



CHAPTER 6

SETUP

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CAUTION

**LEAD
HAZARD**

**KEEP
OUT!**

Lead Abatement for Workers

Setup

Learning objectives

In this chapter you will learn

- how to keep lead out of the air
- how to protect yourself from lead while you work
- how to clean the work room
- how to set up the work room
- how to set up a decontamination area
- how to use the decontamination area

Skit: Starting a new job

Juan and Ed are getting ready to start on an abatement job in one of the houses in their neighborhood.

Juan: We need to replace this window here. Let's get into our suits and masks and start laying out the poly.

Ed: I don't need a suit and respirator. It's too hot in here.

Juan: But there's lead-based paint in this room. You need to protect yourself from the dust.

Ed: All the lead-based paint is on the woodwork. We're not going to disturb it. A respirator and a suit are just going to slow me down in this heat.

Juan: I know it's really hot in here, but you need to protect yourself so you don't get lead poisoned.

Ed: I don't want to get in trouble for working too slowly. This is the first work I've had in three months. It's hot in here.

Discussion questions

1. Do you agree or disagree with the following? Why or why not?

___ Ed and Juan don't really need to wear a suit and respirator if they are just setting up.

___ It's none of Juan's business if Ed doesn't want to wear a suit and respirator.

___ The foreman should install a fan or provide PAPRs to help keep the workers cool during setup.

___ It would be better for Ed to work without a respirator than to risk losing his job.

___ If Ed explained things to the foreman, Ed wouldn't get in trouble with him.

2. Why is Ed in such a hurry?

3. What could Juan do to convince Ed to wear a respirator and suit?

4. What could the foreman do to make it easier for Ed to wear his respirator and suit?



Setup

Working with lead

All lead paint abatement methods create lead dust.

- Lead dust is poisonous if breathed or swallowed.
- Lead dust is made up of very small particles of lead.
- Lead dust is often too small to see.
- Lead dust is heavy. Most lead particles will fall to the floor within one hour.
- Lead dust usually falls within six feet from its source.
- Lead dust settles on whatever surface it lands on.
- You can get lead dust on your hands if you touch any surface that has lead dust.

Burning lead creates lead fumes.

- Lead fumes are very dangerous.
- Lead fumes contain many tiny lead particles.
- Lead fumes stay in the air a long time.
- Lead fumes are very easy to breathe.
- Lead fumes easily go through a dust mask.

**Lead dust is
poisonous when
you breathe or
swallow it.**

**Lead fumes are
very dangerous.
They are very
easy to breathe.**

Rules for lead work

The following steps will keep lead from spreading outside of the work area. It will also make final cleanup of the work area much easier.

1. **Keep dust levels down**
2. **Contain the work area**
3. **Follow good hygiene practices**
4. **Use personal protective gear and clothing**
5. **Clean up**

Each of these steps will be discussed in the remainder of this chapter. Some of these steps will also be included in hands-on activities during this class.

1. Keep dust levels down

The purpose of lead abatement is to reduce a hazard. But, during the abatement you will stir up and even create new lead dust. **It is very important to keep lead dust levels down.** According to OSHA your employer must use methods and tools which create the least amount of lead dust. This program must be in writing and is called a compliance program. As a worker, you can control lead dust levels by

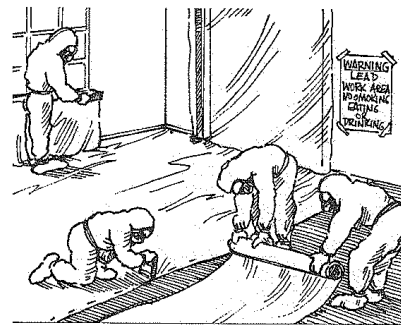
- avoiding methods that create a lot of dust and waste
- using a HEPA vacuum
- using wet methods
- cleaning up as you work
- never dry sweeping

2. Contain the work area

The OSHA Lead in Construction standard says that the work area must be separated from the non-work area. HUD says the work area must be sealed off. The work area can be contained with sheets of 6-mil polyethylene, called "poly."

Containing the work area

- protects non-lead-based painted surfaces from lead dust
- keeps lead dust from spreading outside the work area
- keeps everyone but workers away from the lead
- makes cleanup easier



It is important to look for rips in the poly every day before you begin work. Repair any rips with duct tape as soon as you see them.

