

LEAD PAINT

Background Materials

- 1. Why Is Deteriorated Lead-Based Paint a Health Hazard?**
- 2. Reasons to Test for Lead Paint Hazards**
- 3. Testing for Lead Paint Hazards**
 - Supplies
 - Training and Qualifications
 - Ways to Measure Lead In Paint
 - Loose Paint Chip Analysis
 - XRF Testing
 - Chemical Test Kits
- 4. Reports/Forms**
- 5. Federal Standards**
- 6. What do the Results Mean?**
- 7. Explaining the Results to Residents**

Why Is Deteriorated Lead-Based Paint a Health Hazard?

Lead poisoning can damage children's brains, making it hard for them to learn, and causing behavioral problems. The effects can last a lifetime and cannot be reversed. Most children in America with harmful amounts of lead in their bodies came into contact with the lead in and around their homes.

- Peeling, flaking, chipping lead-based paint can be a serious health hazard.
- Peeling lead paint produces small lead paint chips and lead in dust that are serious health hazards.

Lead poisoning can happen when children eat lead paint chips or get lead dust on their hands or toys that get put into their mouths.

- Lead-based paint that is peeling or chipping is a major source of lead-contaminated dust.
- If lead-based paint on outside walls and windows is chipping, flaking, or rubbing it can add lead to the soil, which can be tracked into the house.
- Painting or remodeling projects that disturb lead-based paint can also release lead dust.

- Lead dust on floors, windowsills and other surfaces. Regular broom sweeping does not clean up lead-contaminated dust. A vacuum with a high efficiency filter and wet scrub should be used to clean up lead dust. Even this type of cleaning doesn't keep dust lead levels low for long if there is a lead source nearby.
- Lead deposits from leaded gasoline (which is no longer in use) as well as industrial emissions and lead mining may contaminate soil.

Even though lead-based paint was banned in the United States for uses in residences after 1978, 38 million homes (40% of all homes and apartments) have lead-based paint. About 14 million homes have more than a two square feet of deteriorated lead-based paint (15% of all homes).

Reasons to Test for Lead Paint Hazards

Federal regulations define deteriorated lead-based paint as a **lead hazard**. Deteriorated lead-based paint can be tested to prevent exposure to harmful lead levels.

There are a variety of reasons why you might want to test the lead content of deteriorated paint.

- To determine if the deteriorated paint in a home is a lead hazard,
- To describe lead paint levels in housing throughout a community,
- To prove that deteriorated lead-based paint is in many properties owned by the same owner,
- To put the property owner on notice about deteriorated lead-based paint, forcing the owner to correct the problem or to tell future tenants or buyers about the lead hazard under the Federal lead disclosure law,
- To show failures by health, housing, or code enforcement agencies, and
- To provide hard evidence needed to win important policy changes or funding increase.

Testing for Lead Paint Hazards

Lead paint in good condition rarely poisons children. Lead-based paint that is chipping, peeling, flaking, rubbing or otherwise creating paint chips or dust is an immediate hazard to health.

A house or apartment has deteriorated lead-based paint if:

- Paint is deteriorated (chipping, peeling, etc.); and
- Paint has enough lead in it to meet the federal standard for "lead-based paint."

It usually makes more sense to first look at paint for signs of deterioration, since this is easy to do. If you find paint in poor condition, then you can figure out if the paint is lead-based. The paint must be tested to determine if the amount of lead is enough to be called lead-based paint.

SUPPLIES:

The following supplies and equipment are needed to collect paint chip samples that will be sent to a lab. Most of the supplies are available at hardware stores.

- Utility/Putty Knife or Sharp Scraper:** used to cut peeling paint

1. How many? One

2. How much? Scrapers range in price from \$2 to \$15 depending upon the type of blade. Buy a scraper with a stainless steel or carbide blade to avoid rust.

3. What features? A knife or sharp scraper can help you cut peeling paint that may be hanging off a wall, window, or trim. This makes it easier to remove a piece of paint that is hanging on to a surface without damaging the surface.

- Heavy duty, zip lock bags (sandwich or quart size):** hold the paint chips. Some labs will supply the bag or a sample container.

