become poisoned by eating lead paint chips. Eating paint chips causes most of the severe cases of childhood lead poisoning because of a higher concentration of lead being ingested at one time.
- **Inhalation:** It is also possible to inhale lead. This is most common among workers who burn lead (and breathe the fumes) or create airborne lead dust when doing work such as power sanding or dry sanding lead paint. Children and pregnant women are also susceptible to lead poisoning by inhalation.

HOW IS LEAD HARMFUL AND HOW DO YOU KNOW IF SOMEONE HAS BEEN EXPOSED TO LEAD?

Children with high blood lead levels are at risk for major disabling conditions, such as mental retardation, paralysis, kidney disease or seizures. In extreme cases, high levels of lead in the blood can kill a child.

Children under the age of six run the highest risk of being lead poisoned because their bodies are still developing. The lead is stored in blood, bones, organs, and the brain. Lead inhibits normal growth and development. Children who are poisoned by lead are likely to have problems in school because of:

- damage to the brain and nervous system;
- loss of intelligence;
- learning difficulties;
- behavioral difficulties.

Pregnant women and women of childbearing age are also at risk for becoming lead poisoned. Pregnant women can inhale or ingest lead contaminated dust when proper precautions are not taken during and after renovation, remodeling, or repainting activities. Lead can be passed from the mother to the fetus. The developing fetus can be very susceptible to lead taken in by a pregnant woman. Lead poisoning can cause:

- miscarriages;
- premature births;
- low birth weight.

Other adults can also be lead-poisoned if exposed to high levels of lead. This type of exposure is most likely to occur at work with certain occupations that include renovation and remodeling, lead smelting, and bridge painting. Symptoms include loss of sex drive, impotence, nausea, weakness, anemia, irritability, and fatigue.

Lead poisoning often has no symptoms or symptoms that are easily overlooked. The best way to determine if lead is present in a person's body is by a blood test that measures the level of lead in the body. All children under age 6 should be tested, especially children at the ages of one and two.

Family members of children found to have high blood levels should also be tested. Your doctor or health center can conduct this test. The test is covered by most health insurance plans.

For individuals who are lead poisoned, treatment must include identification of the source(s) of lead exposure. These sources of lead exposure must then be eliminated or properly contained.

WHERE IS LEAD FOUND IN A HOME?

If your home (or the home that you are considering buying or renting) was built before 1978 you should assume that painted surfaces contain lead paint, unless those surfaces have been tested and found not to contain lead. Lead paint that is peeling, chipping, flaking, chalking, or cracking is dangerous and requires immediate attention. Lead contaminated dust and paint chips will be produced if these conditions are not corrected. Lead paint may be dangerous when it is on areas with heavy wear such as windows, doorways, stairs, floors, and porches because it is likely to become loosened and turn to dust. Lead paint may also be dangerous when it is on surfaces that children can reach such as windowsills and railings because some children chew on molding.



Deteriorating exterior lead paint can contaminate soil. Soil may also have been contaminated from leaded gasoline emissions in the past (especially in high traffic areas). Lead in soil can be a hazard to children who play in that soil. People and pets can also track lead-contaminated soil into the home. Lead does not degrade or evaporate, but remains in soil permanently.

Lead can be present in older homes that have lead pipes or lead solder in the drinking water plumbing system. This may be a problem if there is lead in the plumbing and the water is corrosive. Public water supplies must meet state standards that prevent corrosion of pipes and release of lead. However, you may want to test your tap water for lead if you are on a private well.

HOW CAN I CHECK MY HOME FOR LEAD HAZARDS?

If you wish to have a lead inspection or a lead risk assessment conducted in the home, hire a Connecticut Department of Public Health (DPH) Licensed Lead Consultant Contractor. Check the DPH website (http://www.dph.state.ct.us/BRS/Lead/lead_program.htm) for a list of these contractors.

A comprehensive lead inspection identifies lead painted surfaces throughout your home and identifies any sources of serious lead exposure (such as peeling paint). A comprehensive inspection is usually conducted using a special instrument (an X-ray Fluorescence Analyzer or XRF) for paint testing. The XRF will identify lead in any layer of paint, even those buried under many coats of paint. This type of testing provides immediate and reliable on-site results and permits testing of intact painted surfaces. If a comprehensive lead inspection is not desired, more limited testing (e.g., paint testing within the interior of the home or paint testing of areas that are scheduled for repainting or remodeling) may be conducted by the Lead Consultant Contractor.

A risk assessment includes a visual examination of the property to identify potential hazards such as deteriorated paint. Deteriorated painted surfaces will be tested to determine if they contain lead paint. Dust wipe samples will be collected in selected locations to determine if lead dust hazards exist. A report explains actions that may be taken to address any identified lead hazards. Intact paint is not tested during a risk assessment.

If you wish to have a lead inspection, the DPH Licensed Consultant Contractor will use staff who are certified by DPH as Lead Inspectors or Lead Inspector Risk Assessors to conduct the inspection. If you want a lead risk assessment, the Licensed Consultant Contractor will use a DPH certified Lead Inspector Risk Assessor to conduct the risk assessment. A Home Inspector cannot provide either of these services unless he/she is also a DPH licensed and certified Lead Inspector or Lead Inspector Risk Assessor.

The federal government does not recommend the use of do-it-yourself lead test kits such as those you may have seen at a paint or hardware store. These tests are not reliable. Do not rely on these kits because they are not dependable.

The seller of the house must disclose, by law, known lead-based paint and lead-based hazards before the sale and provide available reports to buyers. Sellers must give buyers the pamphlet developed by EPA, Housing and Urban Development (HUD) and the (US Consumer Product Safety Commission), titled "Protect Your Family from Lead in Your Home".

HOW CAN I REDUCE LEAD HAZARDS SAFELY?

If your house has lead hazards, there are some simple steps that you can take to reduce your family's risk:

- a. You can reduce lead hazards by repairing damaged painted surfaces and planting grass to cover soil with high lead levels. Paint that is intact and in good condition does not present an immediate hazard but such surfaces will require ongoing monitoring and attention. Special precautions must be taken when repairing these surfaces (see the section below for additional information).

- b. To permanently remove lead hazards, you should hire a DPH Licensed Lead Abatement Contractor. Abatement includes removing, sealing, or enclosing lead paint with special materials. Painting over lead paint with regular paint is not a permanent solution. DPH certified lead abatement workers have the proper training to do this work safely. They have the proper equipment to clean up thoroughly. They are trained to follow state and federal safety guidelines.
- c. If there is lead paint in your home, keep your home as clean and dust free as possible. Clean floors, window frames, windowsills, window wells, and similar surfaces weekly. Use a mop and regular detergent to clean floors. Use damp paper towels or tack cloths to clean windows, windowsills, and window wells.
- d. To further minimize the risks to children, have children wash their hands often, especially before meals and at bedtime. Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly. Feed your children nutritious meals with foods high in iron and calcium.

WHAT PRECAUTIONS SHOULD I TAKE WHEN REMODELING OR REPAINTING MY HOME?

Before you begin any remodeling or renovations that will disturb painted surfaces (such as scraping or sanding paint, or tearing out walls) on a pre-1978 house, have the area tested for lead paint or assume that lead paint is present. To protect your family from unsafe renovation and painting hazards you may hire a Home Improvement Contractor licensed by the Connecticut Department of Consumer Protection. Verify that the contractor will use lead-safe work practices and workers who have been trained in those practices.

Also, federal law requires renovators, remodelers, and painters to provide the “Protect Your Family from Lead in Your Home” pamphlet before starting many projects in homes that were built before 1978. The contractor should never use dry sanding, dry scraping, or power sanding or a propane torch or heat gun at a high temperature setting (greater than 700°F) to remove lead paint. These work practices create large amounts of toxic lead dust and fumes. The lead dust can remain in your home long after the work is completed and can make your family very sick. It is important to keep your family (especially children and pregnant women) out of the work area until the work is completed and the area has been properly cleaned. For extensive work, it is best to temporarily relocate until the project is completed and the area has been properly cleaned.

You can find out about other lead safety measures by calling:

1-800-424-LEAD (1-800-424-5323). Ask for the brochure, “The Lead Paint Safety Field Guide”. This guide explains in detail what to do before, during, and after renovation and painting projects.

WHAT ARE MY RESPONSIBILITIES IF I AM SELLING OR RENTING A HOME THAT WAS BUILT BEFORE 1978?

In summary, homes built before 1978 should be evaluated by a lead inspector or lead risk assessor, especially if the home will contain young children. The inspector will tell you if there are significant amounts of lead paint in the home and how to address the problem.

If you are planning to sell or rent a home that was built before 1978, federal law requires sellers and landlords to disclose certain information prior to finalizing contracts.

A seller or landlord must:

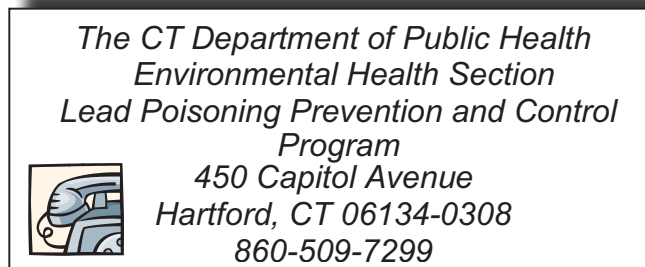
1. Disclose known information on lead paint and lead paint hazards.
2. Give buyers and tenants a lead hazard pamphlet (see Appendix D “Protect Your Family From Lead Poisoning in Your Home”).
3. Include a federal form about lead paint in sales contracts and leases.

In addition, a seller must provide a buyer at least 10 days to conduct a lead inspection or risk assessment to identify lead paint and lead hazards.

FOR MORE INFORMATION, CONTACT:

**The National Lead Information Clearinghouse
at 1-800-424-LEAD (1-800-424-5323)**

Your Local Health Department or:



WEBSITES:

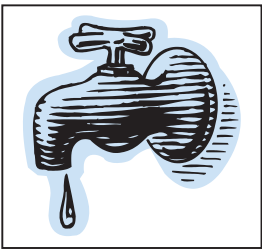
Centers for Disease Control and Prevention:
<http://www.cdc.gov/nceh/lead/lead.htm>

Connecticut Department of Public Health:
http://www.dph.state.ct.us/BRS/Lead/lead_program.htm

National Center for Healthy Housing:
<http://www.centerforhealthyhousing.org/>

U.S. Department of Housing and Urban Development:
<http://www.hud.gov/offices/lead/index.cfm>

U.S. Environmental Protection Agency:
<http://www.epa.gov/lead/>



CHAPTER IV: HOMEBUYER'S GUIDE TO PRIVATE WELL WATER TESTING

Many homes in Connecticut use private wells as a source of drinking water. A good source of drinking water is critical to your health and the value of the property. When purchasing a home with a private well it is important to consider whether the drinking water is acceptable from both an aesthetics (odor, taste, staining) and health point of view. Owners of homes with public water do not have to consider the issues discussed below because the water company tests their water regularly.

