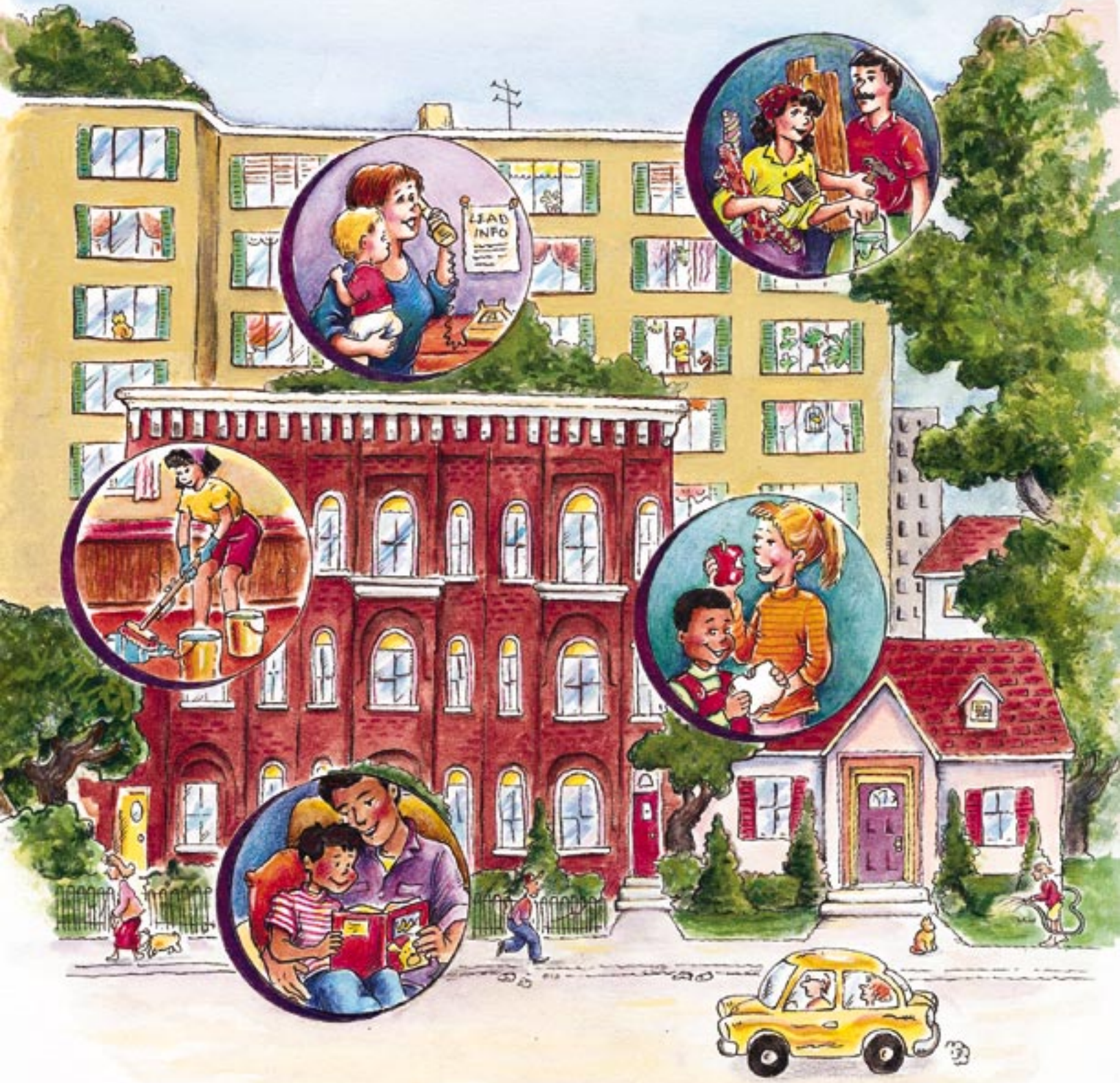
United States
Environmental Protection
Agency

Prevention, Pesticides,
and Toxic Substances
(7404)

EPA 747-B-98-002
June 1998

EPA

Lead In Your Home: A Parent's Reference Guide



Contents

Foreword iii

1. Lead in Your Home: A Parent's Guide 1

How Lead Has Commonly Been Used 1
Finding Lead Hazards in Your Home 2
Other Sources of Lead Hazards 3
Health Effects of Lead 4
Lead Poisoning Prevention 6

2. Reducing the Risk of Lead in Your Home 7

Testing for Lead 7
How to Reduce Your Family's Risk of Leading Poisoning 10
Routine Cleaning and Maintenance 11
New Rules for Sellers and Landlords 14

3. Protecting Your Children From Lead Poisoning 17

Building Good Habits and Safe Surroundings 17
Testing You and Your Family for Lead Poisoning 18
Choosing a Child-Care Provider 19
What Your Children Need to Know 20

4. What You Need to Know Before Working on Your Home 23

Equipment 23
How to Work Safely 25

5. Remodeling and Renovation 27

Replacing or Working on Windows 28
Preparing Surfaces for New Paint or Wallpaper 28
Removing or Replacing Carpeting 29
Performing Duct and Plumbing Work 29
Performing Minor Repairs 30
Working on the Exterior of Your Home 31

6. Interim Controls 33
Safe Management of Lead-Based Paint in Your Home 33
Removing Dust 34
Repainting Lead-Painted Surfaces 37
Repairing Friction and Impact Surfaces 37
Preventing Access to Soil Hazards 38

7. Abatement 41
Lead Abatement: What It Is, Who Should Do It 41
Replacement 42
Enclosure 43
Encapsulation 43
Paint Removal 44
Soil Abatement 45
Help From a Risk Assessor or a Contractor 45

8. Cleaning Up Lead Waste 47
Daily Cleanup 47
Personal Cleanup 48
Final Cleanup 48

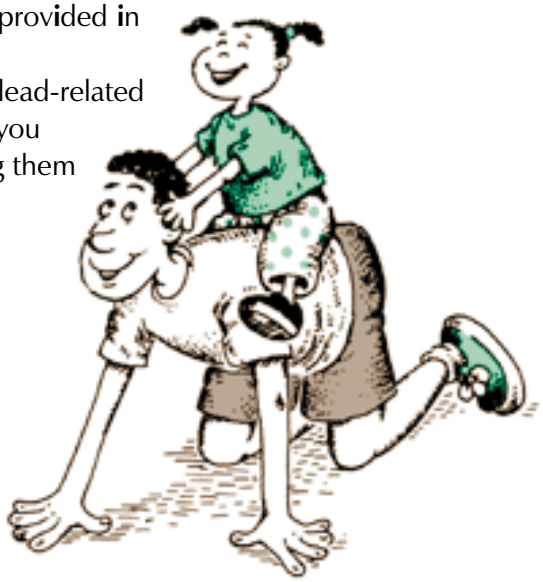
Appendixes 51
A. For More Information 51
B. State Lead Program Contacts 53
C. EPA Regional Lead Contacts 57
D. Abatement Guidelines for Your Contractor 59

Glossary 65

Foreword

To heighten awareness about lead poisoning prevention, the U.S. Environmental Protection Agency (EPA) has developed Lead in Your Home: A Parent's Reference Guide. The Agency believes this is an essential resource for anyone—from owners to tenants—concerned about the dangers of lead in their home and environment. This Guidebook provides Agency recommendations on how you can reduce your family's risk of lead exposure and prevent lead poisoning, ranging from simple steps you can do now to more rigorous procedures that will permanently get rid of lead hazards in your home.

Throughout the Guidebook, the term "home" is used to refer to your home—whether you own or rent a house, apartment, or other type of dwelling. In addition, the Guidebook has been designed so you do not need to read every chapter. Read the Quick Tips listed at the beginning of each chapter. They highlight important information provided in that chapter. Turn to the appendix for a list of hotlines, organizations, and people with further information on lead-related issues. By being aware of the danger lead can pose to you and your family, you are taking the first step in keeping them safe from its hazards.



1

Lead in Your Home: A Parent's Guide

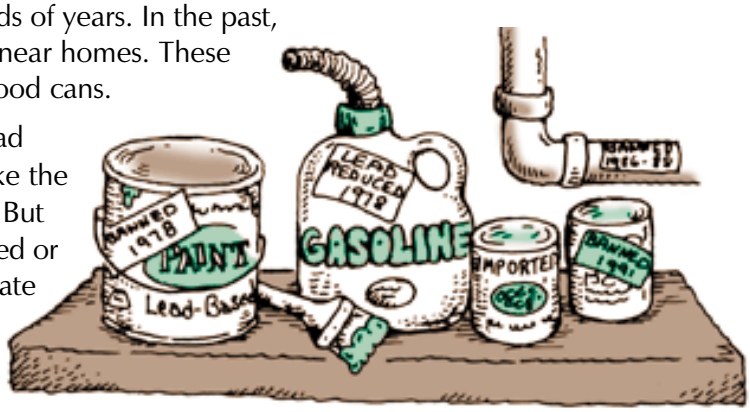
QUICKTIPS

1. Lead exposure can be dangerous, especially to children ages 6 and younger.
2. Exposure to lead-contaminated dust, not lead-based paint, is the most common way to get lead poisoning.
3. Lead poisoning can be prevented.

Lead is highly toxic. Exposure to it can be dangerous, especially for children who are 6 or younger. But lead is also stable and easy to work with, so it has been used for many purposes—even in our homes. It is important that every parent know where lead can be found, and how to control it. It is also important to know what to do if you or a member of your family is exposed to lead.

How Lead Has Commonly Been Used

Lead is a metal that has been mined for thousands of years. In the past, it was used to make common items found in or near homes. These items include paint, gasoline, water pipes, and food cans.



- Lead in paint. Manufacturers used to put lead pigments in paint because the pigments make the paint last longer and cling to surfaces better. But problems can occur later. Paint that is disturbed or that is breaking down with age can contaminate dust. Lead-based paint is no longer used in homes, on children's toys, or on household furniture. In 1978, the Consumer Product Safety Commission (CPSC) banned its sale for use in residences. That same year the CPSC also made it illegal to paint children's toys and household furniture with lead-based paint.
- Lead in gasoline. Oil companies used to add lead to gasoline to stop engine knocking in automobiles, but dangerous lead particles escaped into the air through auto exhaust systems. In 1978, the U.S. Environmental Protection Agency (EPA) reduced the amount of lead allowed in gasoline.

- Lead in household pipes. Lead used in fixtures, pipes, or pipe soldering can leach into water that flows through the pipes. In 1986, and again in 1988, Congress changed the Safe Drinking Water Act to restrict the use of lead in pipes, solder, and other components used in public water systems and residential and nonresidential plumbing. Unfortunately, lead may still be found in pipes today.
- Lead in food cans. The lead solder used to seal food cans can mix with the food in the can. The United States banned the use of lead solder in cans in 1995, but it is still used in many other countries. Lead solder may be found in cans imported to the United States.

Finding Lead Hazards in Your Home

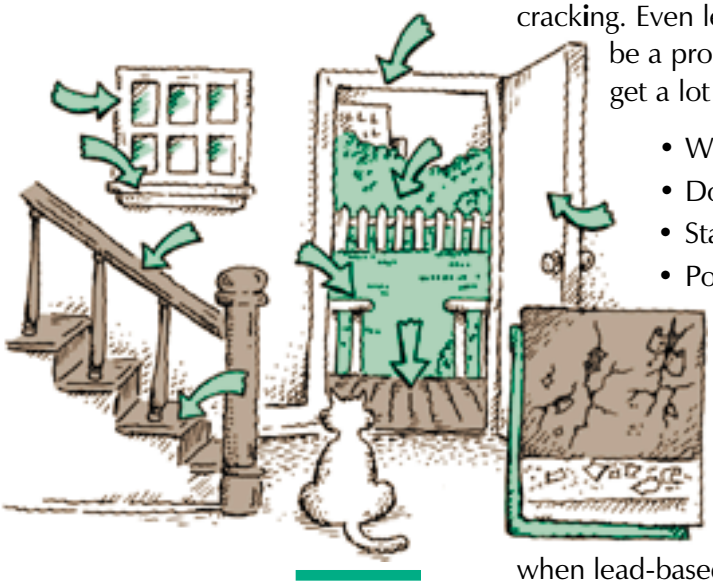
Lead-based paint that is in good condition is usually not a hazard.

Changes in the law have greatly reduced the amount of lead in our homes and in the air today. But it is important to remember that lead does not break down over time. Therefore, you should know how to identify sources of lead in your home and how to keep your family safe.

Common Lead Hazards

The most common household lead hazards are lead-based paint, lead dust, and contaminated soil:

- Lead-based paint is a hazard if it is peeling, chipping, chalking, or cracking. Even lead-based paint that appears to be undisturbed can be a problem if it is on surfaces that children chew or that get a lot of wear and tear. These areas include—
  - Windows and window sills.
  - Doors and door frames.
  - Stairs, railings, and banisters.
  - Porches and fences.



Eighty-three percent of private housing and 86 percent of public housing built prior to 1980 contain some lead-based paint.

Even surfaces that have been covered with new paint or another covering can expose older lead-based paint layers when they become cracked or chipped. The older your home is, the more likely it is to contain lead-based paint.

- Dust can become contaminated with lead when lead-based paint is dry scraped or sanded. Dust can also become contaminated when painted surfaces bump or rub together. Lead chips and dust can gather on surfaces and objects that people touch or that children put into their mouths.