1. How many? 2 bags to double bag each sample.

2. How much? Buy a box of sandwich or quart size bags for about \$3.

3. What features? Use freezer bags. They are heavy-duty bags that don't rip and have a label for writing useful information.

Individually wrapped wipes

1. How many? Be sure to have at least 3 wipes per sample. This allows you to rip, misplace or use wipes for cleaning supplies.

2. How much? Wipes cost a few dollars for a package of hundreds if you use the wipes in boxes. Individual wipes are also not expensive. Wipes are also often provided by the lab.

3. What features? Use individually wrapped wipes or wipes provided by the lab.

Baby wipes for cleaning (optional)

1. How many? One container of baby wipes is enough for many houses. The wipes are used to clean off the template and other sampling materials such as the ruler and your hands. You can also use the same wipes for sampling and cleaning.

2. What features? Buy a container that keeps the wipes wet. Remember that an open lid can dry out the wipes if you don't close it firmly. The type with a pull out top helps keep the wipe wet.

3. How much? A container of over a 100 is a few dollars.

Labels

Shipping package/envelope to send sample to the lab

Disposable gloves. Use powder-free gloves for lead testing (lab may provide)

Trash bags

Pen

Permanent marker

Chain of Custody form

Floor plan: copy marked for lead samples

Camera

TRAINING AND QUALIFICATIONS:

Sampling for deteriorated lead-based paint:

Identifying Deteriorated Paint

There is no required federal training to do this. However, HUD has a useful on-line course that provides guidance in conducting a visual assessment for deteriorated paint, paint chips and dust. You can complete this short course at <http://www.hud.gov/lea/training/visual/h00100.html>

Sampling Paint Chips for Lead

There is no specific federal or state training focused on sampling loose paint chips. Several federal lead training courses (risk assessor and lead inspector) teach this in addition to other material.

You don't need to become a certified lead inspector or risk assessor to collect loose paint chip samples from a house or apartment. However, if you plan to do a full lead inspection or risk assessment, then you must become certified as a lead inspector (for lead inspections) or risk assessor (for risk assessment). The CEHRC sampling protocol is NOT a lead inspection, risk assessment, or lead hazard screen, and certification is not needed.

States may have different requirements for qualifications. Always check your state standards and regulations before sampling.

LEAD BASED PAINT (LBP) DISCIPLINES* <i>Who Can Identify LBP Hazards?</i>			
	Lead Sampling Technician	Inspector	Risk Assessor
Qualified to perform:	Clearance after non-abatement work Other dust wipe sampling	Paint inspections Clearance Other lead sampling	Risk assessments Paint inspections Clearance Other lead sampling
Not qualified to perform:	Risk assessments Paint inspections Clearance after abatement Clearance using random sampling of units in multi-family properties	Risk assessments	
Training/Certification required	5 hours of training HUD requires states certification or risk assessor supervision Some states offer and require certification	3 days of training Certification by state or EPA	5 days of training (including Inspector training) Certification by state or EPA
Methods	Perform: Visual assessment Dust wipe sampling	Perform: Visual inspection Dust wipe sampling Soil sampling Paint chip sampling XRF testing of paint	Perform: Visual inspection Dust wipe sampling Soil sampling Paint chip sampling XRF testing
Objectives	Determine if dust hazards are present by taking a dust wipe and comparing the results to standards. To clear a unit after (non-abatement) work that disturbed lead-based paint.	Identify the existence, concentration and location of lead-based paint. To clear a unit after work that disturbed lead-based paint.	Assess a unit, identify hazards, and recommend methods for lead hazard reduction. To clear a unit after work that disturbed lead-based paint.

WAYS TO MEASURE LEAD IN PAINT:

Test Deteriorated Paint for Lead

If paint is deteriorated, the next step is to find out whether the paint meets the federal government's definition of "lead-based paint". While there is national survey data about the amount of lead paint in housing units throughout the country, this data doesn't prove that a home has deteriorated lead-based paint. Only testing can confirm that paint is lead-based. Testing results that produce hard numbers can be compared to federal standards. This comparison is the best way to document lead hazards.