Some factors to consider when buying a home supplied by private well water are:

- 1) Is the supply plentiful, even in dry weather?
- 2) What is the water hardness level?
- 3) Does the water contain minerals (e.g., sulfates, iron, manganese) which can cause it to have an odor or taste, or which can leave a stain on porcelain or clothing?
- 4) Is the water contaminated with infectious microorganisms?
- 5) Does the water have high levels of nitrates?
- 6) Is the water contaminated with pesticides or organic solvents?
- 7) Is the water contaminated with naturally occurring elements such as arsenic, uranium, radon, or radium?

A basic water quality survey usually conducted at the time of a house purchase, addressing the first five factors listed above, consists of a test for bacteria and tests of the physical/chemical nature of the water. The testing results may be reviewed by the local health department in your town, and they compare the data to standards in the Public Health Code (CGS19-13-B101). This battery of tests is required for new wells to obtain a certificate of occupancy and is typically required by lenders to approve a mortgage. The test for bacteria reports the number of coliform bacteria found in 100 millimeters (ml) of water. The physical/chemical series consists of tests for iron, manganese, chloride, hardness, alkalinity, ammonia nitrogen, nitrate, pH (acidity), color, odor, and turbidity. Testing for pesticides, organic solvents, and naturally occurring elements (questions #6 & #7 above) is at the discretion of the buyer or can, under certain circumstances, be required by the local health department for new wells.

The purpose of this chapter is to assist Connecticut citizens in understanding private well water issues. More information about interpreting well sampling results can be found in the Department of Public Health's (DPH) Fact Sheet "Evaluating Private Well Chemical Sampling Results", available at <http://www.dph.state.ct.us/BRS/EOHA/gwc.htm>.

Some questions that may arise when purchasing a home with a private well are answered below.

DOES THE WELL PROVIDE A SUFFICIENT AMOUNT OF WATER?

Most of Connecticut's domestic wells provide sufficient water for home use. At the time of the home inspection, the inspector can test the flow rate to make sure there is an adequate water supply. This is called a well capacity screening or "yield" test. You can also ask the homeowner if there has been any problem with the water supply and ask the local health department to tell you the original well yield rate (gallons per minute) from the well completion report and what the results mean. Keep a copy of the well completion report in your records.

If the amount produced is not adequate, a well driller should be consulted. It may be possible to increase a well's production through procedures you can discuss with a well driller.

IS THE HARDNESS VALUE ACCEPTABLE?

Water hardness relates to the capacity of water to react with soap; hard water requires considerably more soap to produce lather. Major sources of hardness in water are dissolved calcium and magnesium ions from sedimentary rocks or run off through soils. Hardness is commonly measured in milligrams of calcium carbonate equivalent per liter.

Hard water is not a common problem in Connecticut and most wells are well below the 150-200 milligrams per liter (mg/l) range where water can be classified as hard. Hard water can be a problem because soap does not clean efficiently and deposits can form inside pipes and boilers. This condition is commonly treated with a water softener. We recommend testing hot water only if it has been determined that softening is needed. A moderate level of hardness is considered beneficial because it protects the house's plumbing against corrosion caused by a low pH level (acidity).

STAINING OF PLUMBING FIXTURES: WHAT ARE THE IRON & MANGANESE LEVELS?

Iron and manganese are found in Connecticut rocks and soils, and high concentrations of these metals are a frequent cause of concern for well owners. Iron compounds are easily dissolved in acidic water, and while small amounts are not a problem, high levels can cause rust stains to form on laundry and plumbing fixtures. High iron in water can also affect the taste of food and cause potatoes to blacken. High iron/manganese can also promote the growth of iron/manganese bacteria. Though not infectious, these bacteria can cause rust-colored water and clog valves and filters. As a general guideline, iron concentrations less than 0.3 mg/l do not pose a problem. High iron can be treated with an oxidation-filtration system and may require acidity (ph) adjustment. High iron in drinking water is rarely a health concern, however people with hemochromatosis, a rare genetic condition, can be affected by high levels of iron in the water.



High manganese concentrations may impart a bitter taste to foods and cause black stains on plumbing fixtures and laundry. As a general guideline, manganese concentrations below 0.05 mg/ml do not pose a problem for staining. When concentrations are ten times higher (over 0.5 mg/l), this may be unhealthy to consume as manganese can affect the nervous system. Manganese can be treated with an oxidation-filtration system in conjunction with a pH adjustment system.

HYDROGEN SULFIDE: IS THERE A “ROTTEN EGG” SMELL IN THE WATER?

Water containing hydrogen sulfide does not pose a health risk, but does give water a “rotten egg” smell and taste. Hydrogen sulfide is formed by a type of bacteria that may occur naturally in water.

These bacteria use the sulfur in decaying plants, rocks, or soil as their food or energy source and as a by-product produce hydrogen sulfide. Treatment options include oxidation through either chlorination, aeration, or passage through a manganese oxide-based mineral bed. Chemical analysis is usually not necessary because the nose is able to detect very low concentrations. If only the hot water is affected, the problem may be with the hot water heater.

IS THE NITRATE LEVEL ACCEPTABLE?

High nitrate, resulting from contamination with surface runoff containing animal fecal material or chemical fertilizer can also be a cause for concern. High nitrates have the potential to cause harm to infants consuming formula made with contaminated water. Nitrite (formed from nitrate) can affect the oxygen-carrying capacity of blood in babies under six months of age. This effect (methemoglobinemia) is commonly called “blue baby syndrome”, and in years past, has caused several deaths in this country. Adults are rarely at risk. No adverse effects have been reported in infants’ drinking water with a nitrate concentration of 10 mg/l or less. For this reason, 10 mg/l is the maximum allowable nitrate concentration. Nitrate in well water is commonly derived from farming, lawn fertilizers, and failing septic systems. Shallow wells are most susceptible.

IS THE WATER CONTAMINATED WITH COLIFORM BACTERIA?

Coliform is a type of bacteria that includes many different species found throughout the environment. Normally, groundwater is not contaminated with coliform bacteria because soil and sediments filter out these organisms. If coliform bacteria are found it suggests that the well is not constructed properly or the well casing has cracked because unfiltered water is getting into it. Other possible causes of contamination include nearby unsealed wells or outcrops of fractured bedrock, which can act as a conduit to deliver surface water directly to groundwater. A failed septic system is another possible source of contamination. Effluent from septic systems contains a type of coliform bacteria (e.g., E.Coli, fecal coliform) that can cause disease if ingested.

If a well tests positive for total coliforms, it should be disinfected with chlorine and retested. It should be further screened for E. Coli bacteria or fecal coliforms. If contamination reoccurs frequently, the well needs to be repaired or abandoned. Contact the local health department for more information about disinfecting a well or if contamination reoccurs. Though problem wells should be sampled more frequently, all wells should be tested for coliform bacteria annually or after any maintenance or repair work that has involved well equipment.

IS THE WELL POLLUTED WITH PESTICIDES OR ORGANIC SOLVENTS?

Some of the most common organic chemical contaminants in Connecticut wells are methyl tertiary butyl ether (MTBE), trichloroethylene (TCE), and tetrachloroethylene (PERC). MTBE is an additive to gasoline, while TCE and PERC are solvents for degreasing and cleaning. Though it is uncommon, pesticide contamination does occur, primarily in active or former agricultural areas (farms and nurseries). Testing for organic chemical contamination or pesticides can cost several hundred dollars. MTBE, TCE, PERC, etc., are detected in a laboratory “volatile organics scan”, while pesticides are detected with a “pesticide scan.” Your local health department can help owners/buyers decide if testing is needed, and they can also provide them with help interpreting the test results.

The federal government has set standards for many chemicals found in groundwater. The State of Connecticut has a separate list of drinking water Action Levels. Concentrations below these federal or state targets do not present a health risk. Results of private well tests are compared to these targets to determine if the water is safe to drink. Current Action Levels are posted on the Connecticut Department of Public Health's web page (<http://www.dph.state.ct.us/BRS/EOHA/gwc.htm>).

If your private well is contaminated above the Action Level, you may be eligible to receive bottled water or a treatment system from the Connecticut DEP (860-424-3705). Treatment to remove organic chemicals usually includes installation of an activated carbon filter at the supply line. If you have health questions about a particular contaminant, contact the Toxic Hazard Assessment Program at the Connecticut Department of Public Health (860-509-7742). If you wish to know more about water treatment systems, call the Connecticut Department of Public Health's Private Well Program (860-509-7296).

SHOULD I TEST THE WELL WATER FOR NATURALLY OCCURRING CHEMICALS?

Groundwater in Connecticut sometimes contains naturally occurring elements (arsenic, uranium, radium, and radon) that have dissolved (leached) from bedrock. Because contamination with these elements is not a generalized problem statewide, testing is not routinely recommended. However, the CT DPH has recently recommended testing for arsenic in newly constructed wells due to a growing concern over its discovery in well water around New England. When naturally occurring elements are tested, it is usually done at the buyer's discretion and cost.

Radioactive elements that can occur naturally in Connecticut wells include uranium, radium and radon. Uranium is a metal that can cause kidney toxicity at high levels. There is little, if any, risk from radiation from naturally occurring uranium. Exposure to high levels of radium in drinking water may, in the long term, increase the risk of certain types of cancer. To find out if you have uranium or radium in your water, you should conduct an initial screening test for "gross alpha". Gross alpha is a common measurement of overall radioactivity in water, but does not differentiate the radioactive compound causing the radioactivity. If this initial and less costly analysis indicates there is less than 5 picoCuries per liter of gross alpha, then there is no need to conduct additional testing. If, on the other hand, the results indicate high gross alpha, then the water should be re-sampled and analyzed for radium and uranium. For a listing of laboratories that can test for gross alpha activity, see the Connecticut DPH's list of approved laboratories (link #1). For further guidance on when and how to test for radon in well water, please refer to the radon chapter of this document (Chapter I). Homebuyers may also find relevant information in the DPH's fact sheet on uranium (link #2) in drinking water.



