EPA Model Worker Course

RESIDENTIAL LEAD-BASED PAINT ABATEMENT

Instructor's Manual

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LEAD ABATEMENT FOR WORKERS

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Instructor manual

This manual has information which is not contained in the student manual. The introductory chapter *Using the Curriculum* contains valuable information about the manuals, your job as an instructor, and steps to follow when planning a training, as well as several sample documents on which you can base your own course schedule, student evaluation, and hands-on skills assessments. Chapters 1-9 correspond to those chapters in the student manual.

At the beginning of each chapter in the Instructor's Manual, you will find:

a. objectives of the chapter

b. topics covered

c. different training methods and suggested time needed for each.

At the end of each chapter, you will find references. These same references are listed at the end of the chapter in the student manual. Please look through these reference lists. You should try to have a copy of the reference documents marked with a star (*) in the student manual for the students to see.

The course is designed to be two days long with eight hours of instruction per day. This is a total of 16 hours of instruction that includes eight hours of hands-on instruction. The course outline can be found on page 27 of this section. This course is designed to meet the requirements of 40 CFR Part 745—Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities, a federal regulation under section 402 of the Toxic Substance Control Act (TSCA). ***It is not designed to meet the training requirements established under OSHA's Interim Final: Lead in Construction standard (29 CFR 1926.62). Therefore, if the trainees desire both state/EPA and OSHA training for lead, additional training time would have to be added, preferably before conducting the training included in this curriculum.***

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Student manual

The student manual is designed to provide the information a worker needs to perform safe lead abatement. The student manual is for the participant to keep. The participants will use the student manual throughout the course. Once the course is completed the student manual can be used by the participant as a reference manual.

Your job as a lead abatement instructor

Your job is an important one. You are training workers to do lead abatement work in residences in such a way that they do not risk their health or the health of the occupants. When the worker uses safe work practices, lead poisoning can be prevented. Unsafe work practices can cause lead poisoning. A knowledgeable worker can help prevent young children from getting poisoned by lead.

This training course is designed to make your job as easy as possible. Whenever possible, we give you options, so you can choose the training methods and exercises that work best for you and the workers that you will be training.

This course is designed primarily for lead-based paint abatement in residential structures. It does not include information on the abatement of lead-based paint on other buildings and steel structures. It is anticipated that the EPA will be developing a curriculum focused solely on steel structure abatement in the future. Be aware that the hazards may be even greater for abatement workers in those settings.

We do not assume that you are a "lead expert," but that you have had some experience concerning lead-based paint issues and conducting trainings. If there are topics that are too technical for you to handle at first, you can always bring in an outside "expert" to help you. For some of the sections, your state may require instruction by a medical and/or occupational health professional or a construction expert. You should contact your state program to obtain a copy of your state's requirements.

Remember that each training is unique and different. You always want to try to improve your training. Make it fit each group of workers you are training. Make sure you update your training materials as requirements, regulations, or interpretations change and evolve.

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How to start

Your first task is to become very familiar with all of the information that is part of the manual. Make a note of any questions you have as you read over the manual.

You can use the references at the end of each chapter to get more information on different topics. You can obtain many of these references for free by calling the National Lead Information Center at 1-800-424-LEAD. You can also contact government agencies and private organizations for more information. There is a list of these groups in the back of the student manual in the Resources Section.

Training adults

It is vital for you to remember that many of the people you are training have not been in a classroom for many years. They have learned a lot from their jobs by experience and by doing the job—not from books. To be successful in training adults, it is important to:

a. Respect their lifetime of work and experience by tapping into their expertise.

b. Make the training active, not passive, by involving participants in their own learning. Adults need to be active in their learning process. We learn more and remember more when we are hearing, seeing, and doing something. We may learn less and remember less if we are only hearing somebody speak at us.

c. Make the training practical. You can do this in a number of ways.

   1. Use as many hands-on activities as possible. Adults learn on the job by being shown how to do the task and then by doing it themselves with supervision. Hands-on activities often can be done in a classroom setting if the space is available and the proper precautions are taken. This course depends on the use of hands-on activities for many of its sections.