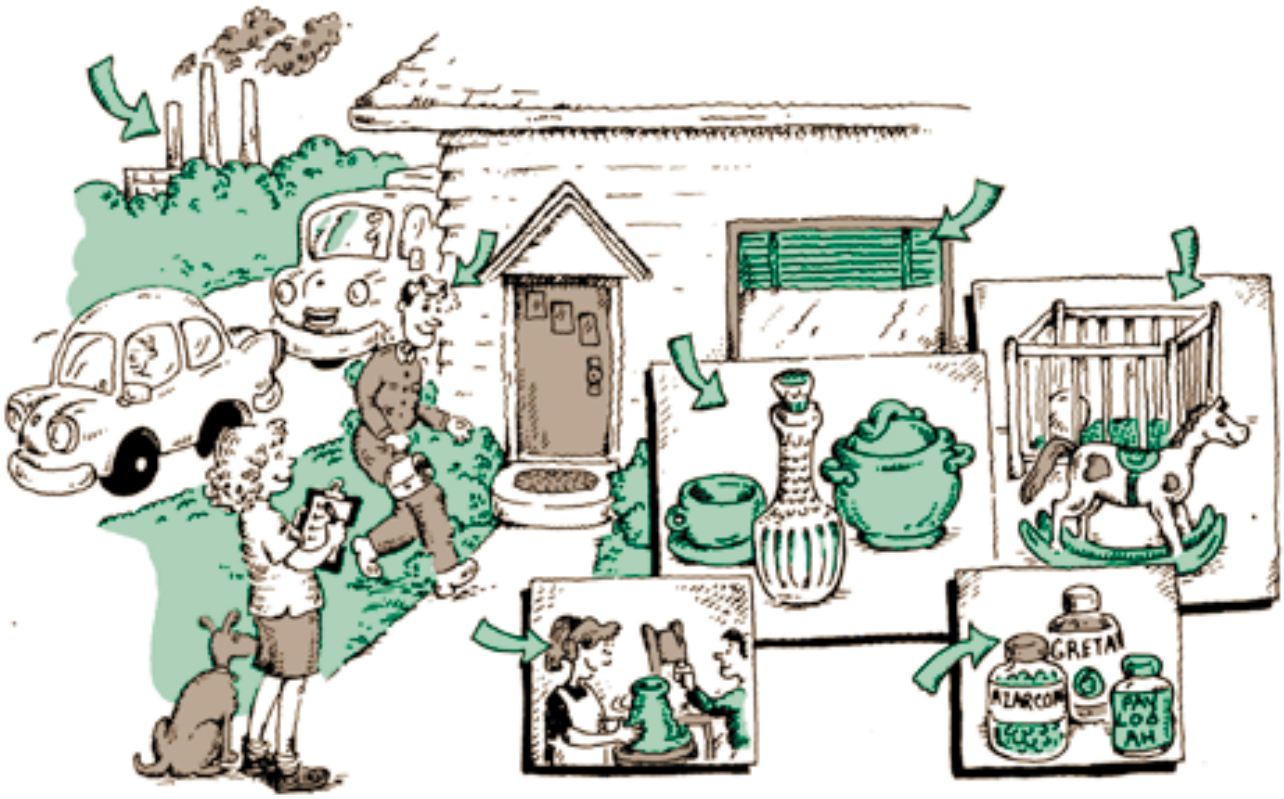
- Soil can become contaminated when exterior lead-based paint from houses, buildings, or other structures flakes or peels and gets into the soil. Soil near roadways may also be contaminated from past use of leaded gasoline in cars. Avoid these areas when planting vegetable gardens.

Other Sources of Lead Hazards

Although less common, a number of other lead hazards can be found in homes:

- Older plumbing fixtures, such as faucets, lead pipes, and pipes connected with lead solder, can contaminate drinking water. Older water well pumps made with brass or bronze parts that contain lead can also contaminate drinking water. The amount of lead in your water depends on the types and amounts of minerals in the water, how long the water stays in the pipes, the amount of wear in the pipes, the water's acidity, and its temperature. Lead can leach into water at any temperature, but the amount of lead can be much greater when the water is hot or warm, so don't drink or cook with water from the "hot" faucet. Carbon, sand, and cartridge filters do not remove lead from water, although some filters are "certified" for lead removal.

Boiling your water will not get rid of the lead.



- Some imported, non-glossy, vinyl miniblinds can be a lead hazard, especially to young children. Sunlight and heat can break down the blinds and may release lead-contaminated dust. Children who touch the miniblinds and put their fingers in their mouths may ingest the lead particles. It's best to remove these blinds if you have children who are 6 or younger. If you purchase new miniblinds, look for products with labels that say "New Formulation," "non-leaded formula," "no lead added," or "New! Non-leaded vinyl formulation."
- Painted toys and household furniture made before 1978 may be painted with lead-based paint. Do not let children chew on any older, painted toys or furniture, such as cribs or playpens.
- Lead-glazed ceramic ware, pottery, and leaded crystal can contaminate food and liquids stored in them.
- If you are exposed to lead at your job site, you could bring lead dust home on your clothes, shoes, hair, or skin.
- Lead smelters or other industries can release lead into the air.
- Hobbies such as making pottery, working with stained glass, or refinishing furniture can expose you to lead hazards. Try not to work on these hobbies in your home.
- Folk remedies that contain lead can cause lead poisoning. Two examples are "Greta" and "Azarcon," which are often used in Hispanic and Asian communities to treat an upset stomach. Another is "Pay loo ah," which is a red powder used to treat a rash or fever. Putting lead into a human body is dangerous, and it does not cure such ailments.

Health Effects of Lead

Q. How does lead get into my body?

A. It enters the body through the mouth or nose. Lead is not absorbed through the skin.

Lead is poisonous because it interferes with some of the body's basic functions. A human body cannot tell the difference between lead and calcium, which is a mineral that strengthens bones. Like calcium, lead remains in the bloodstream for a few weeks. Then it is absorbed into the bones, where it can collect for a lifetime.

Lead can affect anyone, but children ages 6 and younger face special hazards. In part, this is because the bodies of children in this age group develop rapidly. It is also because young children tend to put things in their mouths. More on this in Chapter 3.

It is important to know that even exposure to low levels of lead can permanently affect children. In low levels, 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-level exposure is most common, exposure to high levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

In the United States, approximately 900,000 children ages 1 to 5 have a blood-lead level exceeding the level of concern.

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

Q. How do I know if I have lead poisoning?

A. The only way to know if you have lead poisoning is to get a blood test from your doctor. Many people mistake the symptoms of lead poisoning for other common illnesses, such as a cold or the flu. Sometimes there are no symptoms at all.

Lead poisoning is not easy to detect. Sometimes no symptoms occur, and sometimes the symptoms are the same as those of more common illnesses. Some of the early signs and symptoms of lead poisoning in children are—

- Persistent tiredness or hyperactivity.
- Irritability.
- Loss of appetite.
- Weight loss.
- Reduced attention span.
- Difficulty sleeping.
- Constipation.

Lead Poisoning Prevention

Lead cannot be seen. Lead cannot be felt. But lead poisoning can be prevented. In most parts of the United States, state and local agencies are available to help you prevent lead poisoning. However, it is up to you to keep your family safe from lead hazards in your home.

It is never too soon to start protecting your family from lead hazards. The best thing you can do is lower the chances of exposure to lead in your home—both now and in the future. You can begin right now, by taking these steps:

1. Keep your home clean.
2. Wipe up any paint chips with a wet sponge or rag.
3. Ensure that your family members eat well-balanced meals.

More day-to-day tips for reducing exposure risks and the reasons why they help can be found in Chapters 2 and 3. Measures you can take to reduce lead exposure temporarily or to eliminate the problem forever are described in Chapters 6 and 7.

2

Reducing the Risk of Lead in Your Home

QUICKTIPS

1. Some simple steps—like keeping your home clean and feeding your family a well-balanced diet—will go a long way in preventing lead poisoning.
2. Going one step further and getting your home tested for lead can also help you and your family. This kind of test—known as a risk assessment—will tell you where lead hazards are and what to do about them.
3. Lead-based paint is usually not harmful if it—
   - is not chipping or flaking AND
   - is not bumped, rubbed, or chewed.
4. Lead-based paint can create harmful lead dust if it is chipping, flaking, bumped, rubbed, or chewed.

Testing for Lead

Should I Get My Home Tested?

If your home was built before 1978 and you have children ages 6 or younger, consider testing. A good time to do it is before you move into a new home or have a baby. You may also want to test your home if it has painted surfaces that are in poor condition. Before you begin home repair or remodeling projects, test any painted surfaces that will be removed or remodeled. Remember, disturbing lead-based paint can create a lead-poisoning hazard.

How Can I Get My Home Tested?

To test your home for lead, have either a risk assessment or a lead inspection done. Read on to find out which is better for your situation.

- A risk assessment. A risk assessor tells you if your home contains sources of lead exposure—such as peeling paint or lead dust. The risk assessor will give you a report that identifies lead hazards and ways to control them. If you suspect you have a lead problem, a risk assessment is usually the most appropriate way to test for lead hazards.

- An inspection. A lead inspector reveals the lead content of every painted surface in your home. An inspection will not tell you whether the paint is a hazard or how you should deal with it. The purpose of the inspection is to test each type of painted surface in your home and answer two questions:

  (1) Is lead-based paint present?

  (2) If lead-based paint is present, where is it located?

  It's important to know where lead-based paint is in your home so that, if disturbed by you or your contractor, additional lead hazards aren't created. An inspection is usually recommended if you plan to remodel, renovate, or disturb paint. It is also advised if you plan to abate the lead-based paint in your home.

Whether you hire an inspector or a risk assessor to do your testing, check his or her background. Those who have worked with public housing authorities and childhood lead poisoning prevention programs are usually well qualified. Beginning in August 1999, Federal law will require risk assessors and inspectors to be certified. For a list of certified lead inspectors and risk assessors in your area, call your state lead contact (see Appendix B) or one of these two organizations:

National Lead Service Providers' Listing System
Sponsored by the U.S. Department of Housing and Urban Development (HUD), the Lead Listing is a list of service providers who have received training from a state-accredited training provider. Get a list by calling (888) LEAD–LIST or by visiting the Lead Listing Internet site at www.leadlisting.org.

National Lead Information Center's Clearinghouse
Maintained by EPA, the clearinghouse sends testing and laboratory information to those who request it. The phone number is (800) 424–LEAD.

What Will I Get From the Testing?

Risk assessment: The risk assessor will identify lead-based paint hazards and suggest ways to reduce or control the hazards. For example, a risk assessor may suggest that you clean or dust more often, repair deteriorated lead-painted surfaces, or plant grass in areas with bare soil. The assessor may also suggest that you replace old windows, re-cover old floors, or remove soil. The risk assessor's report will show you what methods you can use to control hazards. It will also list an estimated cost of other actions you may take to prevent or control hazards.

Lead inspection: The inspector will give you a report that tells you whether your home contains lead-based paint and where it is found. The report will not tell you whether it is a hazard or how it should be treated.

What Are Home Test Kits?

Home test kits use chemicals to detect lead in paint, soil, and dust. Some kits can test water, dishes, glasses, and ceramics. A reaction occurs when the chemicals in the kit are exposed to lead.

Do not rely on home test kits. Studies show that they are not always accurate.

Does the Federal Government Recommend Home Test Kits?

No. The Federal Government does not currently recommend home test kits to detect lead in paint, dust, or soil. Studies show the kits are not reliable enough to tell the difference between high and low levels of lead.

What About Testing for Lead in Water?

If you think your water might contain lead, call either the EPA Safe Drinking Water Hotline at (800) 426–4791 or your local health department or water supplier to find out about testing your water. Meanwhile, use only cold water for drinking and cooking. Run tap water for 15 to 30 seconds (or until it feels much colder on your hand) before drinking it, especially if you have not used your water for several hours.

What About Testing for Lead in Dishes, Glasses, and Ceramics?

The Food and Drug Administration (FDA) can tell you how to best test for lead in dishes, cups, glasses, and other items. Contact the FDA at (800) FDA–4010 for information on testing these items.

Am I Required to Do Anything After Testing?

You may not be required to do anything, but read about the situations described below to see if either one applies to you:

- Some states and localities require the parents of children with high levels of lead in their blood to have the lead hazards abated by a certified contractor. (See Chapter 7 and Appendix D for more information on abatement.)
- If you are a home seller or a landlord, you must reveal any known lead-based paint hazards to potential buyers or renters. (For more information on this, see page 14.)

If you decide to hire a professional firm to control lead hazards, you may want to hire someone other than the person who did the testing.

How to Reduce Your Family's Risk of Lead Poisoning

What Can I Do Now to Protect My Family?

If you think your home has lead-based paint, take these simple steps to help protect your family:

- Keep your home clean by washing floors, window frames, window sills, and other surfaces weekly. Use a mop or a sponge with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead to clean up dust. Clean up paint chips using a wet sponge or rag. (For information on repairing chipped surfaces, see Chapter 6.)
- Completely rinse sponges and mop heads after cleaning dirty or dusty areas.

- Clean or remove shoes before entering your home to avoid tracking in lead from soil.
- Have children play in grassy areas instead of soil.
- Never allow children to play under windows or around painted surfaces that often rub together or get bumped.
- Make sure children wash their hands after playing outside and before eating or going to bed.
- Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly.
- Keep children from chewing on painted surfaces, such as window sills, cribs, or playpens.
- Make sure you and your family eat a well-balanced diet that is low in fat and high in calcium and iron. Include foods such as fish, green vegetables, milk, and cheese. (More on why this helps in Chapter 3.)
- Use cold water for drinking or cooking since lead is more likely to leach into warm or hot water.
- If you rent property, tell your landlord about peeling or chipping paint.

How Can I Reduce or Get Rid of the Lead-Based Paint Hazards in My Home?

In addition to the day-to-day steps outlined in the previous section, you can prevent lead poisoning by using either interim controls, abatement, or both.