Contain the work area with poly.

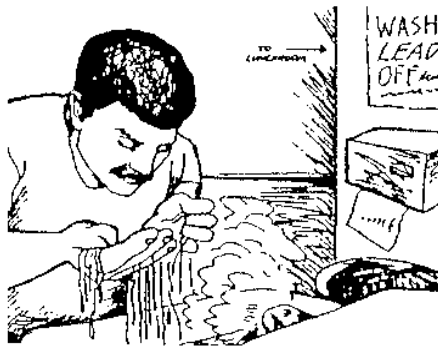
Setup

3. Use personal protective gear and clothing

Your supervisor or employer is required to tell you what equipment you need to use to protect yourself from hazards on the job site. Sometimes you will have to wear a respirator and protective clothing; sometimes you will need protective eye gear, too. What protective gear you need to wear is determined by the job you are doing and the air levels of lead to which you are exposed. Always take off your disposable coveralls and booties whenever you leave the work area. Throw them away in the container labelled "LEAD CONTAMINATED WASTE" at the end of each workday. **Do not take lead dust home on work clothes.**

4. Wash up, shower, change

Wash your hands and face each time you leave the work area. Lead dust will get on you while you work. Washing up each time you leave the work area prevents you from getting lead dust in your mouth. Washing prevents you from poisoning yourself. Never eat, drink, smoke or put on makeup in the work area.



Don't take lead dust home! When your exposure to lead is above $50 \mu\text{g}/\text{m}^3$, your employer is required to provide showers whenever feasible. When showers are available, take a shower at the end of the work day. Do not wear contaminated work clothes or shoes home.

5. Cleanup

Cleanup is very important. It prevents future exposures to lead. It protects you while you work. It keeps harmful lead dust levels down. It prevents you from spreading lead dust outside the work area. Good cleanup is required for the abatement job to pass the final clearance inspection.

Washing up prevents you from poisoning yourself.

Do not wear contaminated work clothes or shoes home.

Setup

A good setup is very important on an abatement job. There are many different parts of the setup job. You have to turn off and seal off the ventilation system. You have to clean and protect the room. You may have to bring in extension cords. A good setup makes the rest of your job much easier. It also prevents many safety problems. The exact type of setup that you do will depend on your job. Your supervisor or employer will tell you what setup is needed for each job area.

It is important to think about how to set up without creating a bigger lead dust hazard. Identify the contaminated areas. Identify where the shower or wash area will be set up and **how you will move in and out of the contaminated area**. Before you do any work, find out if and when you will need to put on a suit and respirator. Check your state regulations for work area preparation.

Setup check list

- Put up warning signs
- Identify work site safety hazards
- Clean and remove anything you can move
- Shut off and seal off ventilation system
- Provide airflow for workers
- Do necessary repair work
- Shut off and lock out electricity
- Set up the decontamination area
- Clean, cover, and seal everything left in the work area
- Put up critical barriers
- Mop and seal the floor
- Bring in equipment and tools
- Seal off the work site
- Separate "dirty work" area from the rest of the work area
- Set up locked storage space for waste
- Secure the work site

Setup

CAUTION

**LEAD
HAZARD**
KEEP
OUT!

Put up warning signs

Only the people working on the lead-based paint abatement job should enter the job site. People who live in homes where work is done should pack up their belongings and stay somewhere else until the abatement job passes the final clearance inspection. Even on jobs where interim controls are being used, occupants should be out of the house during work.

The building owner needs to warn everyone in advance that lead work will be done. Warning signs need to be put up at the exits and entrances of the area to be abated. Many state and local governments say you must post warning signs. Make sure you check your state and local laws.

Some states say the contractor performing the abatement must put up warning signs on the doors leading to the work area. They must say:

CAUTION

**LEAD
HAZARD**

KEEP
OUT!!

Only the people working on the lead-based paint abatement should enter the job site.

**WARNING
LEAD WORK AREA
POISON
NO SMOKING, EATING,
DRINKING**

Warning signs let everyone know there is a lead hazard.

These signs prevent anyone from wandering onto the work site. The signs tell everyone there is a lead hazard. The OSHA lead standard says these signs must be posted if you are working above the PEL. Warning signs should be written in the language of the occupants and the workers.

