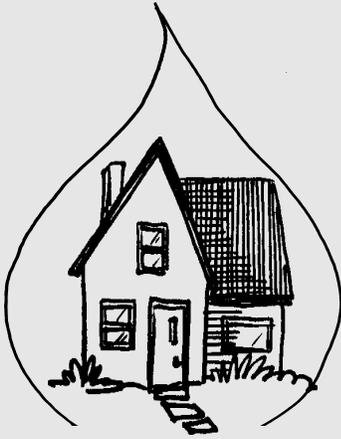


Home*A*Syst

for New Jersey



This worksheet addresses sources of lead in the home and explains the health hazards associated with exposure to lead. The assessment is divided into three parts.

1. *Lead sources inside the home*

- **Lead-based paint in or on pre-1978 homes.**
- **Lead in drinking water from contact with lead pipes, lead-based solder, or other plumbing sources.**

2. *Sources of lead outside the home*

- **Leaded exterior paint**
- **Automobile exhaust**
- **Industry**

3. *Health effects on children*

- **Avenues of exposure**
- **Effects and symptoms of poisoning**

Completing this worksheet will help you identify and evaluate lead-related risks to your family's health. Tips are given for reducing those risks.

Lead in and Around the Home

Identifying and Managing its Sources

Why should you be concerned?

Lead poisoning is a serious but preventable health problem. Many public health experts consider it the number one environmental health problem in the United States. Many homes have one or more sources of lead. An estimated one in nine American children have elevated lead levels in their blood, and the chief suspect is lead-based paint from older homes. Families can also be exposed to lead from something as simple as their drinking water. Lead, depending upon the level, can have wide-ranging effects. Even low lead levels can slow mental development and cause learning and behavioral problems. Higher levels may cause damage to the nervous system and the reproductive system. Sadly, the effects of lead poisoning are frequently irreversible.

Lead is a soft metal used for thousands of years in ammunition, ceramics, printer's ink, paint, coins, leaded crystal, water pipes, as a gasoline additive, and for many other purposes (except for pencils - there is no lead in a lead pencil). The use of lead for many of these purposes has been eliminated, but lead remains a hazard because it was so widely used and never breaks down to a harmless substance. You can reduce your exposure to lead, though you cannot completely avoid it. Reducing exposure is especially important for children.

Where are the lead sources in and around *your* home?

The most common sources of lead are lead-based paint, household dust (containing lead dust from deteriorating lead-based paint), soils contaminated by leaded-gasoline exhaust and decomposing lead based paint, and drinking water delivered through lead pipes or in contact with lead solder. Over the years, lead in residential paint, gasoline, solder, and water

pipes has been eliminated -- but, especially in older homes, lead remains in either trace amounts or significant quantities. Unlike many chemicals, lead does not break down and can remain for long periods in paints, dusts, and soil.

Part 1 -- Inside the Home: Lead in Paint and Drinking Water

Identifying and controlling sources of lead in and around your home is an important responsibility. To determine potential risks from sources inside your home, complete the assessment chart at the end of Part 1. The information below will help you answer the assessment questions.

When was your home built?

According to the U.S. Department of Housing and Urban Development, 74% of all homes built before 1980 contain potentially dangerous levels of lead paint. Although lead has been banned from house paint since 1978, the majority of U.S. homes were built before that time. Homes built before 1950 are very likely to have high lead levels, especially in paint used on windows and exterior surfaces. Levels as high as 50% lead by weight are common. As of December 1996, a federal law (Title X: Residential Lead-Based Paint Hazard Reduction Act) requires, among other things, a disclosure statement relating to all known lead hazards in all sales and rentals of pre-1978 housing.