- Interim controls. Interim controls are treatments that temporarily reduce the risk of exposure to lead hazards. For example, you can repair damaged painted surfaces or plant grass to cover soil. (For more information on interim controls, see Chapter 6.)
- Abatement. Abatement is the permanent elimination of lead-based paint hazards. The four methods below are for abatement of structural components in housing.
  - Replacement. The removal of lead-painted items—such as windows, doors, and trim—and the installation of new, lead-free items.
  - Enclosure. The covering of lead-painted surfaces with a stiff material—such as paneling or wallboard—to prevent lead dust from getting into the environment. Enclosure also prevents contact with the lead-based paint.
  - Encapsulation. The covering of lead-painted surfaces with a special liquid coating. Once it dries, the coating prevents contact with the lead-based paint and the spread of lead dust.
  - Paint removal. The removal of paint done either in your home or at a paint stripping facility. Methods often used include wet scraping, wet planing, or chemical stripping.

Q. What is the difference between interim controls and abatement?

A. Interim controls temporarily reduce lead hazards. They may solve the problem, at least until the condition of the affected area worsens. If that happens, the hazard needs to be reevaluated. Abatement permanently eliminates the lead hazard.

You can perform many simple interim controls yourself, but—because performing an abatement can be dangerous—only a certified contractor should perform an abatement. Call your state lead contact (see Appendix B) or the HUD Lead Listing at (888) LEAD–LIST for a list of certified contractors in your area.

Do not try to perform an abatement in your home yourself. Always use a certified contractor. If not properly performed, an abatement can actually increase the risk of exposing your family to lead.

Routine Cleaning and Maintenance

It is very important to care for the lead-painted surfaces in your home. Lead-based paint in good condition is usually not harmful.

What Causes Lead Dust?

Certain household activities are likely to disturb lead-painted surfaces and contaminate dust, including repeatedly opening and closing windows and bumping furniture or other objects against painted walls. Dust can also become contaminated during many home improvement

activities. If you must perform any of the activities that follow, do them carefully—and don't do them often! These activities include—

- Nailing, drilling, or screwing into lead-painted surfaces.
- Prying painted surfaces apart.
- Cutting, sawing, or chopping lead-painted surfaces.
- Tearing out walls.
- Making holes in walls or ceilings to access pipes or install electrical outlets.
- Scraping, sanding, brushing, or using a heat gun on painted surfaces before repainting. Heat guns should not be warmed above 1100° F. If heated above this temperature, lead-based paint can give off toxic fumes.

Although the lead-based paint in your home may be in good condition, if it is on a surface that is often rubbed, bumped, or chewed, it can easily peel and flake and can be harmful.

For more information on safe work practices when repairing and remodeling lead-painted surfaces, see Chapter 4.

How Do I Prevent Lead Dust?

Follow three important rules when dealing with lead-based paint:

- Do not dry scrape or sand most lead-painted surfaces. Instead, wet scrape areas by misting the surface with water before and during scraping. (More on this in Appendix D.) Limit dry scraping to areas that cannot get wet, such as those around electrical outlets.
- Try to control dust during work on lead-painted surfaces by using the equipment and following the precautions listed in Chapter 4.
- Use a wet sponge or a mister to dampen and wipe down surfaces when cleaning. Never dry sweep or dust lead-painted surfaces.

What Are the Best Ways to Clean Dust?

There are ways to clean your home that will help you reduce or prevent your family's exposure to lead dust. Here are some tips on how to clean—and how not to clean—your home. It's best to follow these steps weekly.

Cleaning Uncarpeted Floors

Do use—

- Damp or wet mopping.
- Standard "sponge" or "string" type mops and an all-purpose cleaner or a cleaner made specifically for lead.
- Standard vacuum cleaners if no visible dust or debris from chipping or flaking paint is present.

Don't use—

- Mops with a "scrubber" strip attached.
- Powered buffing or polishing machines.
- Vacuums with "beater bars" that may wear away the painted surface.

Cleaning Carpets and Rugs

Do use—

- "Wet scrubbing" methods to remove stains.
- Steam cleaning methods.
- Standard vacuum cleaners if no visible dust or debris from chipping or flaking paint is present.

Don't use—

- Dry sweeping of surface dust and debris.
- Shaking or "beating" of carpets and rugs.

Cleaning Walls

Do use—

- Soft cloths to wet wipe walls.
- All-purpose cleaner or a cleaner made specifically for lead.

Don't use—

- Steel wool, scouring pads, and abrasive cleaners.
- Solvent cleaners that may dissolve paint.

Cleaning Other Painted Surfaces

Do use—

- Soft cloths.
- All-purpose cleaner or a cleaner made specifically for lead.

Don't use—

- Abrasive cleaners and scouring pads.
- Solvent cleaners that may dissolve the paint.
- Excessive rubbing of spots to remove them.

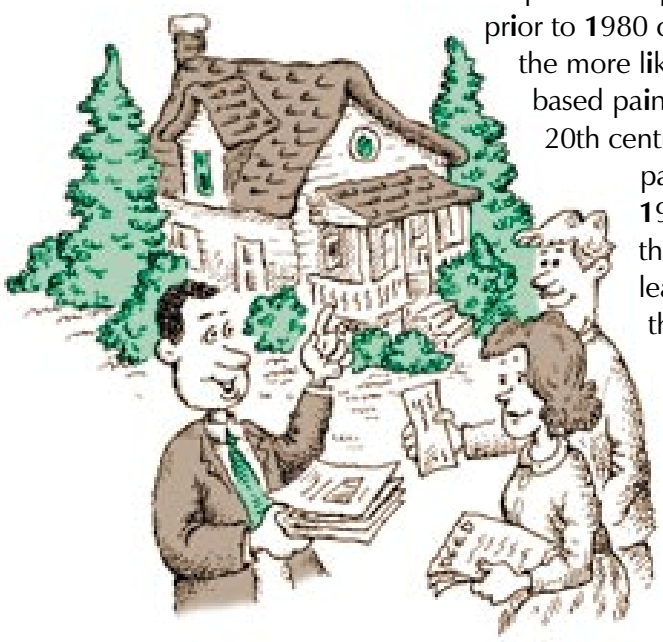
Dusting

Do use—

- Disposable, non-abrasive dusting cloths or "dusters."

New Rules for Sellers and Landlords

Lead-based paint can be found on the painted surfaces—inside and outside—of many residences built before the 1978 ban. The U.S. Department of Housing and Urban Development (HUD) estimates that 83 percent of private housing and 86 percent of public housing built prior to 1980 contain lead-based paint. In addition, the older the home, the more likely it is to contain lead-based paint. That's because lead-based paint was widely used during the first several decades of the 20th century. It was not until the 1950's that the use of lead-based paint in homes began to decline noticeably. During the 1950's, latex paint—which seldom contains lead—became the dominant paint for interior walls. Although the use of lead-based paint in homes continued to decline throughout the 1960's and 1970's, its use was not stopped altogether until it was banned in 1978.



To help protect people against lead hazards in homes, EPA and HUD developed the Real Estate Disclosure Rule. As of December 6, 1996, the owner of any home built before 1978 must follow guidelines set out by the Rule and inform possible buyers and renters about known lead-based paint hazards in the home.

The Real Estate Disclosure Rule requires that the owner of any home built before 1978 inform pontential buyers and renters about known lead-based paint hazards in the home.

If you plan to buy a home built before 1978, the seller must—

- Tell you about any known lead-based paint or lead-based paint hazards in the home.
- Give you any records or reports about lead-based paint hazards in the home.
- Give you a copy of the EPA pamphlet titled Protect Your Family From Lead in Your Home. The pamphlet briefly describes lead hazards and lead poisoning.
- Give you a 10-day opportunity to test the home for lead.
- Include certain warning language in the sales contract and a signed statement verifying that all requirements have been met.
- Keep the signed statement for 3 years.

The seller is not required to—

- Test the home for lead.
- Remove any lead-based paint or lead-based paint hazards discovered during any testing that you have conducted.

If you plan to rent housing built before 1978, the landlord must—

- Tell you about any known lead-based paint or lead-based paint hazards in the home.
- Give you any records or reports about lead-based paint hazards in the home.
- Give you a copy of the EPA pamphlet titled Protect Your Family From Lead in Your Home. The pamphlet briefly describes lead hazards and lead poisoning.
- Include certain warning language in the rental contract and a signed statement verifying that all requirements have been met.
- Keep the signed statement for 3 years.

The landlord is not required to—

- Test the home for lead.
- Remove any lead-based paint or lead-based paint hazards discovered during any testing that you have conducted.
- Give you 10 days to test for lead.

If you plan to buy a home built before 1978, the seller must give you 10 days, or another mutually agreeable period, to conduct a lead inspection. If you plan to rent a home built before 1978, the owner does not have to give you an opportunity to test for lead.

3

Protecting Your Children From Lead Poisoning

QUICK TIPS

1. A child does not have to eat paint chips to get lead poisoning. It is more common for a child to get lead poisoning by swallowing lead dust.
2. Children who eat healthy foods are less likely to get lead poisoning.
3. Your family, especially your children, should be tested for lead. It is the only way to detect lead poisoning.

By performing some simple, everyday tasks, you can reduce your children's exposure to lead.

Building Good Habits and Safe Surroundings

A child does not have to eat paint chips to get lead poisoning. It is more common for a child to swallow lead dust or soil that contains lead from paint. How does this happen? First, dust or soil settles on the hands or toys of children as they play. Then, as children commonly do, they put their hands and their toys in their mouths, and they swallow the dust or soil.

Good habits and a clean home will go a long way toward reducing the risk of exposure to lead. Good food can lessen the effects of exposure. As a parent, you have a responsibility to help your children develop good habits. You also have a responsibility to do what you can to provide your children with good nutrition and safe surroundings. Here are guidelines you can follow every day:

- Make sure your children eat at least three meals a day. Less lead is absorbed when children have food in their systems.
- Give your children foods high in iron and calcium, such as milk, cheese, fish, peanut butter, and raisins. When a child does not have enough iron or calcium in his or her body, the body mistakes lead for these nutrients. A diet lacking protein, vitamin C, and zinc may also cause increased blood-lead levels.
- Avoid giving your children fried and fatty foods. These foods allow the body to absorb lead faster. Cut down on fat by baking, broiling, or steaming food.

- Don't store food or liquid in lead crystal glassware or imported or old pottery.
- Teach children to wash their hands before they eat or sleep.
- Make sure your children do not have access to peeling paint and do not chew on painted surfaces such as cribs, playpens, or window ledges.
- Keep your home clean. At least once a week, wash areas such as hard surface floors, baseboards, and window sills, especially if your home was built before 1978. Use a solution of water and an all-purpose cleaner or a cleaner made specifically for lead.
- Wash children's toys, bottles, and pacifiers often, and always wash them after they fall on the floor. Stuffed toys in particular accumulate dust and should be washed often.
- Encourage your children to play in grassy areas instead of dirt, which sticks to fingers and toys. Also, do not let them eat dirt.
- Teach your children about the dangers of lead and their role in keeping themselves safe. Use stories, role-playing, and songs to help your children recognize sources of lead and learn prevention behaviors. Explain how good nutrition prevents lead poisoning, and help them choose healthy foods.

Testing You and Your Family for Lead Poisoning

The best thing to do for your child is to test the level of lead in his or her body. This is done using a simple blood test. Your doctor or your local health center can perform the test and explain the results.

Here are some tips on when to test, and how often:

- If your child is at risk of lead exposure, have the child tested at the age of 6 months. (A child is at risk of lead exposure if—for example—he or she lives in a home built before 1978 that has peeling or chipping paint, or if the adults in the home work with lead.) Repeat the test every 6 months until the age of 2 years. After that, have the child tested once a year until age 6.
- If your child is not at risk of lead exposure, have the child tested for the first time at the age of 1 year, and again at age 2.

If your child has been tested and has a blood-lead level at or above 10 micrograms per deciliter (ug/dl), you may need to take certain preventive measures. In some cases, when lead poisoning is severe, a drug treatment called chelation can be used. Chelation gradually removes lead from the body. It should be only administered under the strict supervision of a physician.

When your doctor gives you the results of your blood test, use the following chart. It will help explain what the numbers mean.

If your doctor tells you that the results are . . .	You should . . .
0–9 micrograms per deciliter (ug/dl)	**Continue routine testing. Not considered lead poisoning.**
10–14 ug/dl	**Rescreen frequently and consult with your doctor about prevention measures. (See Lead Poisoning Prevention in Chapter 1.)**
15–19 ug/dl	**Determine the lead source and seek advice about proper diet.**
20–44 ug/dl	**Obtain a medical checkup, determine the lead source, and seek advice about proper diet. Children may need medical treatment (chelation).**
Above 44 ug/dl	**Get immediate care. Considered serious lead poisoning.**

Choosing a Child-Care Provider

Although your home may be free of lead-based paint hazards, your child could still be exposed elsewhere. It is important that any place in which your child spends more than 10 hours a week be free of lead hazards. If you take your child to a day-care center, look around the inside and the outside of the day-care center for lead hazards.

When checking the facility, look at—

- Interior painted areas. Examine walls and interior surfaces to see if the paint is cracking, chipping, or peeling.
- Exterior painted areas. Check exterior paint as well; it can flake off and contaminate nearby soil where children may play.
- Surrounding areas. Be sure there are no large structures nearby with peeling or flaking paint that could contaminate the soil around play areas. Examples include bridges and water towers.
- Cleaning practices. Make sure the staff washes any pacifiers, toys, or bottles that fall on the floor. Also, make sure the children are made to wash their hands thoroughly after playing outside and before eating or sleeping.
- Play areas. Look to see if areas where children play are dust-free and clean.
- Old painted toys and furniture. Make sure the paint is not cracking, chipping, or peeling.

The best thing to do for any family member—of any age—who may have been exposed to lead is to have the level of lead in that person's body checked.

What Your Children Needto Know

Lead can make young children very sick. It is important to teach them how to prevent lead poisoning. These pictures will help you show your children how to stay safe and healthy.

Don't be afraid to visit your doctor.

Your doctor can tell you if you have lead in your body.

Don't eat too many fried or fatty foods.

Eating too many fatty foods will increase the amount of lead that your body stores.

Don't put things other than food in your mouth.

Play in grassy areas. Do not play in dirt!