   2. Include field sites to show the real work setting. Even though you won't be able to get on site after the lead abatement work has started, it is still very helpful to show a site before any work begins and even during preparation (e.g., laying of plastic, building of containment, etc.). Make sure you visit the site before bringing the class. Make sure the site is safe for a walkthrough.

      Old buildings that are not being abated can also be used to point out which surfaces need abatement and how this abatement may be accomplished.

d. Have clear objectives for the course as a whole and for each topic. Make sure you communicate these objectives to participants so that they know what information they are expected to learn. There are objectives laid out in the beginning of each chapter to aid you.

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Learner-centered training

For this course, the emphasis is on training methods that are not focused on you as the instructor, but on the learners. This is called learner-centered training. This course design does not allow you to stand in front of the class for hours and lecture (although a short lecture used at times can be very effective). The training methods suggested throughout the course encourage the active participation of the learners. This transfers learning not only from you to the class, but also from the class to you and each other.

So what does this mean for you? It may mean trying something new. You may be used to lecturing. This may be what you know how to do best. Lecturing is not necessarily the best way to learn. You can guide the participants in the learning process. Try these new approaches out. Add to your own tool box of training methods. It will help you in your own development as a trainer. You will learn more from the participants and may even have more fun.

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Steps in planning a training

The following steps will help you make sure you have planned for your training and that you have all the materials you need:

1. Who will you train?
2. Where will you train?
3. Who will train with you?
4. What training methods will you use?
5. What training materials and equipment will you need?
6. How will you evaluate your training?

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1. Who will you train?

What is their work experience? What are their reading and writing skills? Are they able to read English?

When you plan a training, the more you know about the students ahead of time, the better. It will help you tailor the course to their needs. For example, the course will look different if you are training workers who previously did asbestos abatement than if they are young people being trained for their first job. For the first group, you will want to highlight the differences between lead and asbestos abatement work. You can then review the similarities. For the second group, you should spend more time on health and safety issues and worker protection.

For these reasons, you may want to obtain background information on the participants ahead of time. One way to do this is to require attendees to complete a registration form that includes questions about their work experience. The responses may assist you in identifying the reading level of the participant. It would be helpful to have a question on the registration sheet to determine the highest grade level that the participant has completed.

You may not always be able to preregister the participant. You will need to assess their reading skills and work experience on the first day. You can observe how the participants complete the registration form on the first day of the course. A participant who cannot read English will have difficulty completing the registration form. You may note they will seek help from a fellow participant. It is best to speak privately with a participant who has difficulty in reading English. When a participant is not able to read, you should recommend that they sit close to the front of the room. Someone who cannot read often needs more visual aides. They need to be able to hear everything that is said. It is good to recommend that they have a friend, family member, or fellow classmate read the key facts and pull quotes to them every day after class.

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You can be a skilled worker even if you cannot read. Not being able to read is a handicap. There are many skilled workers who are unable to read. The exam can be read to them. (Be sure to check with your state regulators to find out if they allow verbal exams.) You can test the skills they learn in the class in performance evaluations.

On the first day of class, you can ask for anyone who has difficulty reading to let you know. You need to let the class know that you will provide a reader for the exams if anyone is unable to read.

This curriculum was designed to address the learning needs of those who can read English at a 5th to 7th grade reading level. The lower the reading level, the more important visual aides and participation becomes.

This course needs to be taught in the language of the participant. This course is for participants who can speak English. The student manual has been translated into Spanish. Courses for Spanish speaking participants must be taught in Spanish.

Class size

We recommend that the maximum class size be no more than 24 participants. Limiting the class size allows for more interaction. (The state/Indian tribe in which this course is approved may have limits on class size. Check with the agency which approves training programs.)

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2. Where will you train?

How many trainees will you have in the class? Does the location have enough room for breaking the class into small groups and for hands-on activities?