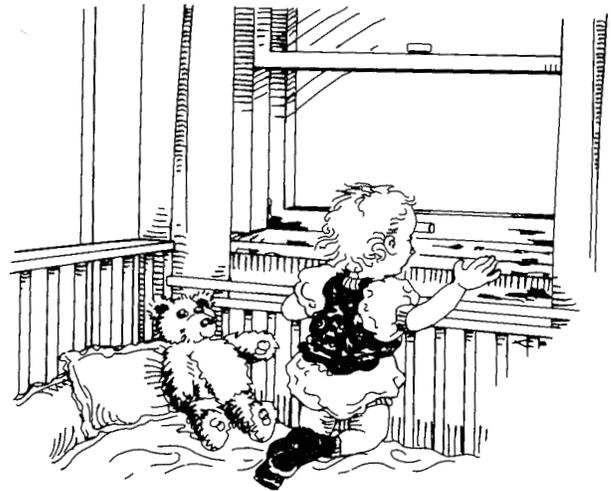


Figure 1. Lead-based paint chips can be easily ingested by children.

Does your *Interior* paint contain lead, and what is its condition?

Lead-based paint (LBP) is the most common source of high lead exposure for children. Most exposure, however, comes from contact with contaminated household dust rather than from eating paint chips. As paint ages or as painted surfaces rub against each other, lead-containing dust is created. If your lead-based paint is perfectly intact, then the potential risk of accidental ingestion is greatly reduced. But if lead paint is cracking, chipping, flaking, or being rubbed by contact, then the danger of lead exposure is much higher.

Testing for lead. To find out if your paint contains lead--and also how much lead--have it analyzed by experts who test samples in a laboratory or who examine paint on-site using a portable X-ray fluorescence (XRF) detector. Surface wipe samples, which test dust for lead-contamination, may be taken by

How much lead is in your paint?

Keep good records of any testing, so you and future owners can properly manage painted surfaces. **Write the results of lead tests here:**

Location of paint sample:

Amount of lead found (percentage by weight, or milligrams per square centimeter):

Date of test:

professional inspectors and sent to a lab for analysis. Do-it-yourself home test kits are available in stores. They indicate the presence or absence of lead, but do not indicate how much lead is present. These kits may not be reliable for testing surfaces in your home -- it is best to have the tests done by a professional. Check with your local health department or national lead information resources to find out what testing options are available. (See "For more information" on page 72).

How else can lead enter the home?

1. In consumer products. Lead is present in such products as lead-crystal glassware and leaded wine bottle neck wraps made before 1990. It may also be present in products from some other countries such as paint on toys and lead solder in food cans. Although lead is now less common in printing inks, it may be present in food packaging labels and newspaper print.

2. From the workplace. Do you work in construction, bridge building, sandblasting, shipbuilding, plumbing, battery manufacturing, auto radiator repair, furniture refinishing or foundry casting? Lead-contaminated dust from your work site can be carried unknowingly into the home on clothing or skin. Workers exposed to leaded dusts should shower and change clothes before entering their homes.

3. In hobby and recreation supplies. If your hobbies include stained glass, furniture refinishing, pottery (using lead glazes), or collecting pewter or lead figurines, you may be exposing yourself and others to lead. Hunters and fishers who use or make lead bullets and lead sinkers also come in contact with lead. Exposure can also occur at indoor firing ranges.

4. Ethnic Medicinals or Cosmetics. Various Hispanic communities and Asiatic communities utilize mixtures that contain high levels of lead. Some of the stomach preparations are actually quite toxic.

If you find lead. Remodeling or renovation in areas having LBP is especially risky. Scraping, sanding, and burning lead-based paint creates extremely hazardous conditions and strict precautions need to be taken, especially if children, pregnant women, or pets are present. If possible, homeowners should use the services of a certified lead inspector and lead-abatement contractor. Paint removal, replacement of lead-painted parts (windows, door jambs, moldings), liquid encapsulants (special paint-like products which cover the surface), and off-site removal of leaded surfaces are some of the options for dealing with lead paint.

Is there lead paint on windows and door frames, and what is its condition?