Sometimes, dirt contains lead and can make you sick.

Eat healthy foods.

Healthy food is good for your body, but did you know that you are less likely to get sick from lead if you eat healthy food?

Wash your hands often.

Always wash your hands before eating.

Make sure your parents wash your toys.

4

What You Need to Know Before Working on Your Home

QUICK TIPS

1. Using the right equipment when working with lead will keep you and your family safe from dangerous lead dust.
2. One of the most important pieces of equipment to use is a respirator with a HEPA filter on it. The respirator and filter will remove lead particles from the air you breathe.
3. Another important piece of equipment is a type of thick plastic sheeting called six-mil polyethylene plastic sheeting. The plastic must cover all work areas to prevent lead dust from spreading throughout your home.

Equipment

Before beginning a remodeling, renovation, or interim control project, it is important to plan. For example, decide where you will begin and how long the project will take. It is also important to get the right equipment to protect you and your family from lead exposure. The following section will explain the equipment you will need and how to use it.

- NIOSH-certified respirator with a HEPA (High-Efficiency Particulate Air) filter. You should wear a properly fitted respirator equipped with a HEPA filter, which is always purple, when doing any work that might create lead dust. A respirator will filter lead dust particles out of the air you breathe. You can buy respirators at many industrial supply centers or home improvement stores for about $20–$30. When you buy your respirator, make sure you have a "fit check." Most stores that sell respirators have salespeople who can perform this test.

A fit check has two steps: (1) a positive-pressure fit check, and (2) a negative-pressure fit check. Have the fit check done when you buy the respirator, and repeat the test yourself every time you wear your respirator.

(1) Positive-pressure fit check. Use the palm of your hand to cover the respirator valve on your chin. Gently blow out. The respirator should balloon out slightly and the seal should tighten. If air leaks out and the seal does not tighten, you need to adjust the respirator or try another size.

(2) Negative-pressure fit check. Cover the two filters with both hands and inhale. The respirator should tighten to your face and you should not feel any air flowing in. If you feel air coming in, the respirator does not fit properly. You need to adjust it or try another size.

Keep the following points in mind when buying and using a respirator:

- Get the right size.
- If you are working with lead, your respirator must be equipped with a HEPA filter.
- Perform negative- and positive-pressure fit checks every time you use your respirator.
- If you have a beard, are not clean-shaven, or have a broken nose, a respirator cannot completely seal to your face. Dust particles can leak in.
- If you have gained or lost weight since buying your respirator, it may no longer fit. You may have to purchase a different size.
- Never take off your respirator until after you have removed your outer protective clothing.

Q. Should I wear any protective gear when doing something in my home that may expose me to lead—such as repairs or remodeling or performing an interim control?

A. You should wear a respirator to prevent lead dust and particles from getting into your lungs. It must be equipped with a HEPA filter. Traditional dust masks will not prevent lead particles from getting into your lungs.

- HEPA filter-equipped vacuum cleaner. This is a special type of vacuum that removes small lead particles from floors, window sills, and carpets, and stores them inside the vacuum cleaner. Household vacuums will not work; their exhaust systems release the lead particles into the air. You can rent a HEPA vacuum from stores that carry remodeling tools. Some laboratory safety and supply catalogs sell them starting at about $300. Remember—when you finish vacuuming—carefully empty the dust collected in the vacuum cleaner, being sure to dampen it with water first to control the spread of the collected dust.
- Wet-sanding equipment, wet/dry abrasive paper, and wet-sanding sponges for "wet-methods." These can be purchased at hardware stores.
- All-purpose cleaner or a cleaner made specifically for lead. A solution of water and an all-purpose cleaner or a cleaner made specifically for lead should be used to clean up lead dust from work areas. Use one bucket for the cleaning solution and one bucket for rinsing. Change the rinse water frequently (at least once for each room being cleaned) and replace rags, sponges, and mops often.

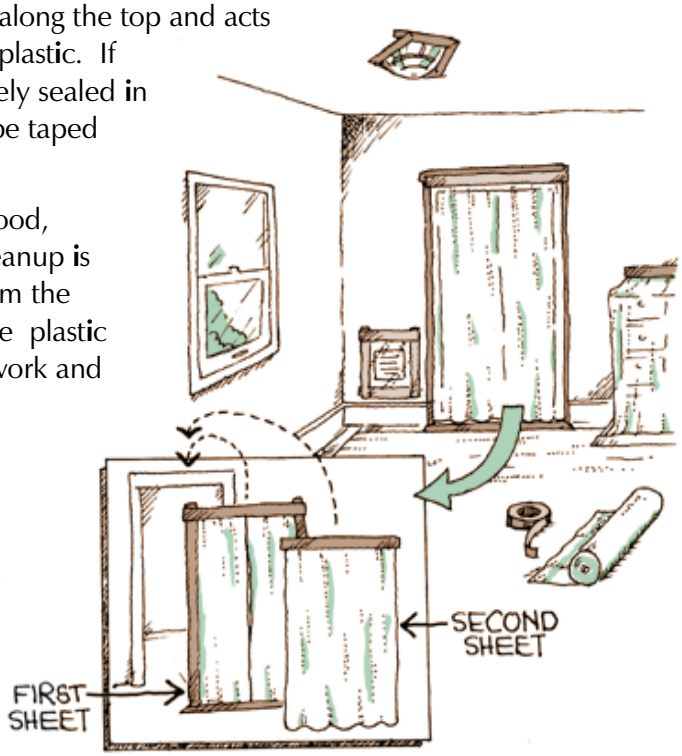
- Six-mil polyethylene plastic sheeting. This thick, plastic sheeting is used to cover the area in which you are working. It can be purchased at hardware stores or lumber yards. The label should say that the plastic is made of polyethylene and is 6 mils thick.
- Duct tape. You will need duct tape to completely seal the plastic in place.
- Protective clothing. To keep lead dust from being tracked throughout your home, wear clothes such as coveralls, shoe covers, hats, goggles, face shields, and gloves. These items are available through laboratory safety equipment supply catalogs and vendors. Inexpensive disposable suits can sometimes be purchased at paint stores.

How to Work Safely

Whether you are renovating, remodeling, or performing interim controls, you must follow these safeguards to prevent lead dust from spreading throughout your home:

Keep all children, pregnant women, and pets away from the work area.

- Construct an airlock at the entry to the work area. The airlock consists of two sheets of the thick plastic. One sheet is completely taped along all four edges. The tape must extend all the way around the top, two sides, and the floor. This plastic sheet is then cut down the middle. The second sheet is only taped along the top and acts as a flap covering the slit in the first sheet of plastic. If two entryways exist, one should be completely sealed in plastic. As an alternative, the doorway can be taped closed on all sides.
- Remove all furniture, area rugs, curtains, food, clothing, and other household items until cleanup is complete. Items that cannot be removed from the work area should be tightly wrapped with the plastic sheeting and sealed with duct tape until all work and cleanup is complete.
- Turn off forced-air heating and air-conditioning systems when remodeling, renovating, or performing interim controls. Then cover the heating and air conditioning vents with the plastic sheeting. Tape the sheeting in place with duct tape. Windows should be kept closed unless volatile chemicals will be used.



Do not eat, drink, or smoke in the work area.

- Cover openings, such as gaps around pipes and between floorboards, with plastic or duct tape to prevent lead dust from sifting down to lower floors and rising to upper floors.
- Cover exposed surfaces that you cannot remove with the plastic sheeting. Examples include floors, carpeting, counter tops, and shelves.
- Tape around the door seals of refrigerators to prevent dust from getting into the food inside.
- Spray water on lead-painted surfaces to keep dust from spreading.

5

Remodeling and Renovation

QUICK TIPS

1. Lead-based paint is most often found around windows, in kitchens, and in bathrooms.
2. Home projects done on lead-painted areas can create harmful lead dust.
3. If you think your home has lead-based paint, hire a professional to test for lead before beginning work.
4. If your home has lead hazards, do not perform any renovations or remodeling yourself. Hire a trained contractor who knows how to work safely with lead.

Remember this important rule: Before beginning work, hire a professional to test affected areas and see if lead hazards exist. Call your state lead contact (Appendix B) or the HUD Lead Listing at (800) LEAD-LIST for a list of qualified consultants in your area who perform testing services.

If you have already completed repairs or remodeling that could have released lead-based paint or dust—

- Have your children ages 6 or younger tested for lead. Call your doctor or your local health department to schedule testing.
- Keep children away from dust and paint chips.
- Clean up all dust and chips with wet mops and rags. Pay special attention to floors and window troughs.

If the test reveals lead-based paint in your home, it is best to have any repair or remodeling work done by a renovator who knows how to protect your family from exposure to lead dust. It is best to hire one who has training and experience in dealing with the hazards of remodeling or renovating homes with lead-based paint.

If you chose to do this work, you should follow all of the work practices and safety precautions in this guide. These include the recommendations in this chapter and in Chapter 8 on cleanup.

Replacing or Working on Windows

Window sills and frames on homes built before 1978 can have high amounts of lead-based paint. Because these items are seldom replaced, paint tends to build up on them. To remove a window safely, follow these basic safety precautions:

- Tape the thick, plastic sheeting (mentioned on page 25) over the entire inside window opening.
- Cover the floor under the window with the plastic sheeting to catch any falling dust. Also, cover the ground outside the window with the plastic sheeting to catch dust and chips.
- Spray the window sill and frame with water to reduce the dust.
- Remove the window unit from the outside, if possible. If you must remove it from the inside, make sure you cover all entryways into the room in which you are working with the plastic sheeting.
- Clean up and dispose of all waste according to the directions in Chapter 8.

Be careful when performing the following renovation and remodeling activities. They can disturb lead-painted surfaces and create lead dust.

- **Removing paint**
- **Sanding**
- **Patching**
- **Scraping or tearing down walls**
- **Making holes in walls or ceilings to gain access to pipes or install electrical outlets**
- **Removing or replacing windows, baseboards, doors, plumbing fixtures, heating and ventilation duct work, or electrical systems**

Preparing Surfaces for New Paint or Wallpaper

Preparing walls and other surfaces for painting, staining, or papering can create lead exposure risks. Follow these good work practices to reduce your risk of exposure to lead:

- Cover the floor and furniture with the thick, plastic sheeting.
- Avoid sanding lead-painted surfaces whenever possible. If you must sand, use a sander with a vacuum attachment connected to a HEPA filter-equipped vacuum cleaner or use a wet-sanding sponge.
- Wipe the area you are sanding often and rinse the sponge in a bucket of water. Strain out any paint chips and dispose of them in heavy-duty plastic bags.
- Wash the walls with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead. Let them dry before painting or papering. Never power-wash or blast lead-painted surfaces inside your home; this can contaminate dust, which can spread to other areas of your home.
- Heat guns may be used to remove paint, but do not use those that operate above 1100° F.

Many traditional methods of preparing a painted surface for repainting, refinishing, or restaining can poison both children and adults if the paint is lead-based. Therefore, they should never be used by homeowners. These methods include—

- Open-flame burning or torching.
- Machine sanding or grinding without a HEPA vacuum exhaust tool.
- Uncontained hydroblasting or high-pressure washing.
- Abrasive blasting or sandblasting without a HEPA vacuum exhaust tool.
- Use of dry scrapers, belt-sanders, propane torches, or heat guns that operate above 1100° F.

Removing or Replacing Carpeting

If you plan to remove or replace your carpet as part of a remodeling job, take the following steps to avoid spreading lead dust:

- Mist the entire surface of the carpet with water to keep dust down.
- Roll the carpet inward to avoid spreading dust to other areas.
- Wrap carpet and pad in the thick, plastic sheeting. Tape seams closed with duct tape.
- Vacuum floor with a HEPA filter-equipped vacuum cleaner after the carpet is wrapped but before you remove it.
- HEPA vacuum the floor again after you remove the carpet.

Performing Duct and Plumbing Work

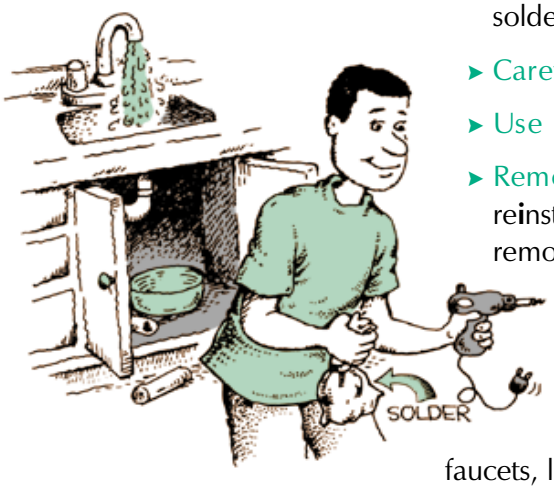
Duct Work

Heating, ventilation, and air-conditioning ducts can collect dust over the years. If you suspect that the dust contains lead, follow these steps when replacing or cleaning the ducts:

- Cover the floor under the ducts with the thick, plastic sheeting to catch any falling dust.
- Use a HEPA filter-equipped vacuum cleaner to remove dust from inside the ducts before starting work.
- Rinse the duct pieces in an area away from your home before putting them back in place. If you are going to dispose of the old duct pieces, follow the cleanup instructions in Chapter 8.

Plumbing

Disturbing lead-soldered pipes can knock loose pieces of lead solder that can get into your drinking water. Follow these precautions when working with plumbing:



- Use enough ventilation to avoid inhaling dangerous fumes from soldering.
- Carefully throw away solder pieces in a tightly sealed trash bag.
- Use lead-free solder when working on drinking water plumbing.
- Remove faucet aerators and clean out any debris before reinstalling them. Look carefully for grit or pieces of solder and remove them.
- Flush the supply pipes of loose pieces of solder by letting the water run for several minutes with the aerators removed.

Also, consider removing older plumbing fixtures—such as faucets, lead pipes, or pipes connected with lead soldering—and replacing them with lead-free ones. Consult a plumber or plumbing materials distributer for more information.