The more trainees you have, the more room you will need. It is vital that the training location be comfortable. A poorly ventilated room or cramped location can make it hard for people to learn. Some of the items you will need to be concerned about are:

___ Location: Are there places to purchase lunch? Who manages the facility? Who do you call if there are problems?

___ Space: Does your facility have space for hands-on activities? You need space for setting up a decontamination chamber, stations for abatement methods, etc.

___ Chairs and tables: Are there enough chairs and writing surfaces for the number of trainees? Set up the tables so that all students can see and interact with each other. This is best done with a U-shaped arrangement of tables and chairs.

___ Temperature: Is the room kept at a comfortable temperature? Before you begin teaching, find out how to control the temperature in the room.

___ Noise: Is the room quiet? If you can, try to keep any outside noise to a minimum. Test the room beforehand to make sure you can be heard. In some situations, you may need to use a microphone.

___ Lighting: Can you alter the lighting so that people can take notes as they view slides? Find out ahead of time how to control the lighting. If possible, find a classroom with lights that can be dimmed, or with separate perimeter lighting.

___ Fire exits: Make sure you know ahead of time the location of fire exits in case of a fire. Make sure the building has a fire escape plan.

___ Emergency phone numbers: Find out ahead of time the emergency phone numbers for fire and health emergencies for the class location. Post these numbers in the class so trainees are aware of who to call in case of an emergency.

Make sure the participants are comfortable. Inform participants of the location of bathrooms, telephones, etc. State when breaks are scheduled. It is usually helpful to inform participants that they may stand if sitting is no longer comfortable and to help themselves to any refreshments (coffee, tea, etc.) whenever they want as long as they are careful not to distract other students. It is helpful to inform the participants where they can go to get food for lunch. If there is no lunch food available, participants need to be informed before the class begins.

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3. Who will train with you?

For any training that lasts more than a day, there should be at least two trainers. There is too much work involved for just one trainer. You will find that as one of you instructs, the other trainer can prepare for the next training module. It is also helpful for the class to have more than one trainer because it provides a change in teaching style and expertise.

For the hands-on sessions, you also want to be able to break the class into small groups so everyone has a chance to practice the activities. This requires more than one trainer. We recommend that you not have more than 8 students per instructor for the hands-on activities (5 to 6 students per instructor is ideal).

Another reason for at least two trainers is team teaching. Team teaching is when two or more trainers teach a section together. Team teaching can help ensure that all items are covered since both of you are teaching together. It allows the class to get expertise from two sources. Even though it may mean you are in front of the class for more time, many trainers find that it can take some of the pressure off to know everything. The more you train with somebody, the better you will work as a team. It is important to support each other when team teaching. Refer to each other's statements and support each other's expertise.

Which sections require an outside expert will depend on your skills and expertise, the content of that section, and the requirements of your state/Indian tribe. For example, your state/Indian tribe may require a health professional to present the section on health effects and medical surveillance.

If you are bringing in outside experts, it is important to talk to them about their style of training. If possible, you should try to attend a training they present so that you can preview their style. Often experts are too technical in their presentations and you may find that they would not work well for your course. It is important that they tailor their presentation to your class. You can help them do this by providing a copy of your training materials on that topic and informing the presenter of the background of the participants (e.g., work experience and educational level). Encourage them to come early to sit through a session with the class before they present. Provide a break when their session is over so students can approach them individually.

Even if you decide to use an outside expert at first, do not underestimate your own ability to learn new information and instruct these topics. You can request that the outside expert work with you so that you can teach that section in the future.

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4. What training methods will you use?

The training methods you use are your choice. Be aware that this course is designed to include a minimum of eight hours of hands-on instruction. At the beginning of each chapter, there are options for how the material can be taught. We do, however, strongly recommend that you avoid teaching methods that are purely passive, such as lecturing and slide presentations. (Slides with scripts, however, are provided for all chapters.) The bottom line is that you should vary the methods you use and make them as active as possible.

On page 17 is a chart that outlines the strengths and limitations of the different methods. As you go down the chart, the training methods demand more active participation from the class participants. This manual provides you with the group exercises, discussion questions, and quizzes that are designed for active participation.