There are three different ways to measure the lead content in paint:

- Laboratory paint chip analysis
- XRF testing
- Chemical spot test kits

All three strategies are described below. **CEHRC recommends Hazard Investigators use a modified laboratory paint chip analysis of ONLY "loose paint" to measure the lead content in deteriorated paint because it is accurate and low in cost.** Our type of testing is modified because we focus on sampling loose paint chips and not removing paint that is intact.

I. Loose Paint Chip Analysis: CEHRC Recommended Method (See *Sampling Instructions* for details on how to do loose paint chip sampling)

Send paint chip samples from the house or apartment to the laboratory for analysis. The lab measures the percentage of lead in the sample and gives results that you can compare to the federal weight-based standard (0.5% lead = lead-based paint). CEHRC recommends collecting samples of paint that have fallen off the wall or surface or that can be easily removed without damaging the house or apartment.

- The test accurately measures the lead in the paint you collect.
- \$4 to \$15 per sample. It can become costly to send a lot of chips to the lab.
- The test only measures the lead in the paint sample sent to the lab. If the sample doesn't include all the paint layers, it will not give an accurate answer about the amount of lead in the painted surface. Testing only some of the paint layers may give a low estimate of the lead content, since lead is most likely in older paint layers.

- Samples must be sent to a lab and usually take 2-3 days to produce results. You can get faster results for an added fee.

2. XRF Testing

The tester holds the XRF (“X-Ray Fluorescence Analyzer”) instrument against the paint. The device tells the operator how much lead is in the paint in milligrams per square centimeter (mg/cm²).

- XRF testing is accurate, does not harm the surface, and provides immediate results.
- Only a trained and state or federally certified professional can do this type of testing.
- XRF testing is more expensive than collecting paint chips because the XRF device is expensive (e.g., \$10,000 - \$18,000) and a certified professional must operate it. Lead inspections of all the paint in a home usually cost \$250-\$600 per unit.
- XRF inspections can be cost-effective for measuring lead in a lot of paint. For example, XRF testing can be used to prove that there is no lead-based paint in a unit by testing woodwork and many walls. If no lead-based paint is found, the results of this type of lead inspection can exempt owners from some federal or state lead requirements.

3. Chemical Test Kits

Chemical test kits have materials that change color when they are rubbed against paint with a certain amount of lead. These tests do not tell you the amount of lead in the paint. The results can’t be compared to either the weight-based or area-based federal standards for lead-based paint.

A positive result from a chemical test kit may help you decide whether to collect loose paint for lab analysis. If a chemical test result is positive, the paint is probably leaded and you can decide whether to do more accurate testing.

See CEHRC’s [Lead Swabs protocol](#) for more information and instruction.

Reports/Forms

CEHRC’s Reports can be downloaded from the Reports section of this website.

- Floor Plan
- Sampling Results Report

FEDERAL STANDARDS:

Lead-Based Paint

The federal government has standards for lead-based paint (40 CFR 745.227(h)). You can measure the lead by weight or by amount in a square centimeter (cm²). The lab will use the weight-based standard for loose paint samples.

Type of Measurement	Lead-Based Paint Standard
<p>Weight-Based Standard</p> <p>Amount of lead in a paint chip sent to lab.</p>	<p>Paint with equal to or more than 0.5% lead (½ of 1 percent lead) which is the same as:</p> <p>5,000 µg/g of lead (micrograms per gram) 5,000 mg/kg of lead (milligrams per kilogram), 5,000 ppm of lead (parts per million)</p>
<p>Area-Based Standard</p> <p>Amount of lead in 1 square centimeter of paint, as measured by a lab or an XRF analyzer onsite. (NOT used for paint chips UNLESS you measure the size of the chip.)</p>	<p>1 milligram or more of lead per square centimeter of painted area (1 mg/cm²)</p>

Deteriorated Lead-Based Paint:

Deteriorated lead-based paint is a paint-lead hazard under Environmental Protection Agency (EPA) and Housing and Urban Development (HUD) regulations. EPA regulations define deteriorated lead-based paint as **paint with a high enough lead content to be considered lead-based AND that is cracking, flaking, chipping, peeling, or otherwise separating from the substrate or building component** (40 CFR 745.63). Paint generally peels, flakes or chips when there is a moisture problem, extreme amount of sunlight or other extreme weather, or lack of maintenance. You can also get loose paint when you sand, scrap, drill, hydro-blast, or burn lead-based paint. Chewable lead-based paint with teeth marks is also considered a lead-paint hazard.