Performing Minor Repairs

Performing minor repairs on lead-painted surfaces can expose you to lead hazards. If you plan to make minor repairs, such as repairing a door, drilling holes in walls, or sawing into painted wood or plaster, follow these steps:

- Cover the floor under the work area with the thick, plastic sheeting to catch any sludge or dust.
- Spray the work area surface with water to reduce the amount of dust generated during the repair.
- To eliminate friction points on a door, first mist the door, then remove the door to plane it. Keep door surfaces being planed wet during repair. Replace the door when the work is complete.
- After making the repair, use a HEPA-filter equipped vacuum cleaner to vacuum all surfaces within 5 feet of the work area.

Working on the Exterior of Your Home

Working on the outside of your home can produce dust, paint chips, larger pieces of material, and liquids that contain lead. To prevent contaminating the areas around your home—

- Cover the ground and any flowers or plants with the thick, plastic sheeting to catch dust and trash. It should extend at least 5 feet from the base of your house and an additional 3 feet for each additional story. Use bricks or rocks to hold the edges of the plastic sheeting in place.
- Cover sandboxes with the plastic sheeting. If possible, move play equipment at least 20 feet away from the work area.
- Close all windows, including windows in adjacent dwellings, within 20 feet of the work area. If dust gets inside, use wet mops and rags to clean it up.
- Anchor ladders securely to the ground. Do not put them on the thick, plastic sheeting, which can be punctured.
- Make one lead-safe entryway available to residents at all times. Do not treat front and rear entrances simultaneously if there is not a third doorway.
- Avoid working in windy conditions. Strong winds can blow lead dust to areas that are not covered. If the chips and dust are blowing off the plastic sheeting, set up a barrier to block the wind or do the work another day.

6

Interim Controls

QUICKTIPS

1. There are ways you can temporarily control exposure to lead-based paint, dust, and soil. They are called interim controls.
2. Keep in mind interim controls will not get rid of lead hazards forever. They can, however, help cut down on the risk of exposure.
3. Lead dust in your home can be harmful to you and your family. It should be removed.

Interim controls provide a useful alternative for homes that cannot be abated right away.

Safe Management of Lead-Based Paint in Your Home

Interim controls are actions you can take to reduce lead hazards in your home without hiring an abatement contractor. They are less expensive than abatement and a good alternative if you cannot afford abatement, but it is very important to remember that the results are only temporary. Nevertheless, if maintained properly, interim controls can protect you and your family for a long time. (See Chapter 7 and Appendix D for more information on performing an abatement to permanently contain or remove lead hazards.)

A list of interim controls follows. They can be used separately or together:

- Removing lead dust.
- Repainting lead-based painted surfaces.
- Repairing friction and impact surfaces.
- Preventing access to soil hazards.

ADVANTAGES of Interim Controls

- **Less expensive than abatement.**
- **Can be implemented immediately.**

DISADVANTAGES of Interim Controls

- **Lead-based paint remains in housing.**
- **Continuing expense, if done regularly.**
- **Requires ongoing monitoring of paint condition and dust levels.**

When Interim Controls Will NOT Work

Interim controls will not work if—

- The windows, doors, porches, or interior or exterior walls are seriously deteriorated or are subject to excessive moisture.
- The windows, doors, porches, or interior or exterior walls are not sound (which would cause the treatment to fail rapidly).

If any child in the home has an elevated blood-lead level, many states and localities require you to have the home abated by a certified contractor. Contact your state lead program contact (Appendix B) for more details.

Lead dust in your home can be hazardous to you and your family and should be removed.

Although interim controls will not rid your home of lead-based paint hazards forever, they can help you reduce the risk of exposure if you do them right and check your work often. To ensure success when you perform any type of interim control, it is recommended that you—

- Surround your work area with thick, plastic sheeting (mentioned on page 25) to avoid spreading lead dust to other parts of your home.
- Hire a certified contractor to conduct a clearance examination once you have finished your work. This is not required, but a contractor can determine if you successfully completed the interim control action.
- Check your interim control work once a year. For example, if you have performed an interim control of lead-based paint and see signs of peeling or flaking, you may need to redo the work.

Removing Dust

Dust removal is a continuing process. You begin with an initial treatment and then follow up with re-cleaning as needed. Dust removal is always a part of lead hazard control measures, whether done alone or as part of cleanup following other work.

Lead dust can be found on surfaces and in cracks throughout your home. Windows, worn floors, carpets, and upholstered furnishings seem to collect most of the lead dust. It is very hard to clean these surfaces thoroughly, and dust settles on them rapidly after they are cleaned.

Major Dust Collectors and Potential Dust Traps

Interior	Exterior
Window sills	Porch swings
Floors or steps	Window troughs
Cracks and crevices	Steps
Carpets and rugs	Exposed soil
Mats	Sandboxes
Upholstered furnishings	Window coverings
Radiators	Heating, ventilation, or air conditioners
Grates and registers	

Removing Lead Dust Inside Your Home

It is very hard to remove lead dust without specialized equipment. You will need to use a vacuum equipped with a HEPA filter combined with wet cleaning methods.

1. Vacuum the surface with a HEPA filter-equipped vacuum cleaner. This special type of vacuum will trap lead particles and prevent them from being released back into the air. A household vacuum will not do this. Remember—when you finish vacuuming— carefully empty the dust collected in the vacuum cleaner, being sure to dampen it with water first to control the spread of collected dust.
2. Wet clean exposed areas with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead. Use one bucket for the cleaning solution and one bucket for rinsing. Change the rinse water frequently (at least once for each room being cleaned) and replace rags, sponges, and mops often. Clean the surface until no dust is visible. After cleaning, rinse the surface with clean water and a new sponge or cloth.

At the same time that you undertake a cleaning project, have all the drapes and curtains professionally cleaned, and replace the filters in heating and air-conditioning units. Have your rugs and carpets

professionally cleaned. If you cannot have them cleaned professionally at this time, clean your carpets in the following manner:

Because removing lead dust from older carpets is difficult, it may be best to remove the carpets altogether.

For rugs and carpets that can be folded over:

- HEPA vacuum the carpet.
- Fold the carpet over in half and HEPA vacuum the bottom side of the carpet.
- Vacuum the top side of the carpet again.
- If there is foam padding under the carpet, clean both sides of the padding.
- Vacuum the floor under the carpet.

For carpets that cannot be folded over (such as wall-to-wall carpeting):

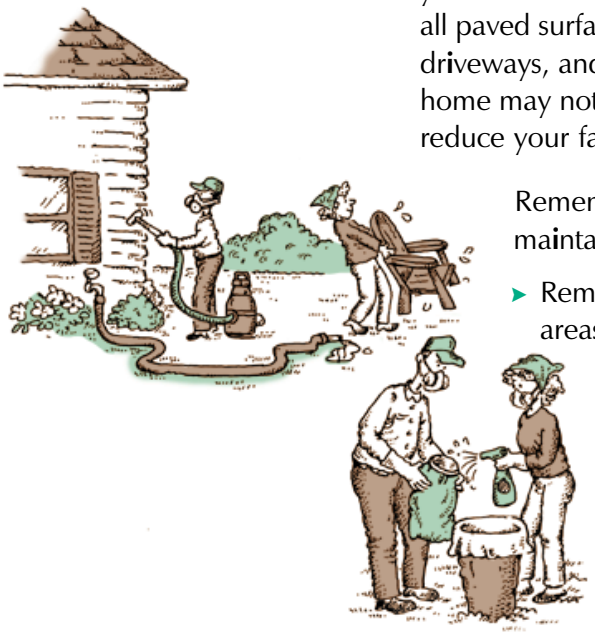
- Vacuum the carpet in a side-to-side direction.
- Vacuum the carpet in a side-to-side direction, opposite the first direction.
- Steam clean the carpet using a solution containing detergent specifically made to reduce static between the carpet and lead dust.

For upholstered furnishings:

- HEPA vacuum each surface three to five times.

Removing Lead Dust From the Exterior of Your Home

Lead in exterior dust can be dangerous because it can be tracked inside your home. You need to remove as much dust and dirt as possible from all paved surfaces on your property (such as sidewalks, patios, driveways, and parking areas). Removing all lead dust outside your home may not be possible, but by following some simple steps you can reduce your family's exposure to exterior lead dust.



Remember—These measures need to be repeated often to maintain safe lead dust levels outside your home:

- Remove all large items, such as outdoor furniture, from the areas you are going to clean. Dampen the areas with water to control the spread of lead dust.
- Vacuum all hard surfaces with a HEPA filter-equipped vacuum cleaner. Clean all surfaces continuously until no visible dirt or dust is present.
- Carefully empty the dust collected in the vacuum cleaner, being sure to dampen it with water first to control the spread of the collected dust.

Repainting Lead-Painted Surfaces

Repainting is often used on painted surfaces that have begun to deteriorate due to problems such as structural defects or water damage. It is a good choice for walls and ceilings because they are not constantly bumped or rubbed. Repainting a surface with a lead-free paint will help to lessen lead hazards by reducing the amount of lead dust and paint chips.

It is very important that you check the surface regularly and maintain it. If properly maintained, you can expect your repainting effort to last from 4 to 10 years.

Recommendations for Repainting a Lead-Painted Surface

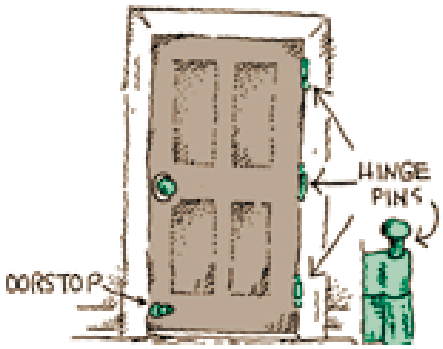
If you plan to repaint a lead-painted surface, take the following steps:

- Make sure that what is causing the paint to deteriorate is fixed or eliminated. This can include repairing water leaks, defective plaster, and damaged structural parts.
- Use a high-quality paint recommended by a manufacturer for the type of surface you are painting.
- Read and follow the manufacturer's instructions for applying paint.

Repairing Friction and Impact Surfaces

Friction surfaces are surfaces that are subject to abrasion, that is, rubbing or friction actions that cause wear on a surface. Common examples of friction surfaces are the parts of a window that rub when opened and closed, tight-fitting doors, cabinet doors and drawers, stairs and hand railings, and floors. When covered with lead-based paint, friction surfaces subject to abrasion can disturb lead-based paint. Friction surfaces may be treated by fixing the areas that rub together. For example, if you replace a tight-fitting door with a loose-fitting one, you will reduce the chances that the door will create lead dust.

Impact surfaces are surfaces that stick out and tend to be bumped or banged. The most common impact surfaces are doors and doorjambs, door trim, doorstops, outside corners of walls, baseboards, shoe moldings, chair rails, and stair risers. Repeated impacts can cause small chips of paint to fall to the floor and contaminate dust. You can reduce impact surface problems by placing barriers in front of the surfaces. For example, put a new chair rail on a lead-painted wall. This will lessen the damage done to the wall when a chair bumps against the rail.



How to Repair a Friction or Impact Surface

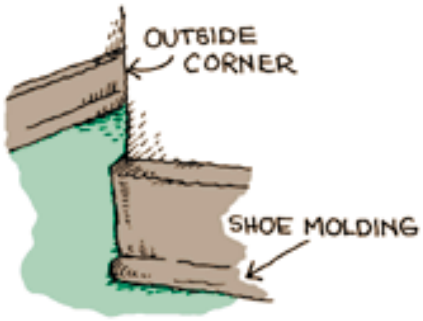
The following actions will help to reduce lead hazards from lead-painted friction and impact surfaces in your home. Remember—when performing any type of interim control—always cover work areas with thick, plastic sheeting and spray components with water to reduce dust.

- If you are repairing a window, remove the window. Wet scrape the deteriorated paint. If the window trough is badly weathered, cover with back-caulked, aluminum coil stock. Reinstall the window.
- If you are repairing a door, remove the doorstop and dispose of it properly. (See Chapter 8.) Remove the door by pulling out the hinge pins. Mist the door with water and plane the door to eliminate areas that might rub together. Reinstall the door and install a new doorstop.

- If you are repairing stairs, install a hard, cleanable covering, such as rubber tread guards. You can install carpeting on the stairs instead, but fasten it securely so that it does not cause abrasion. Repaint any railings that may have deteriorated lead-based paint. (For more information on repainting, see page 37.)

Other ways to repair friction and impact surfaces include—

- Removing and replacing shoe moldings around baseboards.
- Installing new plastic or wood corner beads to abraded outside corners.



- Removing and replacing cabinet doors, or having the paint stripped off at a professional paint stripping plant. Strip paint from drawers and drawer guides or plane impact points and repaint. Or, install rubber or felt bumpers at points of friction or impact.
- Repainting porches, decks, and interior floors.

Preventing Access to Soil Hazards

Whether the source is lead-based paint or leaded gasoline, soil that is contaminated by lead can be dangerous if children play in it or if it is tracked into your home by people and pets. If you think that your soil may be contaminated, have a risk assessor test it. A test will determine what action, if any, needs to be taken.

Never plant vegetable gardens in lead-contaminated soil. You can get lead poisoned from eating carrots and leafy vegetables grown in leaded soil.

What to Do After a Soil Lead Test

If the test results in parts per million (ppm) are . . .	It is recommended that you do the following . . .
Less than 400 ppm	Nothing
400–5,000 ppm	• Cover bare soil by planting grass, piling mulch or sand on top of it, or landscaping with sod and bushes. To keep children from playing in soil near your home (which may have higher concentrations of lead), plant bushes close to the house. In areas near children's playgrounds, cover soil with mulch and gravel piled at least 6 inches. • Move play areas away from contaminated soil. • Put doormats outside and inside all entryways. Remove your shoes before entering.
Higher than 5,000 ppm	Abatement (see Chapter 7 and Appendix D).