Possible Training Methods

Lectures

Lectures with questions asked

Audiovisual methods (slides, video, film, etc.)

Audiovisual methods with class participation

Discussion

Brainstorming

Games

Small group problem-solving

Skits

Field visits or walkarounds

Hands-on exercises

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Lectures

Lectures are the most traditional teaching method used, even though they are very passive for the class. It is very important whenever you do use lectures that you do not read from your notes or from the slides. Make sure you know the information you are going to present and that the presentation follows a clear order.

Lectures should be used to supplement the manual or to present information in a different way. If you would like to be more comfortable lecturing in front of a class, you may want to practice first. You can do this by taping yourself in private, and listening back. Another way is to have a friend or trainer listen to you and make suggestions.

Lectures with questions asked

Unless you allow people to ask you questions, they will not have a chance to clarify any points in the lecture they found confusing. The questions that are asked will also help you to improve your lecture because you will find out what interests the class and what points they need you to spend more time on. You can also pose questions to draw out participants' knowledge and cite examples to illustrate your point.

Once you become very comfortable with this format, you can be more flexible and encourage people to interrupt you with questions at any time.

You may want to tell the class at the beginning that you will not know the answer to every question they ask, but you will find the answer for them. If the question will be covered by someone else with a different area of expertise, you can ask the participants to write the question down. Then ask participants to ask the designated trainer. You can also write the question on a flipchart and keep it posted until an answer is given.

Audiovisual (AV) materials

AV materials can be a useful tool for you in your lectures. For example, slides or overheads can help you structure your lecture. You can use them to prompt your next comment. Slides are provided with each section. Again, it is important to allow the class to ask you questions.

While videos are being used more and more in training, it is strongly recommended that you use a video only to reinforce information given in the class. Do not assume that the class participants have learned the information in the video just because they watched it.

Audiovisual methods with class participation

You can make the learning process more active using slides or a video. The script notes for each chapter's slide presentations include possible questions that you can use to lead the discussion as you review the slides.

There are ways to actively involve the class in watching a video as well. Before beginning the video, have participants read the questions. Let participants know that they need to find the answers on the video. You can break the video into segments and have participants answer questions or initiate a discussion. You may also want to ask questions at the end of the video or follow it with a discussion. The manual provides possible questions to use.

Discussion

The purpose of discussions is to encourage the participants to use the information they have been learning. It avoids you giving the answers and challenges the class to come up with their own answers.

This manual supplies you with discussion questions. There may not be one single correct answer to many of these questions. Be ready for answers that may be new to you.

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Your Role: Facilitator

Your role is facilitator, which means you must encourage the class to think, participate and learn from each other. During a discussion, it is not your job to just give the answers to the questions. It is your job to facilitate the class in finding the right answers.

a. Students need enough time (at least 10 minutes) to read the questions and discuss some possible answers. This time will give them a chance to think on their own.

b. The best way to ensure class participation is to create an atmosphere where trainees feel safe to say what they think without being criticized or ridiculed. You need to set ground rules at the beginning of the course. Inform participants that all questions are "good" questions and that everyone in the class will be treated with respect. During discussions, you should accept all student answers, even if you disagree with them. You can then open it up for general discussion.

c. Rather than you making comments right away when answers are provided, give the class a chance to make comments. ("Does everyone agree with this answer?") You will find trainees will learn from each other. Wrong answers need to be corrected carefully. Do not embarrass a participant who gives a wrong answer. Encourage them to find the correct answer. Then make sure the correct answer is clearly understood by all participants. For example, you can say: "Good try, but.." or "That's logical, but not correct...") After trainees are finished you can add any ideas that they may have missed.

Brainstorming

Brainstorming is a teaching method that draws information out of students rather than simply listing the required information. For example, rather than telling the class the hazards found on a lead abatement job, you might ask them, "Besides lead, what are some safety and health hazards that you may run into on a lead abatement job?" Write down all the hazards the class provides on a blackboard or flip chart.