What do the Results Mean?

The Results Will Tell You:

1. **If the paint is lead-based.** If any samples of deteriorated paint come back with lead levels that are equal to or greater than the federal standard, the home has deteriorated lead-based paint. Deteriorated lead-based paint is an extreme lead hazard under federal regulations.
2. **The amount of lead in the paint you sampled.** The results come back with a specific number for each sample. If the results are less than the standard for “lead-based paint” (0.5% lead) but show some lead, occupants and owners should take special precautions when they repaint or remodel. Paint with less lead than the federal standard can still create a lead dust hazard if it is burned, sanded, scraped, or cut.
3. **Where deteriorated lead-based paint was found.** A positive result tells you that deteriorated paint in a certain location is lead-based.
 - If the paint chip was collected from the floor; it tells you that some paint in the room is lead-based. It may be possible to tell where the chip is from based on the color and/or location of the paint. In other cases, you will know that it came from a specific area in the room.
 - If the sample came from a window, it is likely that the other windows in that room also have lead-based paint. However, the paint on a window may be different from the paint on other trim and is likely to be different from the paint on the walls or ceilings.

The Results Will Not Tell You:

1. **About the lead levels for all the paint in the home.** The results only tell you about the paint you sent to the lab.
 - Results don't give information about the paint in other areas unless the other paint has the same history.
 - Results don't always tell about the lead content of the paint on a specific surface unless ALL the paint layers down to the substrate (the wood, metal, or plaster surface below the paint) were sent to the lab.

- 2. That a home has no lead-based paint.** Sampling paint chips or peeling paint is not a full test of all the paint in the home. Measuring the lead content in paint throughout the unit is a “paint inspection.” This CEHRC protocol is not a lead paint inspection.
- Only certified lead inspectors or risk assessors can conduct lead paint inspections.
 - Inspections require that the tester measure the lead in all the paint. Such testing usually involves measuring lead on many painted areas and measuring lead in both intact and deteriorated paint. Typically an XFR device is used for this type of lead paint sampling because it is cost-effective and doesn't damage paint. A full paint inspection usually costs between \$300 - \$1000 for a house or apartment.
- 3. The reason the paint is peeling, flaking or chipping.** In the long run, it is critical to figure out why the paint is falling off the wall or building. Most failing paint is caused by problems that can be fixed (moisture, bad maintenance or repainting). Some paint failure is caused by long-term exposure to sunlight's ultra violet rays. In this case, more frequent repainting is a solution.

Explaining the Results to Residents

If the results of paint chip sampling show that the deteriorated paint is lead-based paint, the house or apartment has an immediate health risk, particularly to children.

- Within one week of receiving the results from the lab, tell residents the results and what they mean. Give lab reports and **Sampling Results Report**.
- Telling other people (for example, the landlord) or organizations (such as the health department or code enforcement agency) depends on:
 - The residents' agreement, and
 - The advocacy strategy of your organization.
- Provide residents information about their legal rights and ways to fix the lead hazards.
 - Information on how to repair deteriorated paint and control lead-contaminated dust through specialized cleaning.
 - Families can clean up paint chips and dust, but make sure that they know it is the property owner's legal duty to provide safe housing.

- Cleaning to reduce paint chip hazards will only create a short-term benefit unless steps are also taken to control the source of the paint chips: the peeling paint. Cleaning temporarily changes the harmful amounts of lead dust and chips in a home. Property owners are the best people to fix the problem because they have a responsibility to deal with both the paint repair and the problem causing the paint failure (e.g., water leaks, moisture).
 - The best way to fix deteriorated lead-based paint is to fix the cause of the paint problem and then either safely repair the paint or cover it with another material.
- Under federal disclosure requirements, landlords must tell future tenants or buyers about lead paint hazards found during testing.

If the lab results show that none of the paint you sent to the lab is lead-based, you cannot say there is deteriorated lead-based paint in the house. It is possible that some paint in the house is lead-based but wasn't sampled. If there is any lead in the paint, give residents information on how to maintain and repair leaded paint.