Identify safety hazards and do repair work before you start the abatement.

Identify work site safety hazards

It is important to identify work site safety hazards before starting the job. You and your co-workers need to map all the safety hazards on the job site. You will look for problems like

- exposed electrical wires and switches
- water damage
- water leaks
- collapsed or damaged ceilings, walls, floors, stairs
- any other structural damage

You will need to put up warning signs that say "DANGER" until you repair the problems.

Clean and remove anything you can move

Clean and move anything you can out of the room. Large appliances such as stoves, refrigerators, washers, and dryers may be left. But gas stoves and refrigerators must be disconnected. You will move

- chairs
- desks
- computers
- bookcases
- office supplies
- machines
- paintings
- cooking pans
- books
- lamps
- tables
- and so on

Clean everything off with rags and an all-purpose cleaner or a cleaner made just for lead cleanup. Immediately rinse off the cleaner with clear water. Read the manufacturer's instructions and check for surfaces on which the cleaner should not be used. If you can't use the cleaner because it may damage the surface of the item, use a tack cloth instead. Put the used rags in 6-mil poly bags and label the bags "LEAD CONTAMINATED." Dispose of them with other waste. The wash water must be stored in noncorrosive containers. It may be hazardous waste. In some states it is illegal to pour wash water down the drain.

All cloth items must be removed and cleaned. These include clothes, curtains, carpets, and upholstered furniture. (This may not be part of the lead-based paint abatement job; it may be the owner's or tenant's responsibility.) Removing carpet kicks up a lot of dust. You might need to wear protective gear, including respirators and disposable suits.

Rugs and fabric on furniture should be cleaned. It is very difficult to clean cloth and carpets. If they cannot be cleaned, they may need to be removed. Your supervisor or employer should warn the owner about the things you cannot clean.

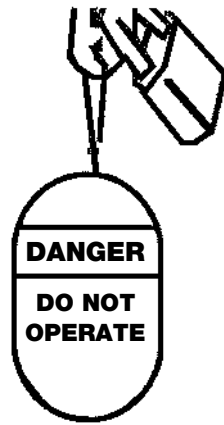
Do not throw anything away without the owner's permission.

Setup

If the owner agrees to throw contaminated items away, wrap them in two layers of 6-mil poly. Seal them up with duct tape. Label the items "LEAD-CONTAMINATED WASTE." Dispose of them with other abatement waste. (See Chapter 8 on Cleanup and Disposal.)

Shut off and seal off ventilation system

The ventilation air system carries air through the building. It can carry lead dust through the building. Lead dust goes where air goes. The ventilation system for the work area must be shut off at the electrical box. Lock the box and label it with a tag that says



The ventilation system is often called the HVAC system. HVAC stands for heating, ventilating, and air conditioning. Cover and seal the air vents with poly and duct tape.

Since the heat is turned off, in cold weather it is necessary to bring in other heat sources. Also be sure to protect water pipes and fixtures from freezing. If necessary, drain the pipes and wrap the water entrance from the street with electrical tape.

Provide ventilation (airflow) for workers

There are times when extra ventilation is necessary. Your employer might use a negative air machine to both ventilate the work area and clean the air. A negative air machine is like an exhaust fan with a HEPA filter. When you use a negative air machine, there must be an opening for fresh air to come in. This is called "make up air." The OSHA lead standard says you must have extra ventilation if you are working above the PEL.

Do necessary repair work

Some of the structural problems you identified at the crew's pre-job meeting have to be fixed. Collapsed stairways, ceilings, and floors can make the work area too dangerous to start the job. You will have to fix these problems before you can start the abatement work.

Check for moisture damage. If you find any moisture damage, determine the source of the moisture or water damage. Fix the source problem or inform the owner of the need to have it fixed. Roof leaks, poor flashing, bad plumbing and other water leaks must be repaired. Uncorrected water leaks will cause the abatement to fail. Walls must be allowed to dry out. Moisture in a wall can cause abatement to fail.

Moisture can cause abatement to fail.

Fix the problems or tell the owner of the need to repair.

Shut off the electricity and lock the box.

Use Ground Fault Circuit Interrupters to protect against electric shock.

Any damaged plaster will need repair if it is going to be abated. Otherwise, the method will fail. Remember to contain the area before you do this repair work.