Arsenic is a carcinogen and people who drank water containing high concentrations for long periods of time have developed skin cancer and other health problems. Though not a major problem statewide, elevated arsenic in well water has been found in isolated wells around Connecticut. The decision to test is usually made at the homebuyer's decision and cost. If the arsenic concentration exceeds the federal standard of 10 micrograms per liter, then a reverse osmosis filtration system should be installed on the household's drinking water tap (the kitchen sink, for example). Because arsenic is not volatile or absorbed through the skin, it is not necessary to treat the water before it enters the house.

Further information on arsenic testing and treatment can be found in the DPH's fact sheet on arsenic in private wells. This document can be obtained by calling the Environmental & Occupational Health Assessment Program at 860-509-7742. For a listing of laboratories that can test for arsenic, see the Connecticut DPH's list of approved laboratories (link #1 below).

WHERE CAN I HAVE MY WATER TESTED?

A state approved water-testing laboratory should perform water analyses. Information on the state approved laboratory nearest you can be obtained from your local health department or the State of Connecticut Department of Public Health

(http://www.dph.state.ct.us/BRS/Environmental_Lab/environmental_laboratorytext.htm).

HOW OFTEN SHOULD I HAVE THE WATER TESTED?

If basic physical and chemical properties are acceptable, and there are no bad odors or taste, then a bacteriological test annually may be adequate. With a shallow water well that is not adequately constructed or if the well is in a location subject to possible contamination, more frequent water testing is suggested. If there appears to be a noticeable change in the drinking water quality for some reason, water analyses may be needed at that time to determine the cause or if there is a problem.

FOR MORE INFORMATION, CONTACT:

**The Connecticut Department of Environmental Protection
Remediation Division: 860-424-3705**

For questions about Connecticut's bottled water program

For questions about private wells:

*The CT Department of Public Health
Environmental Health Section
Private Well Program
450 Capitol Avenue
Hartford, CT 06134-0308
860-509-7296*



For questions about health effects of contaminants:

*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program
410 Capitol Avenue
Hartford, CT 06134-0308
860-509-7742*



WEBSITES:

Links to relevant Connecticut Department of Public Health fact sheets:

A list of approved laboratories

http://www.dph.state.ct.us/BRS/Environmental_Lab/environmental_laboratorytext.htm

Uranium in drinking water

<http://www.dph.state.ct.us/BRS/EOHA/gwc.htm>



CHAPTER V: MOLD

Potential homebuyers may want to know if a significant mold problem exists in a house prior to purchase. This may be especially important if their family has members who are susceptible to mold spores, such as asthmatics. However, it is important to remember that mold is present at some level in all homes. Only homes with significant sources of water/moisture and resultant mold growth require investigation and cleanup.

WHAT IS MOLD?

Mold is a general term that refers to a variety of simple, microscopic organisms, present virtually everywhere, indoors and outdoors. Mold problems in homes are almost always the result of an underlying water or moisture problem. For mold to grow and reproduce, it needs a food source - any organic material, such as leaves, wood, paper, or dirt - and moisture. Mold growth on surfaces can often be seen in the form of discoloration, frequently green, gray, brown, or black, but also white and other colors. Mold growth may appear fuzzy, cottony, velvety, granular or leathery. Mold growth usually produces a noticeable “musty” odor. Molds release countless tiny, lightweight spores, which travel through the air.

HOW AM I EXPOSED TO INDOOR MOLDS?

Everyone is exposed to some mold on a daily basis without harm. It is common to find mold spores in the air inside homes. Typically, most of the airborne spores found indoors come from outdoor sources. Mold spores cause health problems when they are present in large numbers and susceptible people inhale many of them. This occurs when there is active mold growth within the home, office or school. Mold will grow and multiply whenever conditions are right, where sufficient moisture is available and organic material is present. The following are common sources of indoor moisture that may lead to mold problems:

- Flooding;
- Leaky roofs;
- Plumbing leaks;
- Overflow from sinks or sewers;
- Damp basement or crawl space;
- Steam from shower or cooking;
- Humidifiers; and
- Wet clothes drying indoors or clothes dryers exhausting indoors.

Warping floors and discoloration of walls and ceilings can be indications of past or present moisture problems. Condensation on windows or walls is also an important indication.

SHOULD I BE CONCERNED ABOUT MOLD IN A HOME?

Yes. If indoor mold contamination is extensive, it can cause very high and persistent airborne spore exposures. Persons exposed to high spore levels can become sensitized and develop allergies to the mold or other health problems. Any visible mold growth can be a sign of excess moisture that needs to be addressed. Mold growth can damage your furnishings, such as carpets, sofas and cabinets. Clothes and shoes in damp closets can become soiled. In time, unchecked mold growth can cause serious damage to the structural elements in your home. Small amounts of mold in normally wet areas, such as bathrooms and basements, are not usually a cause for concern.

WHAT SYMPTOMS ARE COMMONLY SEEN WITH MOLD EXPOSURE?

Molds produce health effects through inflammation, allergy, or infection. Allergic reactions are most common following mold exposure. Typical symptoms that people are sensitive to mold report (alone or in combination) include:

- Respiratory problems, such as wheezing, difficulty breathing, and shortness of breath;
- Asthma attacks in people with existing asthma;
- Nasal and sinus congestion;
- Eye irritation (burning, watery, or reddened eyes);
- Dry, hacking cough;
- Nose or throat irritation; and
- Skin rashes or irritation.

A variety of less specific symptoms are occasionally reported. Their causes are not well understood.

HOW MUCH MOLD CAN MAKE ME SICK?

For some people, a relatively small number of mold spores can trigger an asthma attack or lead to other health problems. For others, symptoms may occur only when exposure levels are much higher. Nonetheless, indoor mold growth is unsanitary and undesirable. Basically, if you can see or smell mold inside your home, take steps to identify and eliminate the excess moisture, cleanup and remove the mold and remove water damaged materials. There are no accepted standards or Action Levels for airborne exposure to molds.

HOW CAN YOU TELL IF THE MOLD IS "TOXIC"?

The term "toxic mold" is largely a creation of the popular media. The toxicity information for specific molds is too limited to say that some molds are more harmful than others. Further, the effects of a particular mold may vary depending upon moisture and temperature conditions. Experience with buildings with active mold growth shows that symptoms are generally mild and reversible. This suggests that most mold exposures do not involve a "toxic" reaction. For these and other reasons it is not appropriate to conduct testing to identify exactly which type of mold is present or to rule out so-called "toxic" molds. The presence of mold and water damage, in general, is cause to take action.

HOW CAN I TELL IF THERE IS MOLD IN A HOUSE?

You may suspect a house has mold if you see discolored patches or cottony or speckled growth on walls or furniture or if you smell an earthy or musty odor. You may suspect mold contamination if mold-allergic individuals experience some of the symptoms listed above when in the house. Evidence of past or ongoing water damage should also trigger a more thorough inspection. You may find mold growth underneath water-damaged surfaces or behind walls, floors or ceilings.



SHOULD I TEST MY HOME FOR MOLD?

The Connecticut Department of Public Health does not recommend testing as the first step to determine if you have a mold problem. Mold sampling can be very expensive. There are no air standards for levels of mold indoors. If you can see or smell mold or mildew, you have a moisture and mold problem. Visual inspection for water damage, moisture sources and obvious mold growth is usually the first step, rather than testing. Air testing almost never affects the final recommendations. If sampling is done, normally a combination of bulk samples (e.g., carpet dust, discolored sheetrock) and air samples is recommended. Airborne mold assessments require sampling equipment not available to the general public. Outdoor mold samples should always be collected during the same sampling time to compare with indoor results.

ASSESSING THE SIZE OF A MOLD CONTAMINATION PROBLEM

There will be a significant difference in the approach used for a small mold problem (total area affected is less than 10 sq. ft.) and a large contamination problem (more than 100 sq. ft.). In the case of a relatively small area, the homeowner using personal protective equipment (dust mask, gloves) can handle the cleanup. However, for much larger areas, choose an experienced, professional contractor. For moderate cases, the type of containment and personal protection equipment to be used will be a matter of judgment.

CLEANUP AND REMOVAL OF MOLD

How do I clean mold in my home?

- Identify and remove the source of moisture. This could include improving ventilation, using a basement dehumidifier during humid months, repairing leaking roofs, or fixing plumbing leaks. After the moisture source has been corrected, begin the cleanup and drying out process. Purchase a hygrometer from your local hardware store. This instrument measures the humidity level. Be sure to keep the humidity level below 60%.
- Mold-contaminated materials that cannot be dried out and thoroughly cleaned should be discarded. This may include ceiling tiles, sheetrock, plaster, wood products, cardboard boxes, carpets, and other home furnishings. If there has been flood damage, replace all sheetrock and insulation damaged by water up to at least 12 inches above the high water mark. When handling moldy materials, wear rubber gloves and a respirator with a HEPA filter (not a dust mask) to protect you from breathing airborne spores.

- Clean mold on hard, non-porous materials such as plastic, glass and metal with a bleach and water solution (1 part bleach to 10 parts water). Bleach can irritate your eyes, nose and throat. Ventilate the area well and wear rubber gloves and eye protection. Allow the bleach solution to dry naturally for 6 to 8 hours.

Remember, NEVER mix bleach with ammonia; the vapors are toxic!

WHAT CAN I SAVE? WHAT CAN I TOSS?

Use your best judgment. If the material absorbs water, it is considered porous. Porous materials should be thrown out. Materials such as hard plastic, glass, and metal are non-porous and can be cleaned.

HOW CAN I PREVENT INDOOR MOLD PROBLEMS IN MY HOME?

Inspect your home regularly for the indications and sources of indoor moisture and mold. Take steps to eliminate sources of water as quickly as possible. If a leak or flooding occurs, it is essential to act quickly:

- Stop the source of leaks or flooding.
- Remove excess water with mops or wet vacuum.
- Move wet items to a dry, well-ventilated area. Move rugs and pull up wet carpet as soon as possible.
- Open closet and cabinet doors and move furniture away from walls to increase circulation.
- Run portable fans to increase air circulation. Do NOT use the home's central blower if flooding has occurred in it or in any of the ducts. Do NOT use fans if mold may have already started to grow. Growth usually begins within 48 hours after flooding.
- Do NOT turn up the heat or use heaters in confined areas, as higher temperatures increase the rate of mold growth.
- If water is soaked inside the walls, it may be necessary to open wall cavities, remove baseboards, and/or pry open wall paneling.