Know your housing code! For some codes, the presence of any deteriorated paint is a violation.

LEAD PAINT: Sampling Checklist

PREPARE THE SAMPLE AREA:

1. Decide where to collect 3-5 loose paint samples: best from windows or door.
 - Exterior (1-2 samples)
 - "Wet" rooms (1-2 samples)
 - Rooms with children (1-2 samples)
2. Take photos of the deteriorated paint you plan to sample.
3. Label one bag for each sample location.
4. Put on disposable gloves.
5. If paint will break into many small pieces, you may want to prepare for sampling by taping a bag to the wall to catch debris.

COLLECT THE SAMPLE:

6. Collect the sample and record sample location on **Floor Plan**.
 - Pick up loose paint chips from window, floor or counter or take off wall if loose.
 - Pick "thick" chips with a lot of layers of paint.
 - Put chips in bag and double bag each sample
 - Write the number of the paint sample on the floor plan where it was taken.
7. Clean up.
 - Use wet wip to clean around where you found the paint chip.
8. Repeat steps 2-7 for each sample.

FINISH THE JOB:

9. Take off gloves and wash hands.
10. Make sure all bags are labeled and match the **Chain of Custody Form**.
11. Double-check the **Chain of Custody Form**.
12. Send samples to the lab.

FOLLOW-UP

Fill out **Sampling Results Report**, attach lab results and deliver this to the resident, along with information on safe paint repair.

Supplies:

- Labels
- Pen
- Camera
- Summary Report
- Floor Plan
- Disposable gloves
- Permanent marker
- Trash bags
- Detergent and water
- Chain of Custody Forms
- Utility/putty knife or sharp scraper
- Heavy duty, zip lock sandwich size freezer bags
- Individually wrapped wet wipes
- Shipping package/envelope

LEAD PAINT

Sampling Instructions

I. Supplies

The following supplies and equipment are used to collect loose paint chips. You can buy most of them at a hardware or grocery store. Some of these supplies will be provided by your lab*.

- Disposable gloves: must be approved for lead use

(powder-free)

- Trash bags
- Pen
- Permanent marker
- Chain of Custody Form*
- Floor Plan (done during visual survey)
- Camera
- Shipping package/envelope

II.

- Utility knife, putty knife, or sharp scraper
- Heavy duty, zip lock freezer bags (sandwich size)
- Individually wrapped wet wipes
- Labels or tape

Avoid Common Mistakes

Fill out the “Chain of Custody” section of the form. This section keeps a record of who touched the samples so you can trace the movement of the samples from the sample location to the lab.

Double-check that the Chain of Custody Form is completed and easy to read.

Make sure you have extra camera batteries and film.

Avoid rubbery paint since it is probably latex paint that should not contain lead.

III. Sampling Instructions

Do not collect paint chip samples if it will damage the house or apartment.

PREPARE THE SAMPLE AREA

I. Prepare to Collect Loose Paint Samples:

- Go to the locations where you identified loose and peeling paint from the Visual Survey.
- Select no more than 5 areas where loose paint has already fallen to the floor/ground or paint can be easily removed from the trim, windows, walls, doors, and other woodwork.
- Collect 1-5 samples from the selected areas. (See **Decision Guide** for help deciding how many paint chips to take).
- If there is a lot of loose paint, select the places most likely to have lead-based paint:
 - a.** Exterior: porches, walls, woodwork, garages, and fences. (1-2 samples)
 - Pick areas where children are likely to play
 - b.** "Wet" rooms (1-2 samples)
 - Kitchen
 - Bathroom
 - c.** Rooms where children are likely to spend time (1-2 samples). If there are no children, look at bedrooms and living rooms.

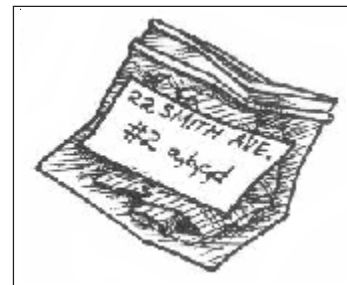
2. Take photos to show the deteriorated paint for each sample:

- Write the picture number on Floor Plan. Take the pictures in the same order that you are taking the samples. Make sure the picture is taken close enough to show the deteriorated paint while still showing other items that give scale and show where the paint is in the room.