Lead was added to paint to inhibit growth of mold on the surface of the paint. Thus, paints with higher lead levels were used where exposure to moisture is greatest: windows, doors and exterior walls. If high-lead LBP is intact, it poses little risk, but if it is chipping or chalking off, or is scraped or sanded during repairs, then the risk of exposure is great. Lead-dust--which is the most easily ingested--is likely to come from weathering (chalking) paint, and especially from surfaces that rub or slide, such as a window in its frame.

Is your drinking water lead-free?

Although your drinking water is not usually a concentrated lead source like paint or soil, it can

still pose risks to your family. Lead can enter your water from several points: lead pipes that bring water to the home, lead pipe connectors, lead-soldered joints in copper plumbing, lead-containing brass faucets and



Figure 2. A state-certified laboratory can provide a water sample container and instructions on how to take a water sample.

pump components. In some private wells, underwater pumps with brass fittings can cause elevated lead concentrations in drinking water, especially with new pumps or if the water is soft. Water that is soft or corrosive tends to dissolve lead from pipes and fittings more easily. Home water softeners, which have other benefits, may increase the amount of lead leached into your drinking water if lead is present in your water system.

What can you do to minimize lead in your water?

Water testing will show if lead is present, and whether your water is “aggressive” or “corrosive” (acidic or soft). Contact a state certified water testing laboratory for instructions on how to take a water sample (See “For more information” on page 72). If lead levels are greater than 15 parts per billion, action is recommended. A simple way to reduce lead concentrations is to flush your plumbing system. If your water system has not been



Figure 3. Bottled water for drinking and cooking is one option for dealing with lead-contaminated water.

ASSESSMENT 1 -- Identifying Lead Sources Inside The Home

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Age of your home	Built after 1987.	Built between 1950 and 1978.	Built before 1950.	
Interior paint	No LBP (lead-based paint).	LBP present but intact.	Defective LBP (chipping, peeling, chalking).	
Windows	No LBP or replacement of LBP windows and frames.	LBP present but intact.	Defective LBP (chipping, peeling, chalking).	
Water supply	No lead water pipes, leaded solder, or brass fixtures used in plumbing.	Lead present in plumbing, but water tested and precautions taken.	Lead likely to be present in plumbing, but water not tested and no precautions taken.	
Water acidity or corrosiveness	Hardness around 80 mg/liter. pH = 7.5 to 8.5	Hardness between 60 to 80 mg/liter. pH = 6 to 7.5	Hardness 60 mg/liter or less. pH = less than 6	

used for more than two hours, let the cold water run for a minute or two until the water runs cold. Also, always use cold tap water for cooking and drinking; hot water is more likely to dissolve lead. Never use potentially leaded water to mix infant formula. For severe lead contamination, you may need to install a water treatment device, such as a reverse osmosis system, a distillation system or an activated carbon filter.

Assessment 1 -- Identifying Lead Sources Inside The Home

Use the table on the previous page to rate your lead-related indoor health risks. For each question, put the risk-level number (1, 2, or 3) in the column labeled "Your Risk." Although some choices may not correspond exactly to your situation, choose the response that best fits. Refer to the information in Part 1 if you need help completing the table.

Responding to Risks

Your goal is to lower your risks. Turn to the Action Checklist on page 71 to record the medium and high risk situations. Plan actions to help you reduce your risks.

Part 2 -- Sources of Lead Outside the Home: Is your family tracking lead into the home?

The soil around your home can be a significant source of lead exposure, and levels tend to be highest where house walls meet the ground. Lead-contaminated soil is a problem when children play outdoors, when soil is tracked inside the home, and when vegetables are grown in contaminated soil. Soils adjacent to painted walls may be contaminated by flaking or peeling or chalking lead based paint. In high auto traffic areas, leaded gasoline exhaust has been responsible for high levels of lead in soil, with levels highest near major roadways. The shift to unleaded gasoline has reduced this risk, but after years of contamination, lead levels can still be high. If you live near industrial sources such as incinerators, lead smelters, and battery recyclers, you should be concerned about lead in your soil.

What can soil tests reveal?