FOR MORE INFORMATION, CONTACT:

*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program*



*410 Capitol Avenue
Hartford, CT 06134-0308
860-509-7742*

WEBSITES:

Connecticut Department of Public Health:
http://www.dph.state.ct.us/brs/eoha/mold_problems.htm

U.S. EPA:
<http://www.epa.gov/iaq>



CHAPTER VI: ELECTRIC AND MAGNETIC FIELDS (EMF)

WHAT ARE ELECTRIC AND MAGNETIC FIELDS (EMF) AND WHAT ARE THEIR SOURCES?

Electric and magnetic fields are waves of energy that surround any electrical device. Power lines, electrical wiring, computers, televisions, hair dryers, household appliances and anything else that uses electricity are sources of EMF. EMF are commonly measured in units of milligauss (mG), which is a unit of magnetic field strength.

HOW HIGH ARE EMF LEVELS NEAR HIGH VOLTAGE POWER LINES?

Most power lines in neighborhoods are low voltage and not an important source of EMF. However, high voltage lines can cause EMF to be elevated directly underneath the lines and in nearby areas. High voltage lines are those with very high towers that transmit electricity over long distances, rather than to local neighborhoods.



Average EMF levels directly beneath power lines vary from approximately 30 to 90 milligauss (mG), depending on the voltage, height and placement of the lines. EMF levels decrease rapidly as one moves away from the power lines as shown below.

Distance from Line	Average EMF Level (mG)
50 feet	6 - 30
100 feet	2 - 13
300 feet	< 1.5 (this is background)*

*Background refers to a level of EMF that can be found in any home not near a power line, due to normal domestic electricity use.

HOW DO EMF LEVELS FROM POWER LINES COMPARE WITH EMF LEVELS IN MY HOME?

In a study that measured EMF in almost 1000 homes in the U.S., 50% of the homes had average EMF levels of 0.6 mG or less and 95% of the homes had average EMF levels of 3 mG or less. However, EMF can be higher (5 mG or more) when you are near household appliances. Thus, EMF levels near high voltage lines can be similar to EMF levels that can be found near household appliances around the home. However, average EMF levels in the home are much lower than levels near power lines. One would generally need to be at least 300 feet from a high voltage line to get down to average levels within the home.

DOES EMF EXPOSURE POSE A HEALTH RISK TO MY CHILDREN OR ME ?

Despite the fact that numerous studies and scientific reviews have been conducted on whether EMF can increase health risks, there is still *no definitive answer*. The best available science tells us that there may be a weak association between EMF measured in the home and childhood leukemia at average exposures above 3 mG. For cancers other than childhood leukemia, the available series of studies indicates no association. The few studies in adults with at-home exposure do not provide clear evidence for an association to cancer or other health effects.

On the other hand, there is more research on *workplace* EMF. These studies evaluated occupations with levels of EMF exposure that are much higher than what occurs in the home. Some studies have found evidence suggesting a link between EMF exposure and both leukemia and brain cancer in electric utility workers, and leukemia in railway workers. However, other studies have not found such associations. These workers were exposed to average EMF levels of approximately 10 mG over the course of a working career.

Animal studies are usually important in showing the toxic effects of environmental agents. However, in the case of EMF, a wide variety of animal studies have failed to demonstrate cancer or other adverse effects. This evidence supports the idea that if EMF is a carcinogen, its effects are weak.


WHAT SHOULD I DO IF A HOME I WANT TO PURCHASE HAS HIGH VOLTAGE LINES NEARBY?

- If the power lines are more than 300 feet away, there should be no problem. At this distance, EMF levels from the power lines are no different from typical EMF levels inside the home.
- If high voltage lines are less than 300 feet away from the home, you may want to consider obtaining EMF measurements in the yard. Most electric utilities in Connecticut will take measurements for free. There are also private firms that will charge a fee for measurements. To understand your measurement, consider that typical EMF levels found in homes range from 0.1 to 4 mG. EMF levels above this range are not necessarily hazardous but indicate EMF levels above typical background inside the home.



FOR MORE INFORMATION, CONTACT:

*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program
410 Capitol Avenue MS#11EOH
Hartford, CT 06134-0308
860-509-7742*



WEBSITES:

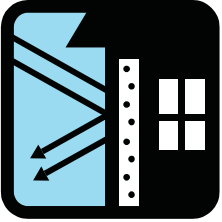
Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) Program:
<http://www.niehs.nih.gov/emfrapid>

World Health Organization International EMF Project:
<http://www.who.int/peh-emf/en/>

California EMF Program:
www.dhs.cahwnet.gov/ps/deodc/ehib/emf/

National Institute for Occupational Safety and Health:
<http://www.cdc.gov/niosh/topics/emf/>

National Association of Realtors:
<http://www.realtor.org/libweb.nsf/pages/fg506>



CHAPTER VII: UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was a concern to homeowners and potential homebuyers in the early 1980s because of its potential to release formaldehyde gas in homes insulated with UFFI. UFFI was banned in Connecticut in 1981. Today, UFFI is not considered to be a problem. Testing has shown that UFFI homes have formaldehyde levels similar to non-UFFI homes. Information on UFFI is included here because questions about its safety are still sometimes raised at the time of sale if UFFI is known or suspected to be present. UFFI is not present in most Connecticut homes, but the exact number of homes insulated with the product is uncertain.

WHAT IS UREA FORMALDEHYDE FOAM INSULATION (UFFI)?

UFFI was a material used in the 1970s and early 1980s to insulate existing homes. It was generally not used in new construction. The material was injected into the wall cavity by drilling holes on the exterior and/or interior walls. The material was mixed on-site (formaldehyde was used as a binder) and pumped into the cavity where it expanded into foam that dried and became relatively rigid. The foam looks like dry shaving cream and can be seen inside the walls from convenient viewing points, such as behind light switch plates.

WHAT IS FORMALDEHYDE?

Formaldehyde is a chemical commonly used as a preservative and disinfectant. It is also in glues used to bond plywood, particleboard, carpets and fabrics, and it contributes to "that new car smell." As the glue dries, formaldehyde vapors can be released. These vapors are pungent and can be irritating. Formaldehyde is in tobacco smoke, car exhaust and the smoke from furnaces, fireplaces and wood stoves. Therefore, exposure to low levels of formaldehyde is very common.

WHAT HEALTH EFFECTS CAN FORMALDEHYDE CAUSE?

While small amounts of formaldehyde are harmless, higher levels can cause irritation to eyes, nose and throat, persistent cough and respiratory distress, skin irritation, nausea, headache, and dizziness. It is also suspected to increase the risk of cancer, but the greater health concern has been the short-term irritating effects.


The DPH recommends a level of 0.1 parts per million (ppm) in air as an action level for formaldehyde in homes. For comparison, levels of 0.07 to 0.08 ppm have been found inside mobile homes and up to 0.05 ppm inside conventional non-UFFI homes.

SHOULD YOU BE CONCERNED ABOUT UFFI TODAY?

Tests show that UFFI is not a significant source of exposure to formaldehyde after the initial curing and release of excess gas. Since it was no longer installed after 1981, it should not be causing excess indoor formaldehyde in Connecticut homes today. Houses with UFFI show no higher formaldehyde levels than those without it. Air testing for formaldehyde in homes with UFFI is not recommended.

In many homes, formaldehyde levels may be increased by new carpets or wood composite materials, such as plywood, particleboard and wafer board that can be in cabinets and furnishings. These are the most likely sources of high formaldehyde levels in the home today (see EPA website on formaldehyde listed at the end of the section).

FOR MORE INFORMATION, CONTACT:



*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program
410 Capitol Avenue, MS #11CHA
Hartford, CT 06134-0308
860-509-7742*

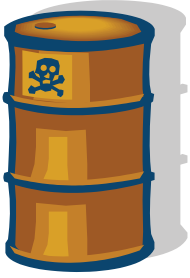
WEBSITES:

U.S. Environmental Protection Agency: "Sources of Indoor Air Pollution-Formaldehyde"
www.epa.gov/iaq/formalde.html

The State of Massachusetts has a list of contractors certified to remove UFFI:
www.state.ma.us/dph/dcs/uffire.htm

The National Safety Council's Environmental Health Center:
www.nsc.org/library/facts/formalde.htm

The California Department of Health Services:
www.dhs.ca.gov/ohb/HESIS/formal.htm



CHAPTER VIII: UNDERGROUND STORAGE TANKS (USTs)

INTRODUCTION: WHAT ARE USTs?

When considering the purchase of a home, you should be aware of the possibility that underground storage tanks (USTs) may be buried on the property. USTs are large metal containers placed underground typically for the purpose of storing fuel oil for home heating. Rather than the tank being in the basement, it was not unusual for it to be buried in the soil outside the basement. Pipes would bring the oil through the basement wall or floor and into the furnace. A typical size for USTs outside of homes was 500 to 1,000 gallons.

WHY MIGHT USTs BE A CONCERN?

Even though most residential USTs are no longer in service, they may create environmental issues for current property owners. If a UST leaked fuel in the past, the soil would likely still be contaminated. There is also the possibility for groundwater contamination. Some of the ingredients in fuel can vaporize and move as a gas through the soil and enter basements. This could lead to contamination of indoor air, which may be noticed as a fuel odor in the basement or elsewhere in the home. While these vapors are not highly toxic, they can lead to discomfort and increased symptoms (e.g., headache, irritation). If groundwater is contaminated, this will affect the quality of drinking water if a private well supplies the home.

The property owner is liable for any contamination of soil and groundwater stemming from a UST on that property. The Connecticut Department of Environmental Protection (DEP) investigates spills from USTs and makes sure the responsible party addresses the contamination. Therefore, purchase of a home containing a UST should involve an evaluation of whether a buried tank is present and if so, whether it had leaked in the past.

HOW DO I KNOW IF A PROPERTY CONTAINS A UST?