7

Abatement

QUICKTIPS

1. An abatement will permanently control or get rid of lead hazards in your home.
2. Never perform an abatement yourself. An abatement must be done by a trained and licensed professional.
3. If an abatement is done incorrectly, the chances of lead poisoning can increase.

Lead Abatement: What It Is, Who Should Do It

You can reduce the risk of lead exposure in your home by having a contractor perform an abatement. An abatement is a way to permanently contain or remove lead hazards. Merely painting or papering over lead-painted surfaces is not abatement.

The four abatement methods for structural components are—

- Replacement. Removing a part of a building that contains lead-based paint and replacing it with a new, lead-free part.
- Enclosure. Building a new wall, ceiling, or floor over an existing one.
- Encapsulation. Using a special type of coating to cover a lead-painted surface.
- Paint removal. Stripping the lead-based paint off an object.

EPA strongly recommends that you use a certified abatement contractor. If the abatement and the cleanup following it are not done right, the chance of lead poisoning will increase. A contractor trained in lead-based paint hazards and abatement will know how to safeguard your family before, during, and after an abatement.

If your child has a blood-lead level at or above 10 micrograms per deciliter (ug/dl), some states require you to hire a certified and trained contractor to abate the lead in your home. Check with your state lead contact (Appendix B).

When hiring an abatement contractor, use the following checklist to find someone who can do the job safely and correctly.

Tips for Finding and Selecting an Abatement Contractor

- **Begin by getting a list of lead contractors.** Call the HUD Lead Listing at (888) LEAD-LIST for a list of inspectors, risk assessors, and abatement contractors who have been trained by an EPA-accredited training provider. Your state lead contact (listed in Appendix B) can also provide a list of contractors who perform lead activities in your area.
- **Check your contractor's credentials.** Always ask to see a contractor's lead-based paint license or certificate. If the contractor is not certified, ask to see the contractor's training certificate. EPA has developed training courses for lead-based paint professionals so ask if the contractor's training was based on EPA course materials. Beginning in August 1999, Federal law will require lead contractors to be certified.
- **Check your contractor's references.** Call at least three of your contractor's previous clients. Make sure your contractor safely and properly completed the work requested.

Once you have hired a contractor, you should understand what your contractor is going to do. Start by—

- Reading the abatement instructions provided in Appendix D of this guidebook.
- Having your contractor explain how the project will be carried out.
- Talking to your contractor about what precautions will be taken to prevent you and your family from being exposed to lead.

Depending on the type of lead hazard, your contractor will choose either replacement, enclosure or encapsulation, paint removal, or a combination of these. Read on for more information.

Replacement

Lead-based painted windows are often the highest source of lead dust in a home.

"Replacement" is the removal of a building part that contains lead-based paint and the replacement of that part with a new, lead-free one. Replacement is a good choice for windows, doors, and woodwork.

Replacement of walls, ceilings, and floors is very expensive, and the process stirs up a lot of dust. Enclosure or encapsulation might be a better choice.

Advantages of Replacement—

- Removes lead-based paint permanently.
- Safest permanent intervention.
- Upgrades your home.
- Can lower heat and maintenance costs.

Disadvantages of Replacement—

- Expensive.
- Areas next to replaced part may be damaged.
- Replacement part may not be as good as the original.

Enclosure

Enclosure is the process of covering lead-painted surfaces with paneling, wallboard, or other materials. The materials are fastened with screws and sealed with caulking to prevent exposure to the lead-painted surfaces.

Enclosure is useful for surfaces that are cracked or chipped. Encapsulation may be a better choice for surfaces in good condition.

Enclosure is most appropriate for walls, ceilings, and floors.

Advantages of Enclosure—

- Cost-effective.
- Durable.
- Generates little contamination.

Disadvantages of Enclosure—

- May not be a permanent solution.
- Must be checked every 3 to 6 months to make sure it stays intact.

Even though enclosure and encapsulation do not remove the lead-based paint, they are considered a form of abatement. If done right, these methods can effectively reduce the lead hazards in your home.

Encapsulation

Like enclosure, encapsulation provides a barrier that prevents lead dust from spreading. With encapsulation, however, the barrier is a special type of coating—called an encapsulant—applied to a lead-painted surface. Once dry, it forms a stiff barrier, which can then be painted. This method of abatement is a good choice for wall surfaces in good condition, for surfaces that are not rubbed often, and for curved surfaces.

Advantages of Encapsulation—

- Generates little contamination.
- Inexpensive.

Disadvantages of Encapsulation—

- Use of some encapsulant products will create hazardous waste.
- Cannot be used in high-friction areas.
- May not be a permanent solution.
- Must be checked every 3 to 6 months to make sure it stays intact.

Paint Removal

Paint removal is the stripping of lead-based paint from an object. This process creates a large amount of lead and waste, so choose paint removal only if no other abatement strategy will work, or if an object has historical value.

It is possible to have paint removed on-site (in your home) or off-site (at a paint stripping plant). You can reduce the risk of lead exposure during abatement by choosing off-site paint removal, and allowing items to be taken from your home to a professional stripping plant.

Advantages of Off-Site Paint Removal—

- Keeps hazardous chemical strippers out of your home.
- Preserves the detail on decorative doors, molding, and trims.
- Useful on antique items that cannot be replaced.

Disadvantages of Off-Site Paint Removal—

- The liquid waste you generate when you rinse and clean the stripped items may be hazardous.
- Chemical stripping never removes all of the lead.
- Leftover stripper will cause the new paint coat to fail.
- Removing a building component for off-site stripping creates dust.

Exterior Paint Removal

Lead-based paint found on the outside of your house can be hazardous too. It may need to be removed or enclosed so that it does not get into the dirt surrounding your house.

To get rid of the lead-based paint on the exterior of your house, your contractor will likely use vacuum blasting, water blasting, or exterior enclosure.

Advantages of Vacuum or Water Blasting—

- Can be used on the exterior of your home.

Disadvantages of Vacuum or Water Blasting—

- Can damage the treated surface, especially wood.
- Creates a lot of waste and can spread paint chips around nearby areas.
- Very expensive.

For more information on vacuum blasting, water blasting, and exterior enclosure, see Appendix D.

Soil Abatement

Sometimes, soil needs to be abated. If it has a high lead level (usually above 5,000 parts per million), it should be abated.

One way to do this is to hire a contractor to remove or replace the contaminated soil. Another option is to have a contractor create a permanent barrier between the soil and your family. This can be done by paving over or putting permanent bricks on top of the soil. If you have the old soil removed, ask your state lead contact (Appendix B) for assistance in determining how it should be disposed.

Help From a Risk Assessor or a Contractor

In some households, interim controls work well. Others require abatement. For still others, the best approach is to combine interim controls with abatement. Deciding on the safest, most efficient, and most cost-effective approach in your case is difficult, so consider consulting a certified risk assessor. Risk assessors are trained to identify strategies for reducing the hazards of lead-based paint.

8

Cleaning Up Lead Waste

QUICK TIPS

1. Cleanup is the most important step in controlling or getting rid of lead hazards.
2. If the cleanup is done incorrectly, your home may be more hazardous than it was before the work began.

Dust contaminated with lead by home projects—from remodeling to interim controls and abatement—can be hazardous to you and your family. In fact, if this dust is not properly removed—both during and after projects—your home could be more hazardous than it was before work began.

Pay special attention to cleanup activities that prevent the spread of lead dust to other areas of your home or exposing your family to lead.

Cleanup is the most important step in your project. Here are some tips for daily cleanup, personal cleanup, and final cleanup after the job is done.

Daily Cleanup

Daily cleanup is important whenever you or your contractor work with lead. Daily cleaning prevents the spread of lead dust and makes cleanup at the end of the project much easier.

Cleanup is the most important step.

At the end of every project day, do the following:

- Wrap up and label any debris or trash.
- Mop floors and wash exposed surfaces and tools with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead. Allow to dry.
- Strain out paint chips from liquid waste and dispose of them in a heavy-duty plastic bag.
- Vacuum all exposed surfaces and any plastic sheeting with a HEPA filter-equipped vacuum cleaner.

- Mist outside areas using a garden hose before sweeping these areas with a broom. Avoid dry sweeping since it spreads lead dust. Shovel, rake, or HEPA vacuum debris into heavy-duty plastic bags placed in cardboard boxes for support.
- Clean your vacuum and tools with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead.
- Seal off the entryways with the thick, plastic sheeting if you have to leave a work site unattended.

Personal Cleanup

It is very important that whoever has been doing the work follow these steps to prevent lead dust from spreading to other areas of your home:

- Wash your hands and face whenever you leave your work area.
- Change your clothes and shoes before leaving the work area. After removing your clothes, wash them immediately, separately from other family laundry.
- Shower and wash your hair right after finishing work to prevent spreading lead dust.

Keep in mind that anyone observing lead hazard control work or entering a room in which work is being done needs to take safety precautions as well. They should always remove their shoes before leaving the work area and wash their hands after leaving the work area.

Final Cleanup

Final cleanup, which takes place at the end of a project, must be performed slowly and carefully. It should occur no sooner than 1 hour after the project ends. Time is needed to let lead dust settle.

Here are the steps of the final cleanup process:

- Collect waste and debris and seal in plastic bags.
- Carefully remove any plastic sheeting by rolling or folding inward.
- Wash all surfaces with a solution of water and an all-purpose cleaner or a cleaner made specifically for lead. Allow to dry.
- Vacuum all exposed surfaces with a HEPA filter-equipped vacuum.

After the above tasks have been performed, you should not see any dust.

Clearance Examination

After any type of lead work has been performed in your home, it is strongly recommended that you hire a professional to perform a clearance examination. This is especially important after an abatement procedure. Because an abatement is likely to disturb lead-painted surfaces, you need to be certain that you and your family will not be exposed to lead hazards.

A clearance examination includes a visual examination and an analysis of dust samples to ensure that lead levels are not a danger to you and your family and that cleanup was done properly. The clearance examination should take place no sooner than 1 hour after any cleaning activity to allow lead particles to settle.

The purpose of the clearance examination is to make sure that dust levels are low so you and your family will not be exposed to lead hazards.

For a list of qualified professionals in your area who perform testing services, call your state lead contact (Appendix B) or the U.S. Department of Housing and Urban Development's Lead Listing at (888) LEAD–LIST. You can also get testing and laboratory information by calling the National Lead Information Center's Clearinghouse at (800) 424–LEAD.

Hazardous Waste Disposal

Working with lead produces many types of waste materials—including lead-based paint chips, liquid waste, used cleaning materials, and lead-painted doors and windows. Do not keep waste materials—like doors, windows, and scraps of wood—for other uses, and never burn lead-painted wood. This creates hazardous lead fumes.

Hazardous waste that is not disposed of properly will harm the environment. Under the Resource Conservation and Recovery Act (RCRA) and state or local regulations, certain types of waste are considered hazardous and must be disposed of at a hazardous waste facility. If you generate lead waste in your own home, however, the hazardous waste requirements may not apply to you. Call your state lead contact to see how lead trash should be disposed of in your area.

APPENDIX A

For More Information

Lead Hazards and Lead Poisoning Prevention

- Call the National Lead Information Center's Clearinghouse at (800) 424–LEAD to speak with a lead information specialist. If you are hearing impaired, call TDD (800) 526–5456. The clearinghouse can provide general lead information. It can also provide testing and laboratory information.
- Call the Safe Drinking Water Hotline at (800) 426–4791 for information on lead hazards in your drinking water.
- Call the Consumer Product Safety Commission Hotline at (800) 638–2772 for information on lead in consumer products. If you are hearing impaired, call TDD (800) 638–8270.
- Call the National Conference of State Legislatures at (303) 830–2200 for a list of local health department contacts for lead poisoning services.
- Visit the EPA lead home page at www.epa.gov/lead to get information on lead regulations and to learn about other EPA and Federal agency efforts to reduce lead exposure.

Blood-Lead Testing

- Call your health care provider or local health department. They can either provide blood-lead testing or refer you to someone who can.

Certified Lead Contractors

- Call the National Lead Service Providers' Listing System at (888) LEAD–LIST for a list of inspectors, risk assessors, and abatement contractors who have received training from a state-accredited training provider. Or get the list from the Internet at www.leadlisting.org.
- Call your state lead contact (see Appendix B) for a list of contractors who perform lead activities in your area.
- Call the National Lead Information Center's Clearinghouse at (800) 424–LEAD if you have a tip or complaint about a lead service provider who may have done work incorrectly.

Financial Assistance for Lead Activities

- Call your state lead contact (see Appendix B) to get information on financial assistance programs in your area. Some state and local agencies can arrange for needed services at no cost to you, and some offer financial help. For example, many agencies—
  - Conduct free blood-lead screenings or direct you to a source of free testing.
  - Help pay for a lead inspection and, if necessary, the removal of lead-based paint by a trained professional.
  - Provide temporary housing, called "Safe Houses," for families undergoing lead removal.
- Call the HUD Office of Affordable Housing Programs at (202) 708–2470 for information on the HUD HOME Program. One of the activities provided for under this program is financial help for major home repairs to low-income people who have lead-based paint in their homes.

APPENDIX B

State Lead Program Contacts

Need more information about lead hazards and the prevention of lead poisoning in your state? Call your state lead contact.

