



State of Illinois
Illinois Department of Public Health

A yellow silhouette of a house with a gabled roof. The roof is decorated with a pattern of small yellow circles. A semi-circular window with a vertical and two diagonal lines is centered on the front facade.

GET THE LEAD OUT

Homeowner's Lead-based Paint Abatement Guide

**HOMEOWNER'S
LEAD-BASED PAINT
ABATEMENT GUIDE**

**ILLINOIS DEPARTMENT
OF PUBLIC HEALTH**

Lead-based paint and dust from such paint are major sources of lead exposure in older (pre-1978) homes today. Remodeling projects to remove lead-based paint (abatement) must be done carefully to avoid generating large amounts of paint chips, debris and dust containing lead. Since lead poisoning is a documented result of sloppy abatement practices that generate large amounts of inhalable and ingestible lead materials, a poorly planned and executed paint removal plan may be more of a hazard than leaving the paint alone. Therefore, carefully plan and conduct abatement projects so that unnecessary exposure, both during and after abatement, is minimized.

Painting over defective surfaces covered with lead-based coatings should be considered only as a temporary measure to reduce immediate exposure and not as an acceptable, long-term abatement method. Complete removal of existing layers of paint should precede any new painting where practical. Unfortunately, all methods of lead-based paint abatement create some hazardous debris and tend to be labor intensive. Homeowners should choose the most effective removal method that creates the least hazard.

Generally, there are three abatement strategies: replacing building components, encapsulating surfaces that contain lead paint, and removing paint from surfaces. More than one of these methods can be chosen, depending on the areas to be abated and available resources. Replacement is better than the other methods because it is a permanent solution. Encapsulation generates less dust than removal; however, surfaces will need to be continually maintained and monitored for damage. Replacement and encapsulation are best from the perspectives of worker safety and cleanup. Paint removal often is less costly but may generate large amounts of lead dust and hazardous waste. All surfaces where lead-based paint has been removed should be sealed and repainted. Regardless of the method(s) chosen, the successful lead-based paint abatement project requires careful planning and effective cleanup. To protect residents, workers and neighbors from exposure to lead, protective clothing and equipment should be provided and used, and the area to be abated should be isolated. A daily cleanup should be conducted during the project and the house thoroughly cleaned at

its conclusion. The property owner and abatement contractor are always responsible for the effects of residue as well as for problems that could arise from drift or movement of lead dust from the affected property to that of others.

This document should be used as a guide to determine an appropriate abatement strategy for home projects, as well as to provide guidance for site preparation, containment and health protections. According to U.S. Internal Revenue Service Publication 502, some of the costs of abatement are allowed as deductions if a resident owner's child has or has had lead poisoning confirmed by a physician. Please read this document completely before beginning an abatement project. For more information, refer to the Lead Poisoning Prevention Code: (77 Ill. Adm. Code 845).

Part 1

LEAD-BASED PAINT ABATEMENT: PROS AND CONS

The methods, materials and disposal options for a particular situation need to be decided before starting the project. The condition and types of surfaces to be abated should be carefully considered and a method that produces the least amount of lead dust and/or fumes selected. A combination of methods is frequently used.

REPLACEMENT — *Highly recommended*

This approach often fits in well with renovation and modernization projects. Lead-painted building components are removed and replaced with components free of lead-based paint. Old components and surrounding structures should be sprayed or misted with water to control dust prior to any removal. Woodwork can sometimes be removed and reversed if only painted on one side. The area should be cleaned with a high efficiency particulate air (HEPA) vacuum. If this machine is not available, conventional vacuum equipment with special dust bags can be used and the inverted wood washed with a phosphate-containing

detergent or a phosphate-free lead dissolving detergent before applying new coatings.

- Pros**
- Removes lead hazard (except with woodwork reversal)
 - May improve appearance and energy efficiency of dwelling
 - May increase value of dwelling
 - New components usually easier to clean
- Cons**
- Difficult to perform on walls, ceilings and floors
 - Costly
 - May require skilled labor and special tools
 - Adjacent walls and surfaces may be damaged

ENCAPSULATION

Encapsulation refers to any process, such as resurfacing, covering or sealing, that makes lead-based paint inaccessible. This work should be documented so that the potential for exposure during future maintenance, renovation or demolition is minimized. Problems also may arise during post-abatement inspection activities because encapsulated lead-based paint can be detected by X-ray fluorescence testing methods.

FLEXIBLE ENCAPSULANT — *Recommended* (if newer flexible encapsulants selected)

Surfaces may be coated or sealed with products designed to be long-lasting and resistant to cracking, peeling, molds and mildews. These flexible encapsulants form a protective layer that prevents chalking and flaking of lead-based paint and keeps chips and dust from becoming accessible to children. The Illinois Department of Public Health maintains a list of flexible encapsulant products for use in the home.