Since it would have been buried, there may be no above ground evidence of a UST. One aid is that real estate transaction forms now have a disclosure statement regarding USTs. Double-check to make sure that this statement has been properly addressed by the seller. If they say there are no USTs on the property, this may not be a guarantee unless the seller had investigated the issue. They may simply be unaware of any tanks on-site since there may not have been a disclosure requirement when they bought the house. Should you sell the house in the future, you would have to also disclose your knowledge of USTs on the property.

With the help of your home inspector, you can make an independent evaluation of whether a UST is buried on the property. The following steps can help you in this evaluation.

- Perform a records search for the property with the following authorities:
 - Town fire marshal: Many towns have a requirement that underground fuel tanks be registered with the fire marshal.
 - Town engineer: This office keeps maps of properties as they are being developed; such maps may show the location of buried tanks.
- During the home inspection notice whether there is an extra pipe leading into the basement from outside; this may be from a UST. If the tank had been removed in the past, the pipe may be gone but there may be a patched area on the wall indicating where the pipe had formerly entered the basement. It is also possible that the fill pipe for a current fuel tank in the basement uses the same pipe from the outside as had once been used for the UST. Thus, if there is no extra pipe, this is not a guarantee of no USTs on-site.
- During the home inspection notice whether there are fuel odors in the basement, particularly in sump pits if they exist. A home with an in-basement fuel tank may have a slight fuel oil odor just because fuel is stored there. However, a strong odor or one that is most concentrated in sump pits may indicate soil or groundwater contamination.

You can consider hiring an environmental engineering firm that can scan the subsurface with a powerful metal detector that is able to find buried USTs.

Note: The property may have had a UST that was removed in the past. If so, it would be good to obtain documentation of this and any related activities (e.g., soil test results) for your records.

WHAT SHOULD I DO IF I LEARN THERE IS A UST ON THE PROPERTY?

There are 2 options for underground storage tanks left on a property.

- 1) Remove the tank and any contaminated soil. This is the preferred choice since removing the tank is needed to assess whether it leaked in the past and caused soil contamination. An environmental contractor is recommended to carry this out.
- 2) Leave the tank in place but properly seal it by following the requirements of the local fire marshal and NFPA Codes 30 and 31. This involves pumping out any tank contents and refilling it with an inert fill material (e.g., clean sand). An environmental contractor is also recommended for this option. You may need to obtain a permit from the town to leave a UST in place.

In summary, it is important to obtain information from the seller and other sources to find out whether UST issues may exist on a given property. If there is evidence that an underground storage tank exists and that it leaked in the past, this should be reported to Connecticut DEP's Oil and Chemical Response Division. You can call DPH if you have health-related questions.

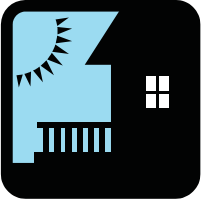
For More Information, Contact:

*The CT Department of
Environmental Protection
Oil and Chemical Response Division
79 Elm Street
Hartford, CT 06106-5127
860-424-3338*



WEBSITES:

Connecticut Department of Environmental Protection Oil and Chemical Response Division
<http://www.dep.state.ct.us/wst/oilspill/index.htm>



CHAPTER IX: PESTICIDES IN PRESSURE-TREATED WOOD

WHAT IS PRESSURE-TREATED WOOD?

Many homes have outdoor wood structures such as decks, playscapes or tree houses made out of pressure-treated wood. Pressure-treatment of wood involves injection of a preservative into the wood under high pressure for maximum penetration. This type of wood has typically been treated with an arsenic-based pesticide called chromated copper arsenate (CCA) that prevents the wood from rotting. This prolongs the life of outdoor wood structures.

CAN THE PESTICIDE GET OUT OF THE WOOD?

Yes. Some of the arsenic leaches out of the wood when it rains and forms a thin layer on the surface. This surface residue of arsenic can easily get onto hands and clothing. Further, arsenic that leaches from the wood can drip to the ground and contaminate soil. Human exposure to arsenic is possible from touching the wood or from working/playing under CCA-treated decks or playscapes. CCA-treated wood has also been used by some to terrace garden beds. The soil right next to this wood can have elevated levels of arsenic. Some arsenic can get into vegetables, especially root crops, but the greatest concerns are from direct exposure to contaminated decks and soil.

WHO IS MOST LIKELY TO BE EXPOSED?

Children who play on decks or play structures made from CCA-wood are likely to receive the greatest exposure. Young children frequently put their fingers in their mouth and so are most likely to transfer arsenic from the wood or soil into their bodies.

WHAT ARE THE HEALTH RISKS FROM ARSENIC EXPOSURE?

Arsenic is a known human carcinogen that can increase the risk for cancer when ingested on a regular basis over long periods of time. It is prudent to minimize your family's exposure to arsenic.

HOW DO I KNOW IF MY YARD HAS PRESSURE-TREATED WOOD?

Until very recently, most wood used in decks and playscapes was made from CCA-treated wood. It typically has a green tinge when new, although it may be difficult to tell apart from other types of wood when old or after it had been stained. A small portion of the wood could be sampled and tested for arsenic content. Unless you know otherwise, you should assume that wood used outdoors contains CCA.

WHAT STEPS CAN I TAKE TO PREVENT THIS EXPOSURE AND RISK?

The following recommendations will help ensure that CCA wood that may be in your yard is not a potential hazard for your family.

- Seal existing structures every 1-2 years with a weather-resistant coating such as polyurethane or an oil-based stain. Sealants form a barrier on the wood surface that can keep arsenic from leaching out.
- Keep children and pets out of under-deck areas where arsenic may have leached in the past.
- Do not sand CCA structures or power wash by highly abrasive means. If you cut CCA wood for any reason, only do this outdoors, wear protective clothing, and carefully clean up sawdust.
- Never burn pressure-treated wood.


WHAT SHOULD I DO WITH A DECK ON MY PROPERTY THAT WAS BUILT WITH CCA-TREATED WOOD?

While it is best to have non-CCA structures in your yard, it is not necessary to remove existing CCA-treated wood structures. These structures can be made safe by following the precautions presented in this booklet, especially with respect to sealing on a regular basis to prevent arsenic leaching.

WHAT MATERIALS SHOULD I USE IN NEW CONSTRUCTION IN MY YARD?

If you are planning to build new outdoor structures, consider alternatives to CCA-treated wood. Also, do not use this type of wood when constructing compost bins or when using wood to terrace garden beds. CCA-treated wood was phased out of the commercial lumber market in 2003. Lumberyards are now carrying a number of safer products including wood-plastic composites and wood that is pressure-treated with alternative preservatives (e.g., ACQ).

For More Information, Contact:

	<p><i>The CT Department of Public Health Environmental Health Section Environmental & Occupational Health Assessment Program</i> 410 Capitol Avenue, MS #11CHA Hartford, CT 06134-0308 860-509-7742</p>
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WEBSITES:

The Connecticut Department of Public Health fact sheet: *Pesticides in Pressure-Treated Wood*
<http://www.dph.state.ct.us/brs/eoha/hwssc.htm>



APPENDIX A: CARBON MONOXIDE

WHAT IS CARBON MONOXIDE?

Carbon Monoxide (CO) is a colorless, odorless and deadly gas produced by the incomplete burning of fossil fuels. These fuels can be natural gas, oil, kerosene, coal or wood. Carbon monoxide replaces oxygen in the blood, interfering with the transport of needed oxygen to cells in the body. The first physical symptoms of CO poisoning may include headache, dizziness, fatigue, and nausea. These symptoms can sometimes be confused with those of the flu. Higher concentrations of CO can cause a loss of consciousness, brain damage, and death.

WHAT ARE THE SOURCES OF CARBON MONOXIDE IN MY HOME? HOW CAN I PROTECT MYSELF?

CO is produced by all fuel burning appliances. In the home, sources can be gas or oil furnaces and wood or kerosene stoves. In addition, charcoal fires and environmental tobacco smoke emit carbon monoxide. Automobile exhaust in attached garages can be another source. Several CO detectors are available to warn of a CO problem in the home. Underwriter Laboratories (UL) has certified detectors that will sound an alarm when high levels are detected. They may be most useful in the event of a heating system problem, and provide a warning before serious health effects occur. Choose a detector that alarms at 50 ppm or less. It is helpful to choose a detector that gives a digital readout, rather than just an alarm. All devices must be used according to manufacturer instructions for maximum protection. Carbon monoxide detectors may be purchased at hardware and home supply stores, and many drug stores. The DPH recommends that at a level of 10 ppm (parts per million) or more or if an alarm sounds, an investigation should take place to determine the source of CO in the home. If an alarm sounds, leave the house immediately and call your local fire department. Investigations of elevated CO in a home may be investigated by the fire department or your oil/gas company.

The following precautions should also be followed to help prevent CO poisoning:

- Have your heating system and chimney inspected and cleaned annually, making sure that the furnace is properly ventilated to the outside.
- Never operate a portable gas heater, gas grill or back-up generator in the home or garage. This has been a major problem after storms that cause power outages.
- Never run cars, lawn mowers or snow blowers in attached garages or in any enclosed space.

***If you suspect CO poisoning, leave the house immediately and call your local fire department.**

For More Information, Contact:

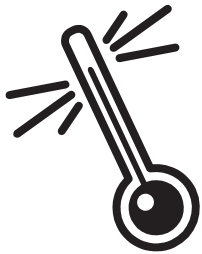
*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program*



*410 Capitol Avenue, MS #11CHA
Hartford, CT 06134-0308
860-509-7742*

Or

**UConn Poison Control Center
1-800-343-2722**



APPENDIX B: MERCURY

WHAT IS MERCURY?

Metallic mercury is a silver colored liquid metal. When liquid mercury is contained in items such as thermometers and electrical switches, there is little chance of exposure. However, if the items break, mercury can be released, and exposure is likely. Liquid mercury vaporizes (becomes airborne) when it comes in contact with air. Breathing the mercury vapor is very dangerous and can affect the brain and nervous system. Exposure to children and pregnant women are of particular concern.

WHERE COULD MERCURY BE FOUND IN THE HOME?

- Some thermometers, barometers, thermostats, electrical switches
- Some types of home medical equipment
- Some light bulbs and fixtures, including fluorescent, high intensity, mercury vapor, high pressure sodium, and metal halide bulbs
- Some clock pendulums
- Some batteries, athletic shoes, toys, and cards that light up or make noise
- Liquid mercury brought home as a novelty from school or work
- Old natural gas regulators (valves)



Mercury and mercury-containing items should be disposed of at your town's hazardous waste collection day. Many towns offer a thermometer exchange program during the collection day in which you can trade in your old mercury thermometer for one that is digital.