Testing your soil is the only way to detect a lead problem. Many laboratories can provide this testing. Contact your local office of Rutgers Cooperative Extension for a list of labs that will test your soil for lead. If high levels are found, there are several steps you can take. Planting grass or covering soil with mulch can keep your family from tracking the soil indoors or breathing soil dust. In some cases, removal and replacement of heavily contaminated topsoil may be recommended.

What level is safe?

Relatively safe background levels in soils range from non-detectable to 200 parts per million (ppm). Soils with lead levels of 300-500 ppm or more should not be used for growing vegetables unless the top 6-8 inches is replaced with non-contaminated topsoil. In undisturbed soil, lead is usually found in the top two to three inches. Regardless of the level of lead in your soil, you should always wash fruits and vegetables before eating them.

Lead levels in soil within 85 feet of busy roadways are typically 30 to 2,000 parts per million higher than natural levels, and some soils have as much as 10,000 ppm. Soils adjacent to houses with leaded exterior paint may also have lead levels as high as 10,000 ppm. Levels near industrial sources can be dangerously high, especially in areas downwind. Old orchards may also have high soil

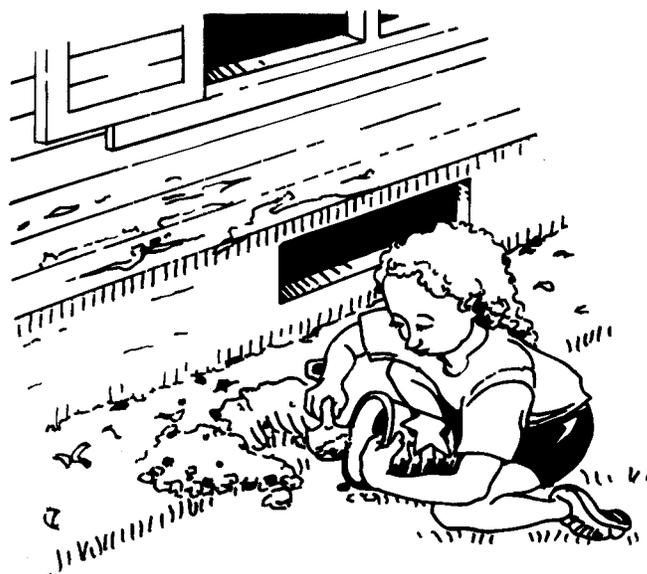


Figure 4. Chipped paint can cause lead contamination of soil.

ASSESSMENT 2 -- Identifying Lead Sources Outside The Home

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Lead-based paint (LBP) on exterior of house	Intact LBP. Lawn or dense landscape plantings around sides of home.	LBP weathered or chalking. LBP in soil around home, but foot-traffic kept away.	LBP chipping, peeling, chalking. Bare soil or foot-traffic areas below painted walls.	
Major roadways	No major roadway nearby.		Major roadway within 85 feet.	
Lead-related industry	No lead-related industry or incinerators in area.		Lead smelter, battery manufacturer or recycler, or other lead-using industry nearby.	

levels due to lead-containing pesticides applied in the 1940s.

Assessment 2 -- Lead Sources Outside The Home

Use the table above to rate your health risks due to lead outdoors. For each question, put the risk-level number (1, 2, or 3) in the column labeled "Your Risk." Although some choices may not correspond exactly to your situation, choose the response that best fits. Refer to the information in Part 2 if you need help completing the table.

Responding to Risks

Your goal is to lower your risks. Turn to the Action Checklist on page 71 to record medium and high risk situations. Plan actions to help you reduce your risks.

Part 3 -- Health Effects of Lead on Children

If children live in--or visit--your home, have they been tested for lead?

Children are much more likely to be affected by lead than adults. Because they naturally engage in hand-to-mouth activities, they are more likely to accidentally ingest lead. Children are at greatest risk from lead because their bodies are developing and they absorb up

to 50% of the lead they ingest. Adults absorb only about 10%.