- Pros**
- Relatively fast and inexpensive
 - Leaded dust usually not generated
- Cons**
- Lead is not removed
 - Requires sound underlying materials

- Physical conditions (e.g., humidity and temperature) may cause encapsulant to fail
- May require maintenance
- Product research concerning their long-term effectiveness is not conclusive
- Manufacturers may require special installation and/or training for warranty approval

ENCLOSURE — *Recommended*

Walls and ceilings may be covered with wallboard, plywood, paneling, vinyl wall covering, jute fabrics, fiberglass or similar durable materials. Paper wall covering or contact paper are not considered rigid encapsulants and are not acceptable as permanent solutions. Vinyl or aluminum siding can be installed over exterior walls. Specially designed plastic and metal products have been developed for wall corners, sills, doors, pipes and door jambs. Long-lasting sealants and adhesives are available for use with these products so lead dust cannot escape from seams and edges.

- Pros**
- Safe
 - Minimizes risk to workers and residents
 - Little dust or debris generated
 - May be cheaper and faster than replacement or removal

- Cons**
- Lead is not removed
 - May require skilled workers
 - Repairs must precede installation of covering
 - Edges must be well sealed
 - Building and fire codes may restrict the types of new material

REMOVAL OF LEAD-BASED PAINT

WET SCRAPING — *Recommended*

Spraying the surface with water before scraping will decrease the amount of dust that is generated. Eye protection and a respirator should be worn. Dry scraping of lead painted surfaces is prohibited (77 Ill. Adm. Code 845).

- Pros**
- Experienced workers can be very effective
 - Only a small amount of dust generated
 - Relatively inexpensive

- Cons**
- Difficult to remove all the leaded paint
 - Labor intensive
 - Scrapers must be sharpened or blades replaced often
 - Possibility of injury exists when using these tools
 - Wet debris can be difficult to collect
 - May damage underlying materials

OFF-SITE STRIPPING — Recommended

Off-site stripping can be used if items are removable and will usually produce better results than on-site stripping. Components should be wrapped in plastic for transportation to the stripping facility to minimize lead dust contamination.

- Pros**
- Chemical strippers will remove all surface coatings
 - Minimal dust generated
 - Allows for restoration of original components

- Cons**
- Components may be damaged during removal, transport, stripping or reinstallation
 - Can be expensive

HEPA SANDING — Recommended

(for flat surfaces only)

Specially designed sanding equipment is fitted with a high efficiency particulate air vacuum. The sander must always be in contact with the surface and used in accordance with the manufacturer's operating instructions. A respirator and eye protection must be worn.

- Pros**
- Effective for flat surfaces
 - Good method for exterior paint removal

- Cons**
- Expensive
 - May damage underlying materials
 - Can create large amount of dust if not used properly
 - Ineffective on non-flat surfaces

CHEMICALS FOR ON-SITE STRIPPING — *Recommended with caution*

Organic and caustic chemical strippers can be applied to soften paint before scraping. The stripper should be compatible with the substrate to be abated (for example, caustic strippers can dissolve aluminum). Adjacent surfaces need to be protected.

Chemical-resistant gloves and special respiratory protection are required. Some strippers contain volatile or caustic chemicals and require gloves, ventilation or supplied air respirators for protection. Use of strippers containing methylene chloride is restricted under the code (77 Ill. Adm. Code 845). Eye protection should be worn. Chemicals must be stored out of reach of children and used according to manufacturer's instructions. The waste generated from chemical stripping may be flammable, toxic and/or caustic; therefore, it must be handled and disposed of carefully.

Pros

- If done correctly, can remove nearly all lead paint
- Minimal dust generated
- Allows for restoration of components

Cons

- Strippers may produce hazardous fumes and vapors
- Products may be flammable
- Requires adequate ventilation and personal protection
- Strippers may be absorbed through skin and cause damage
- Often more than one application needed
- Lead paint waste will be generated and must be cleaned up properly

HEAT GUN — *Not recommended*

Electric heat guns or infrared guns also can loosen or soften painted surfaces so that paint can be removed by scraping. These appliances should be used at their lowest temperature settings. Temperatures above 700 degrees Fahrenheit are prohibited (77 Ill. Adm. Code 845). A fire extinguisher and appropriate ventilation should be available. Eye protection and a respirator should be worn.

- Pros**
- Minimal dust generated
 - Easy to use

- Cons**
- Labor intensive
 - Potential for creating poisonous fumes
 - Fire hazard
 - May damage underlying materials

SANDBLASTING — *Not generally recommended*

Special equipment forces sand under high pressures against the surface in order to remove paint.

Permitted only if appropriate containment is provided. All open abrasive sandblasting is prohibited (77 Ill. Adm. Code 845). Even contained sandblasting is prohibited for inside lead painted surfaces under the code (77 Ill. Adm. Code 845). Use only on exterior surfaces.