To obtain the schedule for household hazardous waste collection in your area call your town hall or go to: <http://www.dep.state.ct.us/wst/recycle/hhwsched.htm>.


WHAT IF I HAVE A MERCURY SPILL AT MY HOUSE?

Basic Cleanup Information:

- Never vacuum mercury!
- Avoid spreading mercury on shoes and pets.
- You can clean small spills (i.e., broken thermometer). Cleanup steps are available at the website below or by calling 860-509-7742.
- Larger spills may require professional help.

For More Information, Contact:

*The CT Department of Public Health
Environmental Health Section
Environmental & Occupational Health
Assessment Program*



*410 Capitol Avenue, MS #11CHA
Hartford, CT 06134-0308
860-509-7742*

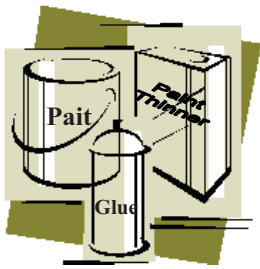
**The Connecticut Department of Environmental Protection
860-424-3338**

**The Connecticut Poison Control Center
1-800-343-2722**

WEBSITES:

Connecticut Department of Public Health:
<http://www.dph.state.ct.us/publications/BRS/EOHA/hgmeth2.pdf>

Connecticut Department of Environmental Protection:
<http://www.dep.state.ct.us/wst/mercury/mercury.htm>



APPENDIX C: HOUSEHOLD HAZARDOUS WASTE

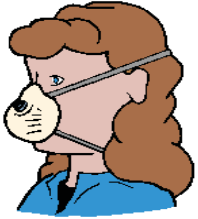
Many products used around the home have hazardous ingredients. Paints, paint thinner, varnish, glues, driveway sealant, motor oil, and other products may contain small amounts of toxic chemicals. Many lawn and garden products contain pesticides. It is important to store these products in a safe place away from children. When purchasing such products, buy the least amount needed for the job. Any unused material that you do not intend to use or that is past its expiration date should be removed from your home to prevent accidental spills. Improper disposal may affect soil or water quality on your property, lead to unnecessary exposures, and potentially harm the environment. Therefore, bring these unused chemical-containing products to your town's hazardous waste collection day. You can find out the next collection day by calling town offices or going to: <http://www.dep.state.ct.us/wst/recycle/hhwsched.htm>.

For more information on household hazardous waste programs, disposal, and recycling options in Connecticut:

WEBSITES:

The Connecticut Department of Environmental Protection:
<http://www.dep.state.ct.us/wst/hhw/hhw.htm>

U.S. Environmental Protection Agency:
<http://www.epa.gov/epaoswer/non-hw/muncpl/hhw.htm>



Appendix D: Federal Lead Pamphlet

If you are planning to sell or rent a home that was built before 1978, federal law requires sellers and landlords to disclose certain information prior to finalizing contracts. A seller or landlord must:

1. Disclose known information on lead paint and lead paint hazards.
2. Give buyers and tenants a lead hazard pamphlet (“Protect Your Family From Lead Poisoning in Your Home”).
3. Include a federal form about lead paint in sales contracts and leases.

The following lead hazard pamphlet was developed by EPA, Housing and Urban Development (HUD) and the CPSC, and is titled “Protect Your Family From Lead In Your Home.”

WEBSITES:

Centers for Disease Control and Prevention:

<http://www.cdc.gov/nceh/lead/lead.htm>

Connecticut Department of Public Health:

http://www.dph.state.ct.us/BRS/Lead/lead_program.htm

National Center for Healthy Housing:

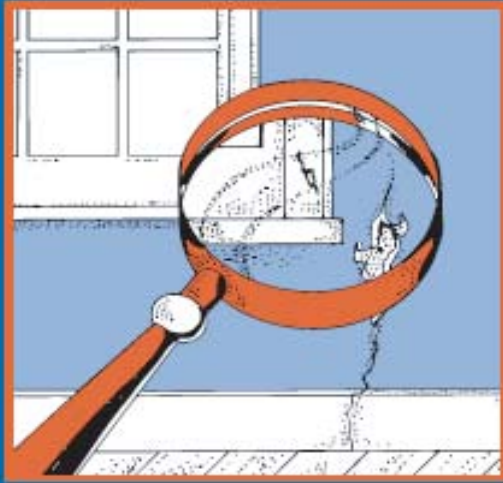
<http://www.centerforhealthyhousing.org/>

U.S. Department of Housing and Urban Development:

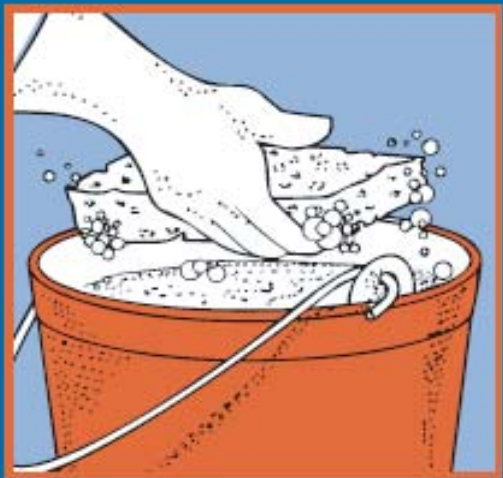
<http://www.hud.gov/offices/lead/index.cfm>

U.S. Environmental Protection Agency:

<http://www.epa.gov/lead/>



Protect Your Family From Lead In Your Home



 **EPA** United States Environmental Protection Agency

 United States Consumer Product Safety Commission

 United States Department of Housing and Urban Development

Simple Steps To Protect Your Family From Lead Hazards

If you think your home has high levels of lead:

- ◆ Get your young children tested for lead, even if they seem healthy.
- ◆ Wash children's hands, bottles, pacifiers, and toys often.
- ◆ Make sure children eat healthy, low-fat foods.
- ◆ Get your home checked for lead hazards.
- ◆ Regularly clean floors, window sills, and other surfaces.
- ◆ Wipe soil off shoes before entering house.
- ◆ Talk to your landlord about fixing surfaces with peeling or chipping paint.
- ◆ Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines).
- ◆ Don't use a belt-sander, propane torch, high temperature heat gun, scraper, or sandpaper on painted surfaces that may contain lead.
- ◆ Don't try to remove lead-based paint yourself.



Are You Planning To Buy, Rent, or Renovate a Home Built Before 1978?

Many houses and apartments built before 1978 have paint that contains high levels of lead (called lead-based paint). Lead from paint, chips, and dust can pose serious health hazards if not taken care of properly.



OWNERS, BUYERS, and RENTERS are encouraged to check for lead (see page 6) before renting, buying or renovating pre-1978 housing.

Federal law requires that individuals receive certain information before renting, buying, or renovating pre-1978 housing:



LANDLORDS have to disclose known information on lead-based paint and lead-based paint hazards before leases take effect. Leases must include a disclosure about lead-based paint.



SELLERS have to disclose known information on lead-based paint and lead-based paint hazards before selling a house. Sales contracts must include a disclosure about lead-based paint. Buyers have up to 10 days to check for lead.



RENOVATORS disturbing more than 2 square feet of painted surfaces have to give you this pamphlet before starting work.

IMPORTANT!

Lead From Paint, Dust, and Soil Can Be Dangerous If Not Managed Properly

- FACT:** Lead exposure can harm young children and babies even before they are born.
- FACT:** Even children who seem healthy can have high levels of lead in their bodies.
- FACT:** People can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips containing lead.
- FACT:** People have many options for reducing lead hazards. In most cases, lead-based paint that is in good condition is not a hazard.
- FACT:** Removing lead-based paint improperly can increase the danger to your family.

If you think your home might have lead hazards, read this pamphlet to learn some simple steps to protect your family.

Lead Gets in the Body in Many Ways

Childhood lead poisoning remains a major environmental health problem in the U.S.

Even children who appear healthy can have dangerous levels of lead in their bodies.

People can get lead in their body if they:

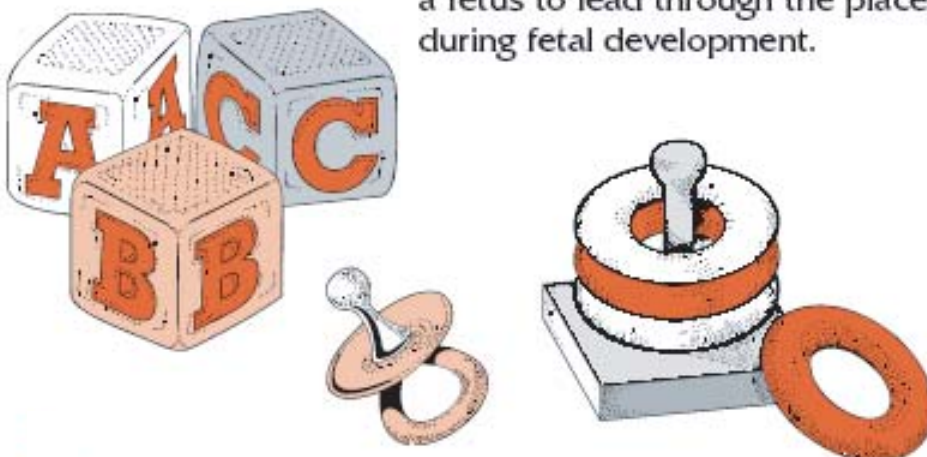
- ◆ Breathe in lead dust (especially during renovations that disturb painted surfaces).
- ◆ Put their hands or other objects covered with lead dust in their mouths.
- ◆ Eat paint chips or soil that contains lead.

Lead is even more dangerous to children under the age of 6:

- ◆ At this age children's brains and nervous systems are more sensitive to the damaging effects of lead.
- ◆ Children's growing bodies absorb more lead.
- ◆ Babies and young children often put their hands and other objects in their mouths. These objects can have lead dust on them.

Lead is also dangerous to women of childbearing age:

- ◆ Women with a high lead level in their system prior to pregnancy would expose a fetus to lead through the placenta during fetal development.



Lead's Effects

It is important to know that even exposure to low levels of lead can severely harm children.