Alabama
Bureau of Environmental Services
Department of Public Health
201 Monroe Street, Suite 1250
PO Box 303017
Montgomery, AL 36130–3017
(334) 206–5373

Alaska
Department of Health and Social Services
Division of Public Health
Section of Epidemiology
3601 C Street, Suite 540
P.O. Box 240249
Anchorage, AK 99524-0249
(907) 269–8044

Arizona
Office of Environmental Health
Arizona Department of Health Services
3815 N. Black Canyon Highway
Phoenix, AZ 85015
(602) 230–5943

Arkansas
Department of Health
Environmental Health and Protection
4815 West Markham Street, Slot 46
Little Rock, AR 72205–3867
(501) 661–2171

California
Childhood Lead Poisoning Prevention Branch
California Department of Health Services
5801 Christie Avenue, 6th Floor, Suite 600
Emeryville, CA 94608
(510) 450–2453

Colorado
Lead Poisoning Prevention Program
DCEED-LEAD-A3
4300 Cherry Creek Drive, South
Denver, CO 80246-1530
(303) 692–2685

Connecticut
Division of Environmental Health
Department of Public Health
450 Capitol Avenue, P.O. Box 340308
Mail Stop 51LED
Hartford, CT 06134–0308
(860) 509–7293

Delaware
DHSS
Division of Public Health
Jesse S. Cooper Building
P.O. Box 637
Dover, DE 19903
(302) 739–4731

District of Columbia
Department of Health
Environmental Health Administration
2100 Martin Luther King Jr. Avenue, SE
Suite 404
Washington, DC 20020
(202) 645–6093 x3066

Florida
Department of Health
Bureau of Environmental Toxicology
1317 Winewood Boulevard
Tallahassee, FL 32399–0700
(904) 488–3385

Mississippi
Department of Environmental Quality
P.O. Box 10385
Jackson, MS 39289–0385
(601) 961–5171

Missouri
Office of Lead Licensing and Accreditation Program
Missouri Department of Health
P.O. Box 570
Jefferson City, MO 65102–0570
(573) 526-5873
(888) 837-0927 (in Missouri)

Montana
Department of Environmental Quality
Division of Planning, Prevention and Assistance
1520 East 6th Avenue
P.O. Box 200901, Metcalf Building
Helena, MT 59620–0901
(406) 444–6697

Nebraska
Department of Health and Human Services Regulation and Licensure
P.O. Box 9507
301 Centennial Mall South
Lincoln, NE 68509
(402) 471–0782
(888) 242-1100 (in Nebraska)

Nevada
Nevada Division of Health
505 E. King Street, Room 201
Carson City, NV 89701
(702) 687–5845

New Hampshire
Bureau of Health Risk Assessment
Department of Health and Human Services
6 Hazen Drive
Health and Welfare Building
Concord, NH 03301–6527
(603) 271–4507

New Jersey
Lead and Asbestos Program
New Jersey Department of Health and Senior Services
CN 360
Trenton, NJ 08625
(609) 984–2193

New Mexico
Lead Poisoning Prevention Program
Department of Health
Runnels Building–St. Francis Drive
Santa Fe, NM 87505
(505) 827–0006

New York
Bureau of Community Sanitation and Food Protection
New York State Department of Health
1215 Western Avenue
Albany, NY 12203
(800) 458–1158

North Carolina
Division of Environmental Health
Department of Environment & Natural Resources
2728 Capital Boulevard
Raleigh, NC 27604
(919) 733–2870

North Dakota
Department of Health
1200 Missouri Avenue
P.O. Box 5520
Bismarck, ND 58506
(701) 328–5188

Ohio
Ohio Department of Health
246 N. High Street
Columbus, OH 43266–0588
(614) 644–8649

Oklahoma
Department of Environmental Quality
4545 N. Lincoln, Suite 250
Oklahoma City, OK 73105
(405) 290–8247

Oregon
Environmental Services and Consultation
Oregon Health Division
800 NE Oregon Street, Suite 608
Portland, OR 97232
(503) 731–4012 x721

Pennsylvania
Childhood Lead Poisoning Prevention Program
Department of Health
P.O. Box 90, Room 725
Harrisburg, PA 17108
(800) 440–LEAD (in Pennsylvania)

Puerto Rico
Emergency Response and Superfund
Environmental Quality Board
P.O. Box 11488
Santurce, PR 00910
(809) 766–2823

Rhode Island
Department of Environmental Management
Office of Director
235 Promenade Street
Providence, RI 02908
(401) 222–2771 x2402

South Carolina
Department of Health & Environmental Control
2600 Bull Street
Columbia, SC 29201
(803) 935–7945

South Dakota
Department of Environment and Natural Resources
Waste Management Program
Joe Foss Building
523 E. Capitol Avenue
Pierre, SD 57501–3181
(605) 773–3153

Tennessee
Department of Environment and Conservation
Life and Casualty Tower
401 Church Street, 21st Floor
Nashville, TN 37243–0435
(615) 532–0104

Texas
Texas Department of Health
Environmental Lead Program
1100 W. 49th Street
Austin, TX 78756
(512) 834–6600

Utah
Lead-Based Paint Program Development
Department of Environmental Quality
150 N. 1950 West
Salt Lake City, UT 84116–4820
(801) 536–4451

Vermont
Childhood Lead Poisoning Prevention Program
Vermont Department of Health
108 Cherry Street
P.O. Box 70
Burlington, VT 05402
(802) 865–7786

Virginia
Lead-Safe Virginia Program
Virginia Department of Health
1500 E. Main Street
P.O. Box 2448
Richmond, VA 23218–2448
(804) 225–4455

Virgin Islands
Division of Environmental Protection
Department of Planning and Natural Resources
396–1 Annas Retreat
Foster Plaza
St. Thomas, VI 00802
(809) 777–4577

Washington
Washington State Department of Health
Office of Toxic Substances
Airdustrial Center Building 4
P.O. Box 47825
Olympia, WA 98504–7825
(360) 236–3381

West Virginia
Environmental Health Services
815 Quarrier Street, Room 418
Charleston, WV 25301
(304) 558–2981 x24

Wisconsin
Bureau of Public Health
1414 E. Washington Avenue
Madison, WI 53703
(608) 266–5817

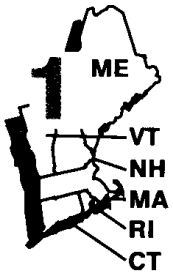
Wyoming
Preventive Medicine Division, Department of Health
Hathaway Building, 4th Floor
Cheyenne, WY 82002
(307) 777–6951

APPENDIX C

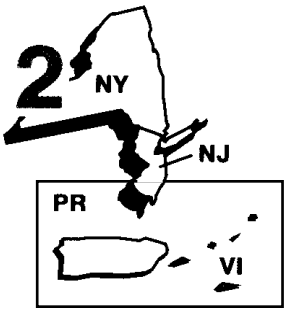
EPA Regional Lead Contacts

The Environmental Protection Agency has 10 regional offices across the United States. For more information on lead regulations or lead poisoning prevention programs, contact the regional office that serves your state or territory.

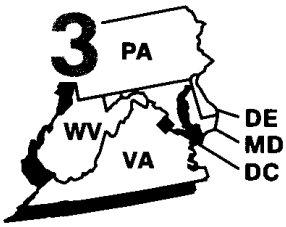
REGION 1	Contact:
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Regional Lead Contact U.S. EPA Region 1 JFK Federal Building 1 Congress Street Boston, MA 02203–0001 (617) 565–3836



REGION 2	Contact:
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



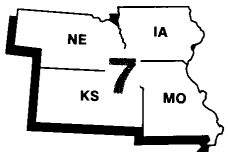
REGION 3	Contact:
Delaware, Maryland, Pennsylvania, Virginia, Washington, D.C., West Virginia	Regional Lead Contact U.S. EPA Region 3 (3WC33) 841 Chestnut Building Philadelphia, PA 19107 (215) 566–2084



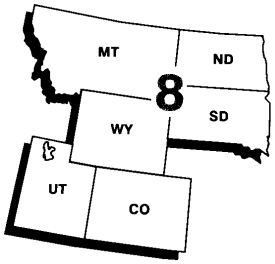
REGION 4	Contact:
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	Regional Lead Contact U.S. EPA Region 4 61 Forsyth Street, SW Atlanta, GA 30303 (404) 562–8998

REGION 5	Contact:
Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin	Regional Lead Contact U.S. EPA Region 5 (DT-8J) 77 West Jackson Boulevard Chicago, IL 60604–3507 (312) 886–7836

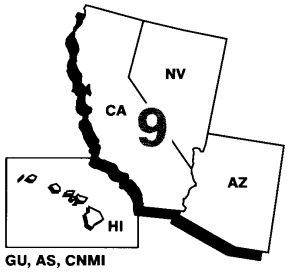
REGION 6	Contact:
Arkansas, Louisiana, New Mexico, Oklahoma, Texas	Regional Lead Contact U.S. EPA Region 6 1445 Ross Avenue, 12th Floor Dallas, TX 75202–2733 (214) 665–7577



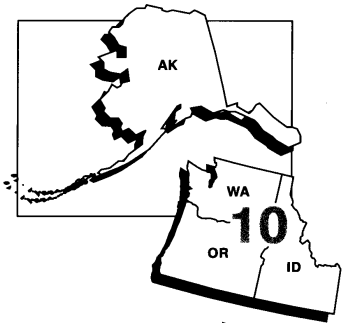
REGION 7	Contact:
Iowa, Kansas, Missouri, Nebraska	Regional Lead Contact U.S. EPA Region 7 (ARTD–RAL1) 726 Minnesota Avenue Kansas City, KS 66101 (913) 551–7020



REGION 8	Contact:
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	Contact:
Arizona, California, Hawaii, Nevada	Regional Lead Contact U.S. EPA Region 9 75 Hawthorne Street San Francisco, CA 94105 (415) 744–1093



REGION 10	Contact:
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

APPENDIX D

Abatement Guidelines for Your Contractor

Once you have hired an abatement contractor, you should know how the abatement project will be carried out. The information in this appendix will help. It lists general guidelines for performing the four types of structural abatement, including—

- Replacement
- Encapsulation
- Enclosure
- Paint Removal

Keep in mind these are not step-by-step instructions. The guidelines are meant to help you make sure that your contractor is working safely and properly.

Method	Where It Is Best Used
Replacement	• Windows, doors, and moldings • Any other easily removed component
Encapsulation	• Walls, ceilings, and trim • Curved surfaces
Enclosure	• Floors, pipes, ceilings, exterior trim, etc.
Paint Removal	
Wet Scraping	• Loose paint • Should not be used as a removal method for large areas
Off-Site Chemical Stripping	• Restoration of historic pieces • Doors, mantels, metal railings, and trim
Solvents	• Metal substrates • To clean residue left by other methods
Heat Gun	• Flat surfaces • To soften thick layers of paint (Should not be operated above 1100° F)

Q. What should I do to prepare for an abatement?

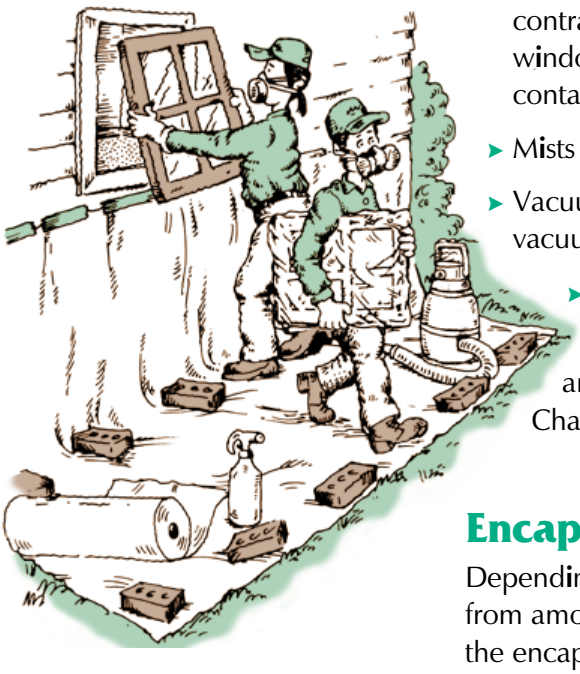
A. Everyone in your home, especially children and pregnant women, must stay out of the house until the work is done and the cleanup, including dust sample analysis, is complete. In some cases, after the work area is contained, you may be able to enter your home if you stay out of the work area. (See Chapter 4 for more information on how to safely contain a work area and prevent lead dust from spreading.)

Replacement

Whenever possible, windows should be removed from the outside of your home to prevent the spread of lead dust inside.

Replacing Doors, Windows, and Woodwork

Opening and closing doors or windows stirs up lead dust. Bumping or banging woodwork does too. You may need to replace some of them to prevent lead dust from spreading to other areas of your home.



Make sure your contractor—

- Covers the area around the part being replaced and any nearby surfaces with two or three layers of 6-mil polyethylene plastic sheeting. When the part being removed is a window, make sure the contractor attaches this plastic sheeting to the wall below the window and extends it at least 6 feet on each side of the window to contain lead dust and debris.
- Mists the component with water before removing it.
- Vacuums the part to be removed with a HEPA filter-equipped vacuum to prevent lead dust from spreading.
- After removal, wraps the part in plastic sheeting.
- Before installing the new part, disposes of the old part and cleans the work area according to the directions in Chapter 8.

Encapsulation

Depending on the task to be performed, your contractor can choose from among many encapsulation products and should consider where the encapsulant will be applied. Encapsulant makers provide directions on preparing surfaces and on monitoring, maintaining, and cleaning encapsulated surfaces. If properly applied and maintained, an encapsulant should last for 20 years.

Enclosure

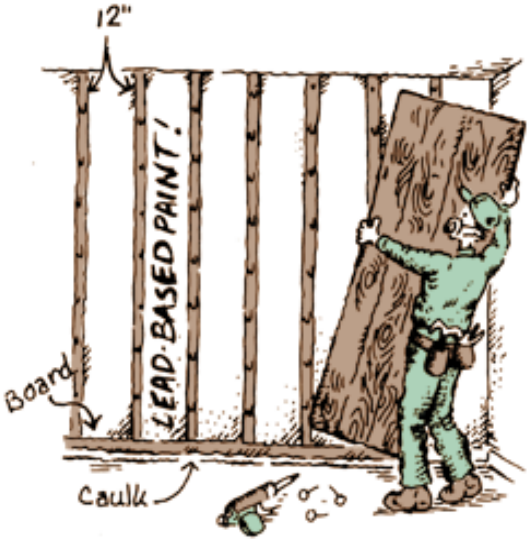
Preparing the Area

Make sure your contractor—

- Eliminates all moisture sources and allows the surface to dry.
- Lays thick, plastic sheeting (mentioned on pages 25 and 60) around the work area to prevent lead dust from spreading to other parts of the room, or to other rooms in your home.