- Pros**
- Removes paint from large areas quickly
 - If equipment has HEPA attachment, efficient collection of hazardous materials is accomplished

- Cons**
- Experienced workers required
 - Containment of lead dust and debris difficult
 - Special equipment needed
 - Can damage underlying materials
 - Dust can move into interior of dwelling
 - Requires eye protection and respirator

CONTAINED WATER BLASTING (Hydroblasting) — *Not generally recommended*

Special equipment forces water under high pressure against the surface in order to remove paint.

Hydroblasting should be used only on exterior surfaces and with appropriate containment. Uncontained hydroblasting is prohibited under the code (77 Ill. Adm. Code 845).

- Pros**
- Removes paint from large areas quickly

- Cons**
- Creates large amount of liquid waste
 - Saturates underlying materials
 - Containment difficult
 - Special equipment needed

- Requires eye protection and respirator

OPEN FLAME BURNING TO REMOVE PAINT

Prohibited (77 Ill. Adm. Code 845)

DRY SANDING

Prohibited (77 Ill. Adm. Code 845)

PART II OTHER ABATEMENT ACTIVITIES

DUST REMOVAL — *Always recommended*

During and after lead paint removal, good house-keeping practices are necessary. Ideally, a HEPA vacuum should be used to collect surface dust. Wet mopping and wiping down surfaces with a phosphate-containing or phosphate-free lead dissolving detergent also are effective, particularly when done after vacuuming. Change wash water often. Throw away cleaning rags. It may take a day or two for all the dust from abatement and remodeling projects to settle.

- Pros**
- Inexpensive
 - No special skills necessary
 - Controls a major source of lead exposure

- Cons**
- Time consuming
 - Must mop, wash or sweep surfaces frequently and regularly

SOIL ABATEMENT — *Recommended if needed*

If a visible paint chip problem is present or laboratory results reflect high lead levels in soils that are accessible by children, soil abatement (reducing the level of lead in top soil) should be considered. This process may include removing gross debris, turning the soil over, sodding, covering with plastic and stone, pouring cement, or excavation and disposal. If new top soil is purchased, be sure to request lead-free soil or have it tested before use. The area should be kept moist while working with the soil to minimize dust

generation. Do not use a rototiller on windy days, or when children or pregnant women are present. Nearby windows and doors should be closed to prevent interior contamination from airborne soil.

PART III

IMPORTANT PLANNING CONSIDERATIONS

HEALTH PROTECTION ACTIVITIES

The overall goal is to safely and cost-effectively reduce exposure to interior and exterior lead-based coatings and lead dust. Proper sequencing of activities serves to avoid contamination of adjoining areas. Following is a list of some activities to be considered prior to the start up of the abatement process.

- No children, pregnant women or pets should enter the work site. For major projects, arrangements should be made to have children and pregnant women stay elsewhere while the project is being completed.
- If the work is contracted out, licensed abatement workers and contractors should be used.
- General construction area safety precautions should be followed.
- Water must be available for cleanup activities and worker hygiene.
- Before eating or drinking during a project, the mouth should be rinsed and hands and face washed thoroughly.
- Shoes or shoe covers should be removed before leaving the contained work area.
- Proper worker protection should be made available and used. This includes use of NIOSH/OSHA(National Institute of Occupational Safety and Health/ Occupational Safety and Health Administration)-approved

respirators for workers. Respirators must be properly fitted and maintained according to manufacturer's instructions. Clean respirators at the end of each work day and store in a clean area. Note: Facial hair prevents a good seal between the respirator and the skin and may allow lead to be inhaled or ingested.

- Protective clothing should be worn. This includes coveralls or similar full body covering, shoe covers, gloves, hair covers, and vented goggles or other protective eye equipment. Workers should begin each work day with clean, dry protective clothing. All protective clothing should be removed at the end of the work day in a designated change area and placed in a closed container. Persons who clean or launder nondisposable clothing must be informed of the potentially harmful effects of exposure to lead. Launder separately and do not shake soiled clothes or attempt to remove leaded dust by blowing.

CONTAINMENT AND SITE PREPARATION

- A work plan should be developed and followed. If possible, start at the room farthest from the exit. Work in one room at a time.
- All personal belongings should be removed and stored in a lead-free area. This includes carpets, drapes, clothing, utensils, toys, bedding and furniture. If large or built-in fixtures or cabinets remain, cover with plastic and seal tightly.
- The work site should be made off-limits to children, pets and pregnant women, as well as anyone who is not properly protected. Access to work area(s) should be limited with barriers and signs.
- The work area should be contained and sealed-off to avoid contamination of adjoining areas with lead dust. The best materials to use are duct tape and 6-mil plastic.
- Vents should be covered and sealed. Forced air systems should be shut down to prevent contamination of duct work.