In children, lead can cause:

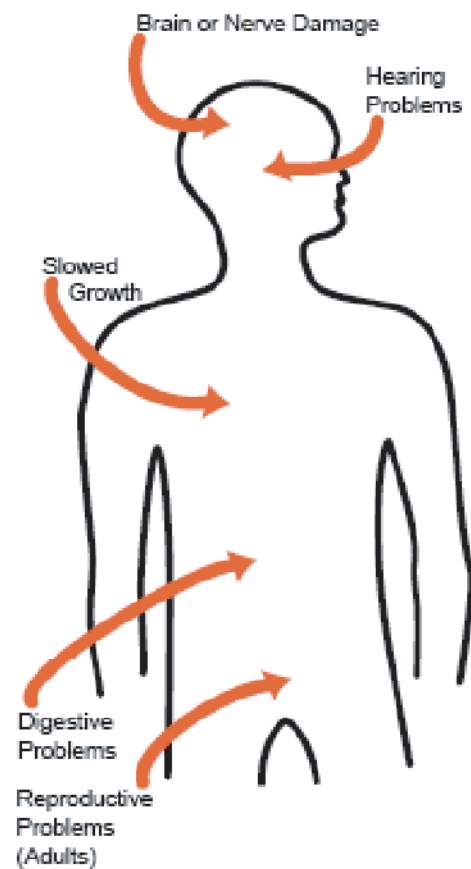
- ◆ Nervous system and kidney damage.
- ◆ Learning disabilities, attention deficit disorder, and decreased intelligence.
- ◆ Speech, language, and behavior problems.
- ◆ Poor muscle coordination.
- ◆ Decreased muscle and bone growth.
- ◆ Hearing damage.

While low-lead exposure is most common, exposure to high levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

Although children are especially susceptible to lead exposure, lead can be dangerous for adults too.

In adults, lead can cause:

- ◆ Increased chance of illness during pregnancy.
- ◆ Harm to a fetus, including brain damage or death.
- ◆ Fertility problems (in men and women).
- ◆ High blood pressure.
- ◆ Digestive problems.
- ◆ Nerve disorders.
- ◆ Memory and concentration problems.
- ◆ Muscle and joint pain.



**Lead affects
the body in
many ways.**

Where Lead-Based Paint Is Found

In general, the older your home, the more likely it has lead-based paint.

Many homes built before 1978 have lead-based paint. The federal government banned lead-based paint from housing in 1978. Some states stopped its use even earlier. Lead can be found:

- ◆ In homes in the city, country, or suburbs.
- ◆ In apartments, single-family homes, and both private and public housing.
- ◆ Inside and outside of the house.
- ◆ In soil around a home. (Soil can pick up lead from exterior paint or other sources such as past use of leaded gas in cars.)

Checking Your Family for Lead

Get your children and home tested if you think your home has high levels of lead.

To reduce your child's exposure to lead, get your child checked, have your home tested (especially if your home has paint in poor condition and was built before 1978), and fix any hazards you may have. Children's blood lead levels tend to increase rapidly from 6 to 12 months of age, and tend to peak at 18 to 24 months of age.

Consult your doctor for advice on testing your children. A simple blood test can detect high levels of lead. Blood tests are usually recommended for:

- ◆ Children at ages 1 and 2.
- ◆ Children or other family members who have been exposed to high levels of lead.
- ◆ Children who should be tested under your state or local health screening plan.

Your doctor can explain what the test results mean and if more testing will be needed.

Identifying Lead Hazards

Lead-based paint is usually not a hazard if it is in good condition, and it is not on an impact or friction surface, like a window. It is defined by the federal government as paint with lead levels greater than or equal to 1.0 milligram per square centimeter, or more than 0.5% by weight.

Deteriorating lead-based paint (peeling, chipping, chalking, cracking or damaged) is a hazard and needs immediate attention. It may also be a hazard when found on surfaces that children can chew or that get a lot of wear-and-tear, such as:

- ◆ Windows and window sills.
- ◆ Doors and door frames.
- ◆ Stairs, railings, banisters, and porches.

Lead dust can form when lead-based paint is scraped, sanded, or heated. Dust also forms when painted surfaces bump or rub together. Lead chips and dust can get on surfaces and objects that people touch. Settled lead dust can re-enter the air when people vacuum, sweep, or walk through it. The following two federal standards have been set for lead hazards in dust:

- ◆ 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) and higher for floors, including carpeted floors.
- ◆ 250 $\mu\text{g}/\text{ft}^2$ and higher for interior window sills.

Lead in soil can be a hazard when children play in bare soil or when people bring soil into the house on their shoes. The following two federal standards have been set for lead hazards in residential soil:

- ◆ 400 parts per million (ppm) and higher in play areas of bare soil.
- ◆ 1,200 ppm (average) and higher in bare soil in the remainder of the yard.

The only way to find out if paint, dust and soil lead hazards exist is to test for them. The next page describes the most common methods used.

Lead from paint chips, which you can see, and lead dust, which you can't always see, can both be serious hazards.

Checking Your Home for Lead

Just knowing that a home has lead-based paint may not tell you if there is a hazard.



You can get your home tested for lead in several different ways:

- ◆ A paint **inspection** tells you whether your home has lead-based paint and where it is located. It won't tell you whether or not your home currently has lead hazards.
- ◆ A **risk assessment** tells you if your home currently has any lead hazards from lead in paint, dust, or soil. It also tells you what actions to take to address any hazards.
- ◆ A combination risk assessment and inspection tells you if your home has any lead hazards and if your home has any lead-based paint, and where the lead-based paint is located.

Hire a trained and certified testing professional who will use a range of reliable methods when testing your home.

- ◆ Visual inspection of paint condition and location.
- ◆ A portable x-ray fluorescence (XRF) machine.
- ◆ Lab tests of paint, dust, and soil samples.

There are state and federal programs in place to ensure that testing is done safely, reliably, and effectively. Contact your state or local agency (see bottom of page 11) for more information, or call **1-800-424-LEAD (5323)** for a list of contacts in your area.

Home test kits for lead are available, but may not always be accurate. Consumers should not rely on these kits before doing renovations or to assure safety.

What You Can Do Now To Protect Your Family

If you suspect that your house has lead hazards, you can take some immediate steps to reduce your family's risk:

- ◆ If you rent, notify your landlord of peeling or chipping paint.
- ◆ Clean up paint chips immediately.
- ◆ Clean floors, window frames, window sills, and other surfaces weekly. Use a mop or sponge with warm water and a general all-purpose cleaner or a cleaner made specifically for lead. REMEMBER: NEVER MIX AMMONIA AND BLEACH PRODUCTS TOGETHER SINCE THEY CAN FORM A DANGEROUS GAS.
- ◆ Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas.
- ◆ Wash children's hands often, especially before they eat and before nap time and bed time.
- ◆ Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly.
- ◆ Keep children from chewing window sills or other painted surfaces.
- ◆ Clean or remove shoes before entering your home to avoid tracking in lead from soil.
- ◆ Make sure children eat nutritious, low-fat meals high in iron and calcium, such as spinach and dairy products. Children with good diets absorb less lead.



Reducing Lead Hazards In The Home

Removing lead improperly can increase the hazard to your family by spreading even more lead dust around the house.

Always use a professional who is trained to remove lead hazards safely.



In addition to day-to-day cleaning and good nutrition:

- ◆ You can **temporarily** reduce lead hazards by taking actions such as repairing damaged painted surfaces and planting grass to cover soil with high lead levels. These actions (called “interim controls”) are not permanent solutions and will need ongoing attention.
- ◆ To **permanently** remove lead hazards, you should hire a certified lead “abatement” contractor. Abatement (or permanent hazard elimination) methods include removing, sealing, or enclosing lead-based paint with special materials. Just painting over the hazard with regular paint is not permanent removal.

Always hire a person with special training for correcting lead problems—someone who knows how to do this work safely and has the proper equipment to clean up thoroughly. Certified contractors will employ qualified workers and follow strict safety rules as set by their state or by the federal government.

Once the work is completed, dust cleanup activities must be repeated until testing indicates that lead dust levels are below the following:

- ◆ 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) for floors, including carpeted floors;
- ◆ 250 $\mu\text{g}/\text{ft}^2$ for interior windows sills; and
- ◆ 400 $\mu\text{g}/\text{ft}^2$ for window troughs.

Call your state or local agency (see bottom of page 11) for help in locating certified professionals in your area and to see if financial assistance is available.

Remodeling or Renovating a Home With Lead-Based Paint

Take precautions before your contractor or you begin remodeling or renovating anything that disturbs painted surfaces (such as scraping off paint or tearing out walls):

- ◆ **Have the area tested for lead-based paint.**
- ◆ **Do not use a belt-sander, propane torch, high temperature heat gun, dry scraper, or dry sandpaper** to remove lead-based paint. These actions create large amounts of lead dust and fumes. Lead dust can remain in your home long after the work is done.
- ◆ **Temporarily move your family** (especially children and pregnant women) out of the apartment or house until the work is done and the area is properly cleaned. If you can't move your family, at least completely seal off the work area.
- ◆ **Follow other safety measures to reduce lead hazards.** You can find out about other safety measures by calling 1-800-424-LEAD. Ask for the brochure "Reducing Lead Hazards When Remodeling Your Home." This brochure explains what to do before, during, and after renovations.

If you have already completed renovations or remodeling that could have released lead-based paint or dust, get your young children tested and follow the steps outlined on page 7 of this brochure.



If not conducted properly, certain types of renovations can release lead from paint and dust into the air.



Other Sources of Lead



While paint, dust, and soil are the most common sources of lead, other lead sources also exist.



- ◆ **Drinking water.** Your home might have plumbing with lead or lead solder. Call your local health department or water supplier to find out about testing your water. You cannot see, smell, or taste lead, and boiling your water will not get rid of lead. If you think your plumbing might have lead in it:
 - Use only cold water for drinking and cooking.
 - Run water for 15 to 30 seconds before drinking it, especially if you have not used your water for a few hours.
- ◆ **The job.** If you work with lead, you could bring it home on your hands or clothes. Shower and change clothes before coming home. Launder your work clothes separately from the rest of your family's clothes.
- ◆ **Old painted toys and furniture.**
- ◆ **Food and liquids stored in lead crystal or lead-glazed pottery or porcelain.**
- ◆ **Lead smelters** or other industries that release lead into the air.
- ◆ **Hobbies** that use lead, such as making pottery or stained glass, or refinishing furniture.
- ◆ **Folk remedies** that contain lead, such as "greta" and "azarcon" used to treat an upset stomach.