You also need to make sure the water system is working. You will need on-site running water to wash up. You will need water for some abatement methods and for cleanup procedures. If the water service is shut off, you will have to bring water to the site.

Shut off and lockout the electrical system

Lead abatement jobs use water. This is an electrical hazard. Water can leak into an electrical outlet and kill you. For small residential jobs, you can cut off the electricity at the fuse or breaker box for the rooms that you are working on.

For large jobs, the electrical system should be shut off at the electrical box. Lock the box and label it with a tag that says

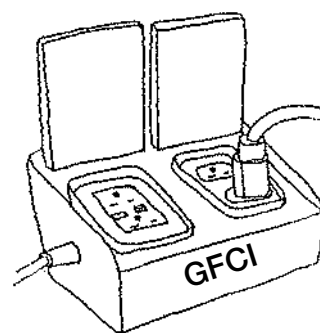
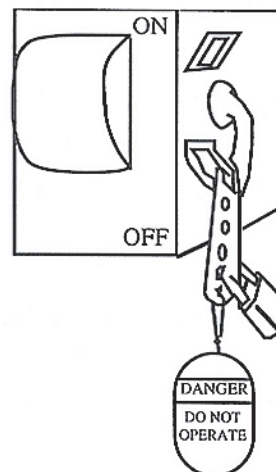
"DANGER—DO NOT OPERATE."

Turning off wall switches is not enough. Someone who does not know about lead abatement work could electrocute you by mistake.

Machines also have to be shut off. A machine with moving parts could hurt someone. It has to be turned off and locked so that people can work safely around it.

Ventilation machines, safety lights, HEPA vacuums, and hand tools all need power. Bring in extension cords for all the equipment. Extension cords are sometimes called **temporary wiring**. Tape the cords onto the walls so that workers will not trip on them. Do not hang cords with metal wire. This could cause a shock.

Cords should be hooked up to sensitive switches. These are called **Ground Fault Circuit Interrupters (GFCIs)**.



Setup

Set up the decontamination area (decon)

You go into and out of the work area through a special area. It is called the "decontamination unit" or "decon." This is where you decontaminate or get clean.

Your employer needs to set up a decon. Set up the decon in a clean area. The kind of decon you use depends on the size of the job. Some contractors build their own decons. Some use hard plastic decons. Others use decon trailers that go outside the building.

For a large-scale job, the decon may be separate rooms. These rooms should be lined with two layers of poly (hung with duct tape) and have poly flaps between them. The decon should be sealed to the work room. For small-scale work, like single unit abatement or interim control, you may not need or be able to construct a full decon. You employer is still required to provide an area to decontaminate, a wash area, and a clean changing area that are separate from the work area.

The decon has three rooms. They have to be in this order (starting from the work room)

DIRTY AREA—WASH AREA—CLEAN AREA

1. Dirty area

The dirty area must have a container to put your dirty protective clothing and used respirator filters in. This container has to have a lid that closes. The container should be labeled.

2. Wash area

The wash area must have an eye wash station, running warm water, clean towels, and soap. When possible there should be a shower. Your employer must also provide on-site toilets.

3. Clean area

The clean area must have a clean place to store your street clothes and respirator. Your street clothes should never be in contact with your dirty work clothes.

Entering the work area

Before you begin to work, you should change into your protective work clothes and shoe covers in the clean area. Store your street clothes in the clean area. Inspect, put on, and fit check your respirator. Put your hood over your respirator straps and secure with duct tape. Walk through the wash area into the equipment or dirty room. Take whatever equipment you need and go into the work area.

Exiting the work area

Every time you leave the work area, **you must exit through the decon.** Before stepping into the decon, HEPA vacuum the protective suit that you are wearing. Remove your booties and leave them in the work area. Then enter the **dirty area** of the decon. Take off your protective clothing by rolling the inside out. At the end of the day, you need to put your contaminated protective clothing in the labeled laundry container. Your

Enter and exit the work area through the decon.

Set up the decon in a clean area.

The decon area has a dirty room, shower, and clean change room.