- All floors should be covered with a double layer of 6-mil plastic. Before applying plastic to floors they should be HEPA vacuumed then washed with a phosphate or phosphate-free lead dissolving detergent solution and sealed with tape.
- Highly contaminated carpeting should be removed, sealed in plastic and disposed of properly. If carpeting is to remain in place during a project, it should be covered with cardboard in high traffic areas before plastic covering is installed. Carpets should be cleaned following abatement.
- Care should be used when moving debris to avoid putting lead dust into the air or tearing plastic barriers.
- For exterior work, plastic should cover the ground near the building. The sheeting should extend out from the foundation 3 feet per story being abated, with a minimum of 5 feet and a maximum of 20 feet. Raise the edges of the sheets to trap waste.
- During exterior work, lead dust should be prevented from entering the dwelling by keeping the windows closed. Do not scrape on windy days.

GOOD WORK PRACTICES

- Labels on any materials to be handled during a project, especially chemicals, should be reviewed to be sure the appropriate methods and safety equipment will be used. Be sure to obtain material safety data sheets on chemicals and read.
- Adequate ventilation must be provided, especially if chemical strippers are used. Window fans can be fitted with dust filters that should be changed on a regular basis. Fans should be positioned to exhaust air to the outside of the building.
- Lead-contaminated clothing or shoes should not be worn home or anywhere off-site to avoid contaminating other areas.

DAILY, POST-ABATEMENT AND FINAL CLEANUP ACTIVITIES

All abatement strategies create dust; therefore, thorough cleaning of all surfaces and regular removal of debris is imperative.

- Work areas must be cleaned daily or at the end of each shift. Carefully collect gross debris, paint chips and dust after misting with water and place in plastic bags. This waste must be kept out of the reach of children.
- If a HEPA vacuum is available, use it at the end of each day to remove lead dust from all surfaces. Conventional vacuums should not be used because they return some of the lead dust to the air.
- Disposable coveralls, shoe covers and hair covers should be deposited in plastic bags for proper disposal. When removing these items, keep the clean side toward the body, rolling the contaminated sides inward. Do not shake.
- If nondisposable coveralls are used, HEPA vacuum (if available) clothing before removing. Do not shake. Clothing should not be reused before laundering. Work clothes should be stored separately from street clothes. Work clothes should be laundered separately. If using professional cleaners, notify company that clothes are contaminated with lead dust.
- During cleanups, holes or rips in plastic containment should be repaired immediately with duct tape.
- Respirators should be cleaned and maintained according to manufacturer's instructions and stored in lead-free containers.
- New non-lead paint should not be applied for at least 24 hours after the abatement project is completed. This will allow abatement-related dust to settle and be cleaned up. It is best to use a primer coat followed by a high-gloss paint.

- After abatement is completed, remaining debris should be collected on the floor plastic, misted, rolled up in the top layer of plastic and disposed of. HEPA vacuum (if available) all surfaces, from the ceiling to floor, then wet wash all surfaces with a phosphate or phosphate-free lead dissolving detergent. The wash water should be collected with a wet vacuum. The final layer of floor plastic should then be removed, followed with another vacuum and wash cycle, this time including the floor. Throw away used cleaning rags.
- Tile, linoleum or wood floors should be HEPA vacuumed, washed with a phosphate or phosphate-free lead dissolving detergent, and waxed or sealed.
- If appropriate, wash tools and equipment to limit the transfer of leaded dust to other areas.
- A final cleaning cycle (HEPA vacuum and then wash with a high phosphate or phosphate-free lead dissolving detergent) is recommended before occupants return to the abated area. It is also recommended that a lead dust analysis be done to ensure that the lead has been abated. New flat latex paint should not be washed with phosphate detergents since it can be damaged.
- Maintenance cleaning is especially important during the months immediately following the abatement since lead dust will continue to settle.

DISPOSAL

- Paint wastes, dust and building debris must be kept out of the reach of children. Homeowners may dispose of wastes by placing smaller debris in tightly sealed plastic bags alongside their regular trash. Larger debris should be wrapped in sheets of plastic and sealed with tape. Large dumpsters should be covered and locked. All waste must go to a permitted landfill and not be incinerated. Property owners need to verify homeowner exemptions from the Illinois Environmental Protection Agency disposal regulations if they are doing their own abatement. If you have any further questions related to disposal issues, contact —

Illinois Environmental Protection Agency

Office of Chemical Safety

2200 Churchill Road

P.O. Box 19276

Springfield, IL 62794-9276

217-785-0830

TTY (hearing impaired use only)

217-782-9143

FOR MORE INFORMATION, CONTACT

Illinois Department of Public Health

Division of Environmental Health

525 W. Jefferson St.

Springfield, IL 62761

217-782-3517

TTY (hearing impaired use only)

800-547-0466

Printed by Authority of the State of Illinois

IOCI 12-90