Most children with elevated blood lead levels do not show visible symptoms. A blood test is the only way to detect the problem. The lowest levels of lead poisoning, which can damage the brain, have no outward symptoms. At higher levels of poisoning, symptoms may include tiredness, short attention span, restlessness, poor appetite, constipation, headache, sudden behavior change, vomiting and hearing loss. Many of these symptoms may be mistaken for other illnesses.



Figure 5. A blood test is the only way to detect elevated blood levels in children.

ASSESSMENT 3 -- Testing for lead in children

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Blood test results in children	Blood lead level under 10 ug/dL (10 micrograms per deciliter of blood).	Blood lead level 10 - 19 ug/dL.	Blood lead level 20 ug/dL.	

Since lead is widespread in our environment, it is almost impossible to have a zero level in the blood. Lead levels are measured in micrograms per deciliter (ug/dL) of blood. Levels of 10 ug/dL or over are considered elevated in children, and are likely to cause negative effects.

Assessment 3 -- Testing for lead in children

Use the table above to rate your health risks due to lead outdoors. Put the risk-level

number (1, 2, or 3) in the column labeled "Your Risk." Refer to the information above if you need help completing the table.

Responding to Risks

Your goal is to lower your risks. Use the Action Checklist below to record the medium and high risk situations. Plan actions to help you reduce your risks.

ACTION CHECKLIST

Go over the three assessment tables and write down all the high and medium risks you identified. Next, write the actions or improvements you plan to make. Use the information provided in this worksheet to help pick an action you are likely to complete. Write down a date for carrying out your plan. You don't have to do everything at once, but try to eliminate the most serious risks as soon as you can. Often it helps to tackle the inexpensive actions first.

Write all high and medium risks below.	What can you do to reduce the risk?	Set a target date for action.
<i>Sample:</i> House built in 1935. Paint has not been tested for lead.	Arrange to have paint tested for lead (include samples from window frames, exterior walls, interior walls).	One week from today.

FOR MORE INFORMATION...

Who to contact for more information about lead and its health effects.

Testing paint samples and drinking water. Contact the New Jersey Department of Community Affairs, (609) 530-8812, for a list of certified lead testing and removal contractors.

Request the following fact sheets from your county office of Rutgers Cooperative Extension:

FS 625 Lead Poisoning and Your Child's Health

FS 735 Lead Poisoning and Nutrition

FS 343 Where to Get Your Drinking Water Tested in New Jersey

FS 435 Drinking Water Treatment and Conditioning

FS 656 Lead in Urban Garden Soils

Educational information for parents and others: Call your county office of Rutgers Cooperative Extension, your local health department, or your doctor.

National Lead Information Center. To order a packet of materials about lead, including information specific to your state and locality, call toll free 1-800-LEAD-FYI (1-800-532-3394). For personal assistance on a lead-related question, call 1-800-424-LEAD (1-800-424-5323).

New Jersey Department of Health, (609) 292-5666 provides the following free publications:

Important Information for Homeowners and Renters about Lead Paint Hazards

Questions Parents Ask About Lead Poisoning

New Jersey Department of Community Affairs, (609) 633-6179, can provide information on lead in homes.

New Jersey Poison Control Center 1-800-POISON-1. Keep this number by your phone in case of emergency.

This Home*A*Syst assessment does not cover all potential risks related to lead which could affect health or environmental quality. It is meant to serve as a starting point for identifying and addressing the most apparent problems and risks. There are other Home*A*Syst worksheets -- on a variety of topics -- to help homeowners examine and address their most important environmental concerns.

This worksheet was written by Karen Filchak, University of Connecticut Cooperative Extension System.

This worksheet was adapted for use in New Jersey and technical review provided by Joseph Ponessa, Ph.D., Extension Specialist in Housing and Energy, Rutgers Cooperative Extension; Susan Lance, Program Associate in Water Quality, Rutgers Cooperative Extension; and Jan Larson, Program Associate in Resource Management, Rutgers Cooperative Extension of Ocean County.