CAUTION

**LEAD
HAZARD**
KEEP
OUT!

Lead Abatement for Workers

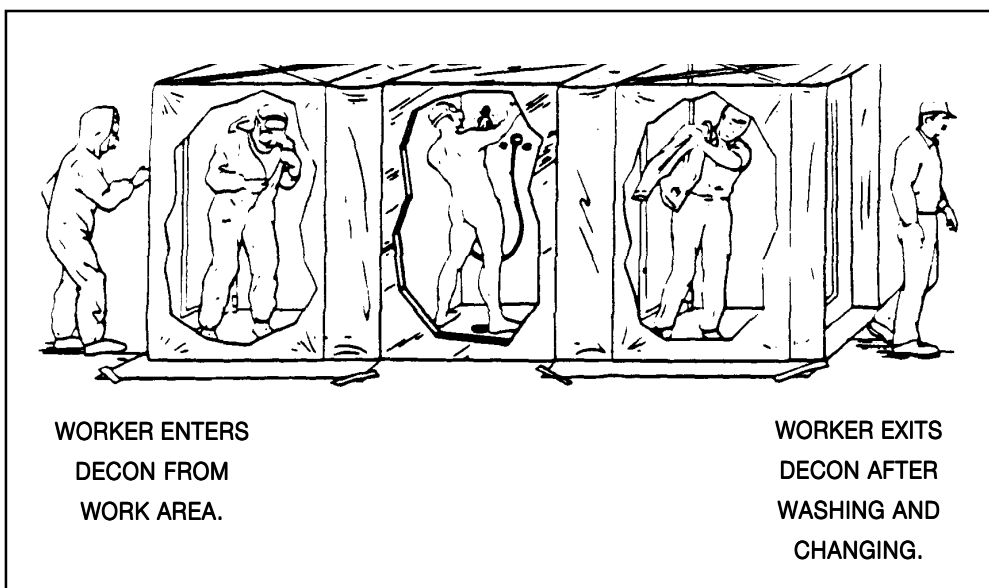
Everyone must enter and exit the work area through the decon.

employer must give you clean protective clothing either every day or once a week, depending on the levels of lead in the air.

Move into the **wash area**. Wash your face with your respirator on. Remove your respirator and wash your hands and face.

Clean your respirator. When you leave at the end of the day, you need to shower and wash your hair as well as wash your hands and face. Don't take lead out of the work area on your body. If showers are not available, shower and wash your hair as soon as you get home.