For More Information

The National Lead Information Center

Call **1-800-424-LEAD (424-5323)** to learn how to protect children from lead poisoning and for other information on lead hazards. To access lead information via the web, visit **www.epa.gov/lead** and **www.hud.gov/offices/lead/**.



EPA's Safe Drinking Water Hotline

Call **1-800-426-4791** for information about lead in drinking water.

Consumer Product Safety Commission (CPSC) Hotline

To request information on lead in consumer products, or to report an unsafe consumer product or a product-related injury call **1-800-638-2772**, or visit CPSC's Web site at: **www.cpsc.gov**.



Health and Environmental Agencies

Some cities, states, and tribes have their own rules for lead-based paint activities. Check with your local agency to see which laws apply to you. Most agencies can also provide information on finding a lead abatement firm in your area, and on possible sources of financial aid for reducing lead hazards. Receive up-to-date address and phone information for your local contacts on the Internet at **www.epa.gov/lead** or contact the National Lead Information Center at **1-800-424-LEAD**.

For the hearing impaired, call the Federal Information Relay Service at **1-800-877-8339** to access any of the phone numbers in this brochure.

EPA Regional Offices

Your Regional EPA Office can provide further information regarding regulations and lead protection programs.

EPA Regional Offices

Region 1 (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)

Regional Lead Contact
U.S. EPA Region 1
Suite 1100 (CPT)
One Congress Street
Boston, MA 02114-2023
1 (888) 372-7341

Region 2 (New Jersey, New York, Puerto Rico, Virgin Islands)

Regional Lead Contact
U.S. EPA Region 2
2890 Woodbridge Avenue
Building 209, Mail Stop 225
Edison, NJ 08837-3679
(732) 321-6671

Region 3 (Delaware, Maryland, Pennsylvania, Virginia, Washington DC, West Virginia)

Regional Lead Contact
U.S. EPA Region 3 (3WC33)
1650 Arch Street
Philadelphia, PA 19103
(215) 814-5000

Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)

Regional Lead Contact
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
(404) 562-8998

Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)

Regional Lead Contact
U.S. EPA Region 5 (DT-8J)
77 West Jackson Boulevard
Chicago, IL 60604-3666
(312) 886-6003

Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Regional Lead Contact
U.S. EPA Region 6
1445 Ross Avenue, 12th Floor
Dallas, TX 75202-2733
(214) 665-7577

Region 7 (Iowa, Kansas, Missouri, Nebraska)

Regional Lead Contact
U.S. EPA Region 7
(ARTD-RALI)
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7020

Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)

Regional Lead Contact
U.S. EPA Region 8
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 312-6021

Region 9 (Arizona, California, Hawaii, Nevada)

Regional Lead Contact
U.S. Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4164

Region 10 (Alaska, Idaho, Oregon, Washington)

Regional Lead Contact
U.S. EPA Region 10
Toxics Section WCM-128
1200 Sixth Avenue
Seattle, WA 98101-1128
(206) 553-1985

CPSC Regional Offices

Your Regional CPSC Office can provide further information regarding regulations and consumer product safety.

Eastern Regional Center
Consumer Product Safety Commission
201 Varick Street, Room 903
New York, NY 10014
(212) 620-4120

Western Regional Center
Consumer Product Safety Commission
1301 Clay Street, Suite 610-N
Oakland, CA 94612
(510) 637-4050

Central Regional Center
Consumer Product Safety Commission
230 South Dearborn Street, Room 2944
Chicago, IL 60604
(312) 353-8260

HUD Lead Office

Please contact HUD's Office of Healthy Homes and Lead Hazard Control for information on lead regulations, outreach efforts, and lead hazard control and research grant programs.

U.S. Department of Housing and Urban Development
Office of Healthy Homes and Lead Hazard Control
451 Seventh Street, SW, P-3206
Washington, DC 20410
(202) 755-1785

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U.S. EPA Washington DC 20460
U.S. CPSC Washington DC 20207
U.S. HUD Washington DC 20410

EPA747-K-99-001
June 2003

Simple Steps To Protect Your Family From Lead Hazards

If you think your home has high levels of lead:

- ◆ Get your young children tested for lead, even if they seem healthy.
- ◆ Wash children's hands, bottles, pacifiers, and toys often.
- ◆ Make sure children eat healthy, low-fat foods.
- ◆ Get your home checked for lead hazards.
- ◆ Regularly clean floors, window sills, and other surfaces.
- ◆ Wipe soil off shoes before entering house.
- ◆ Talk to your landlord about fixing surfaces with peeling or chipping paint.
- ◆ Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines).
- ◆ Don't use a belt-sander, propane torch, high temperature heat gun, scraper, or sandpaper on painted surfaces that may contain lead.
- ◆ Don't try to remove lead-based paint yourself.



Recycled/Recyclable

Printed with vegetable oil based inks on recycled paper
(minimum 50% postconsumer) process chlorine free.

DISCLOSURE OF INFORMATION ON LEAD-BASED PAINT AND LEAD-BASED PAINT HAZARDS FOR TARGET HOUSING RENTALS AND LEASES

Lead Warning Statement

Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not taken care of properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, landlords must disclose the presence of known lead-based and lead-based paint hazards in the dwelling. Lessees must also receive a federally approved pamphlet on lead poisoning prevention.

Lessor's Disclosure

(initial)

_____ (a) Presence of lead-based paint and/or lead-based paint hazards (check one below):
Known lead-based paint and/or lead-based paint hazards are present in the housing. (explain)
Lessor has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

_____ (b) Records and reports available to the seller. (check one below):
Lessor has provided the lessee with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).
Lessor has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Lessee's Acknowledgment

(initial)

_____ (c) Lessee has received copies of all information listed above.
_____ (d) Lessee has received the pamphlet "**Protect Your Family from Lead in Your Home**".

Agent's Acknowledgment

(initial)

_____ (f) Agent has informed the lessor of the lessor's obligations under 42 U.S.C. 4852d and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information provided by the signatory is true and accurate.

Lessor Date

Lessee Date

Lessor Date

Lessee Date

Agent Date

Agent Date

DISCLOSURE OF INFORMATION ON LEAD-BASED PAINT AND LEAD-BASED PAINT HAZARDS
(PURCHASE AND SALE)

Lead Warning Statement

Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interests in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase.

Seller's Disclosure

(initial)

_____ (a) Presence of lead-based paint and/or lead-based paint hazards (check one below):

Known lead-based paint and/or lead-based paint hazards are present in the housing (explain).

Seller has no knowledge of lead-based paint and/or lead-based paint hazards in the housing.

_____ (b) Records and reports available to the seller (check one below):

Seller has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the housing (list documents below).

Seller has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the housing.

Purchaser's Acknowledgment

(initial)

_____ (c) Purchaser has received copies of all information listed above.

_____ (d) Purchaser has received the pamphlet "Protect Your Family from Lead in Your Home."

_____ (e) Purchaser has (check one below):

_____ Received a 10-day opportunity (or mutually agreed upon period) to conduct a risk assessment or inspection for the presence of lead based paint and/or lead based paint hazards; or

_____ Waived the opportunity to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

Agent's Acknowledgment

(initial)

_____ (f) Agent has informed the seller of the seller's obligations under 42 U.S.C. 4852d and is aware of his/her responsibility to ensure compliance.

Certification of Accuracy

The following parties have reviewed the information above and certify, to the best of their knowledge, that the information provided by the signatory is true and accurate.

Purchaser Date

Seller Date

Purchaser Date

Seller Date

Agent Date

Agent Date

Evaluation Form for Environmental Hazards Handbook

This evaluation form will help us improve this handbook and is a way for you to receive more information about environmental hazards (See # 6 below). Please fill in the form and fax or mail the form to:

Fax: 860-509-7785

Address:

CT Department of Public Health
 Environmental & Occupational Health Assessment Program
 Environmental Health Section
 410 Capitol Ave, PO Box 340308, MS #11CHA
 Hartford, CT 06134-0308

Name: (optional) _____

Address: (optional) _____

Phone: (optional) _____ E-mail (optional) _____

(Your Status:) REALTOR Homebuyer Home seller Landlord Tenant

1. **Overall, did you find this handbook useful? (Check the most appropriate responses below)**
 Excellent Very Good Good Fair Poor

2. **Was the overall information easy to understand?**
 Excellent Very Good Good Fair Poor

3. **Is there any portion of the booklet that you found confusing or unclear?** _____

4. **The content was:**
 Poorly organized Adequately organized Well organized

5. **For each hazard below, please check your answer:**

Hazard	Learned to identify Hazard	Learned about harmful effects	Learned How to Correct Hazard/Learned where to get help	Took Action to Investigate/Correct Problem
Lead	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Radon	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Asbestos	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Mold	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Pressure-treated wood	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Private well	yes no unsure	yes no unsure	yes no unsure	yes no unsure
EMF	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Formaldehyde (UFFI)	yes no unsure	yes no unsure	yes no unsure	yes no unsure
Carbon Monoxide	yes no unsure	yes no unsure	yes no unsure	yes no unsure

6. **If you would like to receive additional information about these hazards, please mark your choice(s) below:**
 (Please be sure to provide your name and address above.)

__ Lead __ Radon __ Asbestos __ Mold __ Pressure-treated Wood __ Well Water __ EMF __ UFFI __ Carbon Monoxide
 __ Mercury __ Other Hazards: _____



Dear Reader:

Thank you for agreeing to read and review the booklet entitled “*Environmental Hazards in the Home – A Guide for Homeowners, Homebuyers, Landlords & Tenants.*” This booklet is a joint project of the Connecticut Department of Public Health and the Connecticut Association of REALTORS®, Inc. in an effort to provide homeowners/sellers and homebuyers with important factual information concerning environmental conditions in real estate. The fact that you have been asked to read this booklet should in no way imply that the particular property that you are interested in or the property that you might be selling has any of the conditions discussed in the booklet.

Please take a few minutes to read the information in the booklet and fill out and fax our evaluation form on the previous page. Your comments will be used to improve the booklet for the benefit of your fellow homebuyers and home sellers.

We hope you find the information in this handbook useful. Thank you for your time and for providing any feedback on the information in the booklet.

Very truly yours,

Robert J. Kennedy, Jr.
Executive Vice President
Connecticut Association of REALTORS®, Inc.

J. Robert Galvin, M.D., M.P.H.
Commissioner of the Department of Public Health