LEAD PAINT Sampling Instructions

3. Label the bag:

- Attach a label to the bag or write the information directly on the zip lock bag if it has a label area.
- Give each sample a number and a "P" for paint chips. Start with P1, P2, P3 – don't skip or reuse numbers.
- Write the sample number on label/bag.
- Write picture number on the label/bag.
- Write the address on the label/bag.
- Add room name for each sample on the label.
- Record the number on the **Chain of Custody Form**.



4. Put on clean disposable gloves.

5. Prepare area for sampling.

If peeling paint in areas you will sample seems like it will break into many small pieces or a lot of pieces will fall to the ground, tape a bag to the wall below it, or tape a sheet of plastic to the floor to collect debris.

COLLECT THE SAMPLE

6. Collect the samples and Record Sample Locations on Floor Plan - follow the same order as the photos:

- Collect loose paint from windows, doors and trim. Paint on these surfaces is more likely to contain lead at higher levels than walls or ceilings. If there isn't any on these surfaces, collect paint chips on

- Include paint that is about the size of a postage stamp. This might mean you need to put more than one chip in the bag. If you use a couple of chips, be sure they come from the same general area of the same surface.
- If you used a scraper, take any remaining paint off the scraper and put it into the bag before closing.
- Place the paint chips and pieces in the bag (or container that may be provided by the lab). Make sure this bag is labeled. Close the bag and put it in a second bag to “double bag” the sample. (Each sample should be double-bagged individually).
- Wipe off the scraper using a disposable wipe.
- Change gloves** before picking up the next paint chip or piece of loose paint.
- Write the number of the paint sample (i.e., P1, P2, etc.) on the floor plan where it was taken.

7. Clean up:

- Use the wet wipes to clean the floor/window around the area you collected loose paint chips. This helps clean up lead dust or small chips.
- Put used wipes in your trash bag.

8. Repeat steps 2 to 7 for each sample:

Remember to change gloves between samples. Put used wipes and gloves in your trash bag.

FINISH THE JOB

9. Take gloves off & wash your hands:

- After sampling, wash your hands with soap and water. Use wet wipes if running water and soap are not available. Throw away used gloves in your trash bag.

10. Make sure all bags are labeled and labels match the Chain of Custody Form:

- Count the number of bags with samples and make sure you have written down information for the same number of samples on the form. Double-check this against the Floor Plan.

11. Double Check the Chain of Custody form:

- Make sure the form is filled out and includes important information: your name and organization, property address, sample numbers, and sample locations.
- Make sure label information matches information on form.
- Keep copies of all forms.

12. Send the samples to a laboratory:

- Ask for results via fax or email and regular mail. Contact **CEHRC** if you need help obtaining or interpreting your lab results.

FOLLOW-UP

When you receive the results from the lab, usually within one week of mailing the samples to the lab, write the result of the test on the **Sampling Results Report**, attach the lab results and deliver to the resident, along with information on safe paint repair.

LEAD PAINT

Decision Guide

This guide is for program managers who are trying to decide if they want to collect loose paint chip samples in the communities they serve and which properties to sample. The **Sampling Instructions** provide the step-by-step instructions that the Hazard Investigator needs. CEHRC's **Lead Paint Background Materials** offer added reference information.

- ❑ **Why is lead paint important?** Loose or peeling paint with enough lead in it to meet the Federal standard for lead-based paint is a health hazard for children and a lead based paint hazard under U.S. Environmental Protection Agency (EPA) regulations. Lead paint is a problem because young children can put paint chips in their mouths and the chips can get ground up into dust, which gets on a child's hands or in their lungs when they play. Contact with lead paint and dust can cause learning difficulties, behavior problems, and damage to the nervous system and other organs. You may find that lead-based paint is a source of the lead dust that you discover in a house. (CEHRC has a separate sampling guide for collecting lead dust samples.)