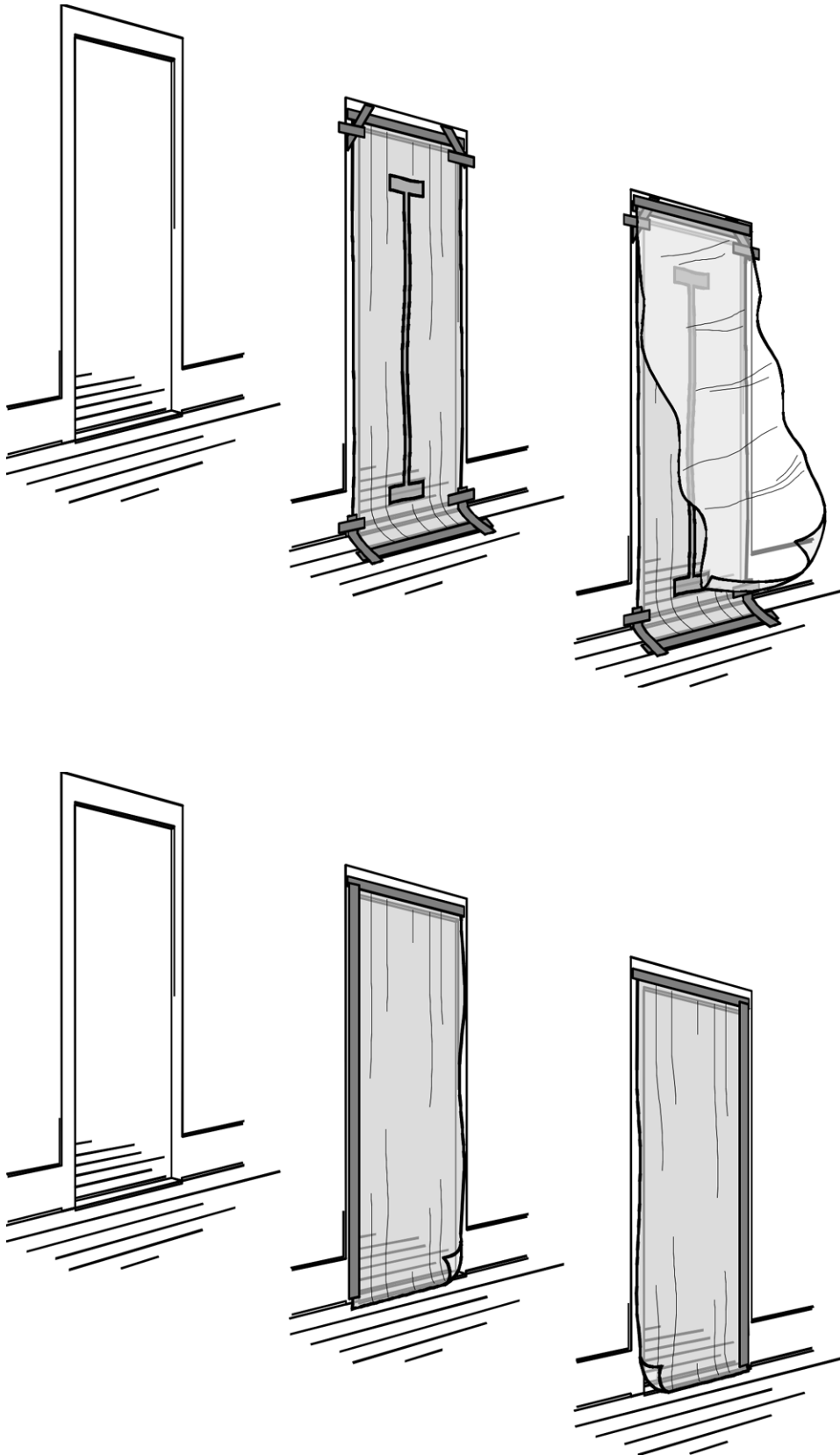
Move into the **clean area** with your clean respirator. Put on your clean clothes and shoes. Never wear contaminated work clothes home or bring them home to wash. They are contaminated with lead. If you take your work clothes home, you could expose yourself and your family to lead.



On small jobs, the doorway to the work area may be covered with overlapped poly "flap" doorways. These doorways separate the dirty area from the rest of the house or building. (See Figure 1 on the next page for two examples of these door flaps.) Check often to make sure the flaps are still stuck to the door frame.

Setup

FIGURE 1. EXAMPLES OF DOOR FLAPS WHICH SEAL OFF THE WORK AREA FROM THE REST OF THE DWELLING.



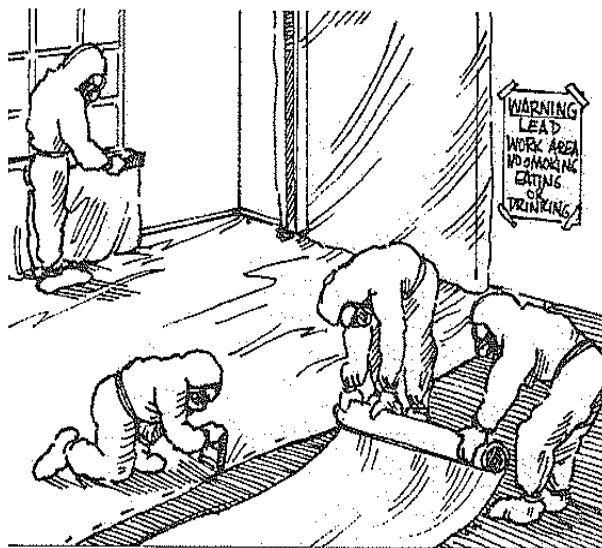
Clean and seal everything left in the work area.

Repair tears in poly as you work!

Cover floors with two layers of 6-mil poly sheeting.

Clean, cover, and seal everything left in the room

HEPA-vacuum and wipe off with a damp rag anything that you cannot remove (like a refrigerator, oven, piano, etc.). Wet mop all surfaces. Wait until the surfaces dry. Then cover and seal them with 6-mil poly and duct tape. This seal may not be broken until the final inspection. Remember to duct tape the poly to the floor.



Put up critical barriers

Duct tape poly on air vents, heat ducts, windows, and any other openings. This helps prevent lead dust from escaping the work area.