Enclosing a Wall

Make sure your contractor—



- Writes the words "Lead-Based Paint" on the wall to be enclosed.
- Nails strips of wood 12 inches apart down the wall being enclosed.
- Nails one horizontal strip of wood along the base of the wall, and seals it with caulk along the bottom edge to create a dust-tight seal.
- Measures and caulks the new wallboard or paneling, and attaches it to the original wall.
- Measures and caulks the baseboard, and attaches it to the bottom of the wallboard.
- Measures and caulks the shoe molding, and attaches it to the bottom of the baseboard.
- Cleans the work area according to the instructions in Chapter 8.
- Paints or papers the new wall.

Exterior walls can be enclosed in much the same way.

Enclosing a Ceiling

Make sure your contractor—

- Writes the words "Lead-Based Paint" on the ceiling to be enclosed.
- Using a stud finder, finds the ceiling studs.
- Measures the wallboard carefully.
- Caulks and screws the wallboard directly into the ceiling studs.
- Cleans the work area according to the instructions in Chapter 8.
- Paints the new ceiling.

Paint Removal

There are many ways to remove paint, and some of them should never be used on lead-based paint. They include—

- Torch or flame burning.
- Open abrasive blasting.
- Uncontained water blasting.
- Machine sanding without a HEPA filter.
- On-site use of chemical strippers that contain methylene chloride.
- On-site use of flammable solvents.
- Solutions of potassium or sodium hydroxides.
- Dry scraping large areas.

Off-Site Paint Removal

Off-site paint removal works best for doors, mantels, and other trim that may have architectural or historical value. The items are dipped into a tank of chemical stripping agents, and the paint dissolves off the surface.

Be sure to wash the items before reinstalling them. You may also need to refinish or re-glue the pieces.

On-Site Paint Removal

If you must have paint removed in your home, your contractor can apply one or more of these methods:

- Wet scraping. Wet scraping is a way to prepare a surface for repainting by removing loose paint. The surface must be misted before being scraped to keep lead dust levels down. It also must be misted constantly while it is being scraped.
- Wet planing. Similar to wet scraping, the surface must be misted with water before being planed and while it is being planed.
- Electric heat guns. Electric heat guns force warmed air onto a painted surface. The heat softens the paint, which is then scraped off with hand tools. Heat guns should not be warmed above 1100° F. If heated above this temperature, lead-based paint can give off toxic fumes.

- Local exhaust hand tools. These handheld power tools are attached to a HEPA vacuum by a hose. The vacuum contains a HEPA filter to prevent the spread of lead dust.
- Chemical stripping. Chemical stripping is the use of solvents or caustic pastes to dissolve and strip off paint. Chemical strippers are dangerous and may give off harmful vapors, which can catch on fire. Some states prohibit the use of methylene chloride, which is often used in chemical strippers. Your contractor should know whether chemical stripping is an option in your state. If not, check with your state lead contact (Appendix B).

Vacuum Blasting, Water Blasting, and Enclosure for Exterior Paint

Although vacuum blasting or water blasting should never be done inside your home because of the waste they create, your contractor may remove paint from the exterior of your home using these methods. To avoid contaminating areas around your home and your neighbors' homes, make sure your contractor controls the spread of any waste or debris.

When removing exterior paint, make sure your contractor—

- Protects the soil, bushes, plants, and the area around your home by taping thick, plastic sheeting to the base of the structure. The plastic sheeting should extend at least 6 feet for every story.
- Places 2" x 4" boards under the edge of the plastic sheeting to create a curb. The curb should direct the waste water into a low spot, where it can be pumped into a 55-gallon drum.
- Cleans and smooths the surface.

Enclosing outside surfaces with a dust-tight material or aluminum siding is often the best method to use. This will protect the lead-based paint from the elements and will increase the energy efficiency of your home. It also creates less waste than other abatement methods.

Glossary

Abatement A procedure that eliminates lead-based paint hazards or lead-based paint. The four types of abatement methods are removal, enclosure, encapsulation, and replacement. Removal and replacement are permanent.

Abrasion Rubbing or friction that causes wear on a surface.

Accredited training provider A training provider approved by EPA to train individuals to be risk assessors, inspectors, supervisors, and workers.

All-purpose cleaner A general-purpose cleaning product.

Bare soil Soil not covered with grass, sod, other vegetation, or pavement. This also includes the sand in sandboxes.

Blood-lead level A measurement of how much lead is in the body.

Certified The designation for contractors who have completed training and other requirements to allow them to carry out risk assessments, inspections, or abatements safely. Risk assessors, inspectors, and abatement contractors should be certified by the appropriate local, state, or Federal agency.

Characteristics (of hazardous waste) EPA has identified four characteristics of hazardous waste: how easily the waste ignites, how corrosive it is, how it reacts with other substances, and how toxic it is to people and the environment. Any solid waste that has at least one of these characteristics may be classified as hazardous under the Resource Conservation and Recovery Act (RCRA), depending on how the waste is produced and how much is generated.

Chemical stripping A paint removal method that uses chemicals to strip off paint.

Chelation A medical drug treatment for lead poisoning.

Cleaner made specifically for lead Cleaning product made specifically for cleaning and removing lead-contaminated dust. Can be found in some paint and hardware stores.

Cleaning The process of using a HEPA vacuum and wet cleaning agents to remove lead dust. See also HEPA filter and wet cleaning.

Clearance examination An inspection performed after abatement work is completed in housing that contains lead hazards. Also recommended after interim controls and renovation and remodeling activities. Dust levels are checked to be sure that they meet standards.

Clearance examiner An individual who performs a clearance examination, usually a risk assessor or inspector. See also clearance examination.

Contaminate The process by which an area may become infected through contact or association.

Contractor Any business, public body, or person doing work on a lead-based paint hazard control project.

Deteriorated lead-based paint Any lead-based paint that is peeling, chipping, blistering, flaking, worn, chalking, cracking, or otherwise becoming separated from the surface to which it was applied.

dl Short for deciliter. A deciliter is one tenth of a liter, or a little less than half a cup of liquid. This measurement is used when measuring blood in the body.

Disposal (of hazardous waste) Getting rid of hazardous waste in a way that prevents it from polluting the environment.

Durable Able to exist for a long time without deterioration.

Dust removal A type of interim control that involves initial cleaning followed by periodic monitoring and recleaning, as needed.

Dust trap A surface, component, or furnishing where dust may accumulate.

Encapsulation An abatement method in which a lead-painted surface is coated with a special liquid paint that hardens and prevents lead dust from being released.

Enclosure An abatement method in which a lead-painted surface is covered with paneling, wallboard, or other approved material to prevent lead dust from being released.

Evaluation An assessment that includes a risk assessment, paint inspection, reevaluation, investigation, clearance examination, or lead hazard screen.

Exterior work area The area outside a housing unit in which lead hazard control work is performed. It includes areas such as porches or outdoor stairways.

Friction surface Any interior or exterior surface, such as a window or a door, subject to abrasion or friction.

Gram A metric unit of weight equal to one thousandth of a kilogram. It is close to the weight of a penny.

Hazardous waste Any waste that is considered dangerous to people or the environment by state or Federal laws.

Heat gun A device that forces warmed air onto a painted surface and softens the paint so it can be removed. Heating and burning lead-based paint makes dangerous fumes and vapors. If a heat gun must be used, it should not be warmed above 1100° F.

High-Efficiency Particulate Air (HEPA) filter A filter that can remove very small lead particles and prevent them from being redistributed into the air. HEPA filters are used on respirators and vacuum cleaners to prevent lead exposure from projects that disturb lead-based paint.

Hydroblasting The process of using high-powered water pressure to loosen exterior paint so it can be removed.

Impact surface An interior or exterior surface—such as the surface of a door—subject to damage by repeated impact or contact.

Inspection (of paint) An evaluation to determine if lead-based paint is present in housing and where it is located.

Inspector An individual who has completed training from an EPA-approved program and has been licensed or certified by the appropriate state or local agency to perform a lead-based paint inspection. See also inspection.

Interim controls A set of measures that temporarily reduce lead hazards. Such measures include specialized cleaning, repairs, maintenance, painting, and temporary containment.

Interior window sill The portion of the horizontal window ledge that extends into a room on the inside of a house.

Leach The process in which liquid passes through an object, and particles from the object dissolve into or mix with the liquid.

Lead A heavy, bluish-white chemical that can be easily shaped.

Lead-based paint Any paint, varnish, shellac, or other coating that contains lead equal to or greater than 1.0 milligram per square centimeter or 0.5 percent lead by weight.

Lead-contaminated dust Surface dust in residential settings that contains levels of lead that pose a threat of adverse health effects in pregnant women or young children. The term is defined this way for the purpose of Lead In Your Home: A Parent's Reference Guide. However, this is a technical term that will be further defined by the EPA in the TSCA 403 regulation.

Lead-contaminated soil Bare soil in residential settings that contains lead at levels that are hazardous to human health. The term is defined this way for the purpose of Lead In Your Home: A Parent's Reference Guide. However, this is a technical term that will be further defined by the EPA in the TSCA 403 regulation.

Lead hazard Dangerous conditions or circumstances that cause lead exposure at levels that would result in adverse human health effects. Lead hazards could include deteriorated lead-based paint, lead-contaminated dust, and lead-contaminated soil. The term is defined this way for the purpose of Lead In Your Home: A Parent's Reference Guide. However, this is a technical term that will be further defined by the EPA in the TSCA 403 regulation.

Lead hazard control Activities to control and eliminate lead hazards. They include interim controls and abatement.

Lead hazard screen A type of risk assessment performed only in housing in good condition using fewer samples but more stringent evaluation criteria to determine the absence of lead-based paint.

Maintenance Work intended to maintain adequate living conditions in a housing unit.

Mg Short for milligram. It is equal to one thousandth of a gram.

Mil An English unit often used to measure the thickness of paint film or plastic sheeting. It is equal to one thousandth of an inch.

Monitoring Surveillance to make sure lead-based paint and lead dust are kept under control and that activities performed to control lead hazards continue to be successful.

NIOSH National Institute for Occupational Safety and Health. When you purchase a respirator, make sure the package says it is certified by NIOSH.

Off-site paint removal The process of removing a component from housing and stripping the paint from the component at an off-site paint stripping facility.

On-site paint removal The process of removing paint from components inside the housing.

Owner The person who holds the title to a housing unit.

Paint removal An abatement strategy to remove lead-based paint from identified surfaces.

Parts per million (ppm) Measurement used to identify the amount of lead in paint. It is the weight of lead per 1,000,000 weights of a sample, including the lead. For example, if a paint sample contains 5,000 micrograms of lead in 1 gram of paint, then the lead concentration is 5,000 ppm.

Priming To prepare a surface for painting.

Reevaluation An assessment performed by a certified risk assessor to determine if a previously implemented lead-based paint hazard control measure is still effective and if the dust and soil levels remain lower than EPA standards.

Replacement A type of abatement that involves removing housing components coated with lead-based paint—such as windows, doors, and trim—and installing new components that are free of lead-based paint.

Resource Conservation and Recovery Act (RCRA) A Federal law that defines hazardous and nonhazardous waste and regulates hazardous waste disposal.

Respirator A device worn to cover the mouth and nose. When working with lead-based paint, the only type of respirator that will filter out lead dust particles is one equipped with a HEPA filter.

Risk assessment An on-site investigation of housing to determine if lead hazards are present and how they can be controlled.

Risk assessor A certified individual who has completed training with an accredited training program and has been certified to perform a risk assessment. See also risk assessment.

Sandblasting A process in which sand is blown by air or steam to remove paint.

Safe Drinking Water Act (SDWA) A law that limits the amount of which certain chemicals are allowed in drinking water. Congress made additions to this act in 1986 and 1988, which made it illegal to use lead in household plumbing.

Screening The process of testing children to determine if they have elevated blood-lead levels.

Solder A combination of metals used to join or patch metal parts or surfaces. Solder sometimes contains lead.

Solid waste Garbage, refuse, sludge or other discarded materials resulting from domestic, industrial, or commercial operations or from community activities.

Substrate A surface on which paint, varnish, or other coating has been applied or may be applied. Examples of substrates include wood, plaster, metal, and drywall.

Title X This law directs Federal agencies to develop regulations to strengthen and redirect national lead poisoning prevention efforts. Also called the Lead-Based Paint Hazard Reduction Act of 1992.

Trained The successful completion of a training course in one of the following disciplines: inspector, risk assessor, supervisor, project designer, and abatement worker. For lead hazard control work, the training course must be accredited by EPA or by an EPA-approved state program.

Treatment In residential lead hazard control work, any method designed to control lead-based paint hazards. This includes interim controls and abatement.

µg Short for microgram. A microgram is one millionth of a gram.

µg/dL Short for micrograms per deciliter. The measurement used to express how much lead is in your blood.

Wet cleaning The process of using a mixture of water and a household cleaner to remove lead dust.

Wet planing A process of smoothing off a surface. The surface is wet misted before being planned to keep dust levels down.

Wet scraping A process used to remove loose or chipping paint. The paint is wet misted before being scraped to keep dust levels down.

Window trough For a typical double-hung window, the part of the exterior window sill between the interior window sill and the frame of the storm window. This is sometimes inaccurately called the window "well." See also window well.

Window well The space that provides exterior access or light to a window that is below the level of the surrounding earth or pavement.

Worker An individual who performs lead hazard control work. Beginning in 1999, workers must be trained by an EPA-accredited provider and certified by EPA or a state or tribe to perform lead hazard control work.

Work area Any interior or exterior area where lead hazard control work is performed.