- ❑ **Which homes should be checked?** Collect loose paint chip samples in homes with lead paint in poor condition to supplement lab results showing the presence of lead dust hazards.
 - a. **Old homes** are more likely to have lead-based paint. Most homes built before 1960 have some lead-based paint.
 - b. **Homes with poor maintenance** are more likely to have peeling, flaking, or cracking paint. Lead-based paint in good condition is not a health hazard. Only paint in poor condition is a problem.
 - c. **Homes with young children** (under age 6) live or spend a lot of time are a good place to sample because children are at greatest risk from lead paint and dust hazards.
 - d. If you are not sure if a home has lead-based paint, you can use low cost chemical test kits to give you an instant indication of whether there might be lead in the paint. (See **Lead Swabs Protocol**).

Year House or Apartment Built/ Percent of Housing Units with Lead-Based Paint

1989-1998	5%
1978 -1988	8%
1960 - 1977	24%
1940 - 1959	69%
Before 1940	87%

Source: US HUD, National Survey of Lead and Allergens in Housing, 2001.

How can you test for deteriorated lead-based paint?

a. CEHRC recommends a low cost two-step test. First, you look to see if the paint is peeling, flaking, chipping, or cracking – all of these types of poor paint condition meet the EPA & HUD definitions for deteriorated paint. (See the **Visual Survey**.) Second, you test pieces of the deteriorated paint to see if it has enough lead to be lead-based. CEHRC recommends using a simple test of collecting loose paint chips that have fallen off the wall or trim (or can be easily removed from a painted surface without damaging it) and then sending them to a laboratory for analysis. This type of testing is low cost but it has limitations: it can only tell you about the paint you sample and you may miss older layers of paint that may not be peeling in one location, but is deteriorated in another.

b. Lead Check Swabs - Follow CEHRC protocol. If the swab tests and the age of housing suggest that there is likely to be a lot of lead paint, there are two options: (1) You can collect loose paint samples and send them to a lab. (2) You can hire a certified Inspector or Risk Assessor to use an XRF instrument to test the entire home for lead on-site. Paint inspection will likely cost at least \$200 but can provide data that is more comprehensive than loose paint chip sampling because it looks at more places and samples ALL the layers of the paint. This alternative is only likely to make sense when results must stand up in court or similar settings.

What training is required? You must complete CEHRC sponsored training that supplements the Lead Sampling Technician training in collecting loose paint chip samples. This training only takes about 30 minutes.

How much does testing paint chips cost? Beyond training, there are minimal costs. The cost of supplies and laboratory fees is approximately \$35- \$45 for each home. This includes \$35 for a laboratory fee to analyze each of 5 samples.

Any limits on scheduling of visits? No.

Any special supplies needed? You can get most needed supplies at hardware or grocery stores.

Are there recognized/established standards? The Federal Government has standards for lead-based paint (40 CFR 745.227(h)). You can measure the lead by weight or by the amount in a square centimeter. When analyzing loose paint samples, the lab will use the weight-based standard.

Type of Measurement	Lead-Based Paint Standard
Weight-Based Standard Amount of lead in a paint chip sent to lab.	Paint with equal to or more than 0.5% lead ($\frac{1}{2}$ of 1 percent lead) which is the same as: 5,000 $\mu\text{g/g}$ of lead (micrograms per gram) 5,000 mg/kg of lead (milligrams per kilogram), 5,000 ppm of lead (parts per million)
Area-Based Standard Amount of lead in 1 square centimeter of paint, as measured by a lab or an XRF analyzer onsite. (NOT used for paint chips UNLESS you measure the size of the chip.)	1 milligram or more of lead per square centimeter of painted area (1 mg/cm ²)

- How useful are the results?** The lab will give you a result that is a number; it is the percentage of lead by weight in the sample you sent them. You can compare the lab results to the Federal standard of 0.5% lead. A result that is equal to or greater than the standard is a lead paint hazard, which means that there is a current source of lead paint and likely lead dust in the apartment. Residents should be given written results along with materials describing how to control lead paint hazards. Until a property owner fixes a lead dust problem, occupants can take steps to reduce lead in their home. The results should also be given to the property owner with the consent of the resident. The owner is required under federal regulations to disclose the information to future tenants and buyers.
- Are there any safety concerns to the person who collects paint chips?** No, as long as clean up steps are followed.