Mop and seal the floor

Wet-mop the floor, particularly where the floor meets each wall. Let it dry. Cover the floor with 6-mil poly, taping it around the outside edges with duct tape. Staple the corners. When the surfaces are dry, cover the first sheet of poly with a second sheet of poly where demolition or removal will create high dust levels. Tack this layer down with small pieces of duct tape so the second layer can be taken up without pulling up the first layer.

It's important to look for tears in the poly every day before you begin working. **Repair any rips as soon as you notice them.**

Bring in equipment and tools

Be sure that all the tools you need are in the workroom **before** abatement begins. Make sure you bring all the tools and cleaning equipment that you will need for abatement. You should bring in cleaning equipment, negative air machines (if required), scaffolding, and ladders before the decon area is built and before the area is sealed.

Setup

Seal off the work site (from the rest of the building)

If you're only abating lead-based paint from **one room or one part of a building** and another part of the building is occupied, **seal off the work area from the rest of the building**. The barrier must prevent people from passing through accidentally. Examples of this kind of barrier are a locked door or plywood nailed to a frame. The edges must be sealed on all sides with duct tape to make them dust tight. **This seal may not be broken until the work is complete in this area, the area is cleaned, and the area passes final clearance.**

Workers should enter and exit from the work area through a door. If this is not possible (for example, the work area is more than three floors up), a full decon system must be used between the work area and the rest of the occupied building.

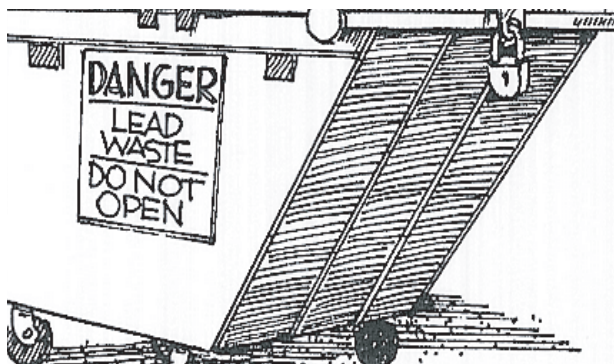
Separate "dirty work" area from rest of work area

Demolition, chemical stripping, and any other work that will generate a lot of lead dust or waste is called "**dirty work**." It is a good idea to separate "dirty work" area from the rest of the work area. Doing so helps control the transfer of dust.

- Put up two layers of 6-mil poly over the dirty area exit (air lock)
- Seal off ventilation registers (vents)
- (If possible) do not remove debris through other areas
- Avoid tracking dust from the dirty area when you move to other parts of the work area.

Set up a locked storage space for waste

Use a locked dumpster or an area that can be locked. The waste storage area must not be accessible to children or animals. Put up a warning sign that says: "DANGER! LEAD WASTE." If you use a rented dumpster, be sure the rental company knows you will be storing lead waste in it. Lay out a path of poly to the storage space. Do not track lead dust or chips from the work area to the storage area.



Store waste in a locked storage area.

Secure the work site

Secure the building at the end of each work day. This prevents vandalism and loss of property. It also keeps people from entering the contaminated area. Take particular care to lock doors and windows.

Setup**Setup for outside work****Checklist for outside setup**

- ___ Put up warning signs
- ___ Rope off the area
- ___ Put down the poly

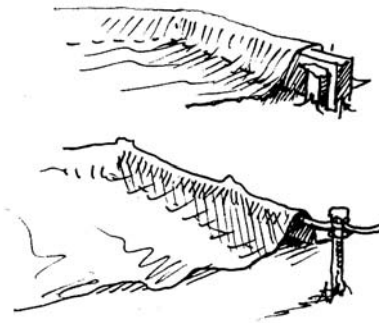
Put up temporary fencing or barrier tape at a 20-foot perimeter around the surfaces on which you will be working (or less if distance to next building or sidewalk is less than 20 feet). Put up warning signs on the building and at the same distance from the working surfaces as you put the barrier tape or fencing.

Put 6-mil poly on the ground and seal it to the wall with duct tape or wood trim and masonry nails. There should be no gaps between poly and the building. You need to extend 10 feet of poly in every direction from the surface on which you are working. A disposable tarp may be laid loosely over plants. Put weights around the edge of the tarp to keep it down. Keep all windows within 20 feet of the working surfaces closed, including windows of houses or buildings nearby.

If the outside work includes window treatment or replacement, then one layer of poly should be placed on the ground and extend at least five feet beyond the perimeter of the window being treated/replaced. Two layers of poly should be taped to the *interior* wall around the window(s) to prevent dust and debris from getting inside the house.

Good setup will prevent soil from getting contaminated. When water is used to remove the lead-based paint, you need to collect **all** of the water. You can use 2 x 4s to build drains. Turn up the edge of the poly and attach the boards. Water must be contained and disposed of properly.

Do not do outside abatement work if wind speeds are more than 20 miles per hour. If it looks like it is going to rain, work must stop and cleanup must be done *before* the rain begins. At the end of each day, wrap up the poly, seal it with duct tape, and store it with other waste.



Put up warning signs around the perimeter of the exterior work area.

CAUTION

**LEAD
HAZARD**
KEEP
OUT!

Lead tracking

When you walk on lead dust it can stick to your shoes or boots. It then falls in another area. This is called "**lead tracking**." Set up a path of poly to prevent lead tracking. Areas of heavy traffic should be covered with a layer of plywood.

Tracking lead dust is a big problem on lead abatement jobs. Lead dust can be tracked on your shoes from the work to outside. Sometimes lead dust from the outside soil is tracked into the work area. Lead dust from a porch or nonwork area can get tracked into a clean area. When this happens, the whole area must be cleaned again.



**Don't track lead
dust or debris
out of the work
area!**

Setup

Setup for interim controls

Anytime you disturb lead-based painted surfaces you will create lead dust. Even small jobs require appropriate set up. When performing an interim control or a maintenance repair activity, it is possible to create lead dust.

Setup checklist for interim controls

- Put up warning signs and mark off work area with tape. Keep people out of the work area
- Wear protective gear, as appropriate
- Clean and remove nearby objects. Send rugs out to be cleaned, after labeling
- Clean and seal what remains in the area
- Turn off HVAC (or turn off HVAC to that room)
- Seal air vents and other openings
- Set up dirty area, wash area, and clean area
- Place layers of poly at least six feet in every direction from the area where you will be working
- Bring all work tools and equipment into the work area
- Seal off the work site from the rest of the building

Even small jobs require appropriate set up.

Place poly at least six feet in every direction from the area where you will be working.

The following activities are **not** interim controls

- stripping
- demolition
- paint removal (scraping, sanding, etc.)
- component replacement

You must use a full abatement setup when you do any of them.

Key facts for Chapter 6

- Good setup makes cleaning up at the end of the job easier
- When working with lead, you must
 - keep dust levels down
 - seal off the work area
 - repair tears in poly as you work
 - wear disposable suits and booties while in the work area
 - wash your hands and face each time you leave the work area
 - shower at the end of each shift
 - clean up as you work and at the end of each shift
 - secure the work site
- To set up you will use the following materials
 - disposable coveralls and booties
 - poly and duct tape
 - HEPA vacuum
 - all-purpose cleaner or a cleaner made just for lead, buckets, rags, and sponges
- Before doing the abatement
 1. Clean and remove everything that you can from the work area (such as furniture, appliances, etc.)
 2. Clean and cover anything that you cannot remove with poly.
 3. Remove all carpeting.
 4. Cover all floors with poly.
 5. If you're only removing paint from one room or one part of a building, then seal off the work area from the rest of the building with poly.
- When doing outside abatement, keep lead from getting into the soil
 - Good setup can prevent lead contamination
- During interim controls, setup is important to contain any lead dust that gets created

Setup

For more information

These publications or resources have more information on the topics covered in this chapter. Your instructor has a copy of the publications marked with a star (*). You can order your own copy by calling 1-800-424-LEAD.

EPA, *Reducing Lead Hazards When Remodeling Your Home* (April 1994).

EPA, HUD, and CDC, *Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work* (June 1999).

* EPA, HUD, and CPSC, *Protect Your Family From Lead in Your Home* (June 2003).

* HUD, *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (June 1995).

NIBS, *Lead-Based Paint: Operations & Maintenance Work Practices Manual for Homes and Buildings* (May 1995).

National Lead Information Center Hotline: 1-800-424-LEAD.

CAUTION

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Lead Abatement for Workers