Do not argue with any of the answers given, just write them down. As with a discussion, your role is facilitator—you are trying to inspire the class to think, participate and learn from each other.

When students are finished listing hazards, compare the list they generated with your own list (keep yours hidden). They will probably have given answers that are on your list and some that are not. If they left out something you planned to cover, you should point it out and list it along with their hazards. You can also help organize the answers by putting them in categories. For example, stripper can be put under a category of hazardous chemicals.

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Games

This method is useful because it allows participants to have fun as they learn. It is mainly used in this course as a way to review material, e.g., Lead Jeopardy. Some competition is good and can enhance everyone's learning. However, it is important to avoid letting the class get too competitive because some people will refrain from participating for fear of giving the wrong answers and having their team "lose." Then competition can have a negative impact on learning.

In addition, teamwork is an important component of working safely on the job. The "buddy system" is used to help people suit-up and don respirators. By emphasizing team work, you can also lessen unhealthy competition.

Small group problem-solving

This method involves breaking the class into groups of six trainees and having them solve a problem together. This manual will supply you with examples of small group exercises. Allow the small groups to work on the problem with one person in each group recording the discussion and answers. Then the class reassembles and the different notetakers report back the answers of their group, which leads to a general discussion. You can then add any points that were left out.

Skits

A number of skits are provided throughout the manual. The skits are very short but can provide lots of useful material. Not everyone is comfortable acting out the skit in front of others. Make sure you allow people to volunteer to do it. Give the "actors" a few minutes to review the skit. Make sure you have reviewed the discussion guide that follows each skit so that you are prepared to help the class analyze the skit.

Skits are particularly useful for raising social issues and providing information for how to deal with these issues. One example is the fear of losing one's job if a health and safety concern is raised. A discussion usually occurs regarding OSHA's legal protection against harassment and the limitations to this protection.

Field visits or walkarounds

If your course is longer than two days, or you can regroup people at night, you should consider a field visit to a real work setting. You must visit the site first so that you can structure the visit. Since there may be a class size of 20 or more, you must plan how you will walk everyone through the site. It is useful to develop discussion questions for your return to the classroom to ensure that participants share the information they learned on the visit.

It may not be that easy to find a site for field visits because of liability issues involved (e.g., one of the trainees gets hurt on the visit). Be prepared to deal with this concern when approaching the owner of the site. If a field trip is not an option, consider showing slides of a project you've been involved with and describing the conditions on the job site shown in each slide.

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Hands-on activities

For effective training of adults, you should include hands-on activities. This course uses a minimum of eight hours of hands-on instruction. This will require a facility that allows you to conduct hands-on activities. You will need physical space for this.

We strongly encourage the use of hands-on activities whenever possible. For example, along with lecturing about setting up a work area, have students lay down poly and attach it to the wall. If the workers have already been trained in respirators/PPE in an OSHA course, consider suiting them up for this exercise. Trainees should know firsthand how it feels to wear protective equipment and how to ensure it is working correctly.

Hands-on activities can also be used to evaluate how much the trainees have learned. Trainees demonstrate their skill in using a needle gun by actually removing paint with one. Instructors evaluate if the trainees used the equipment correctly.

We recommend an instructor-to-student ratio of no more than 1 to 8 for all hands-on activities. Check to see if your state has any requirements on the instructor-to student ratio.

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Training Methods

Methods	Strengths	Limitations
Lecture	• Easy way to present information • Speaker can share personal experience • Good for large audiences	• Experts not always good speakers • Audience more apt to be passive • Hard to gauge learning
Lecture with questions	• Involves audience during or after lecture	• Time may run out and limit questions
AV Materials (slides, video, films, etc.)	• Entertaining • Effective for large groups	• Passive, "zone-out" • Too many issues
AV Materials with class participation	• Becomes a more active method	• Takes more time
Discussion	• Pools experiences and ideas of group • Effective after a passive experience such as a video	• Hard to do with more than 15 people • A few people can dominate
Brainstorming	• Listing exercise that allows for new ideas • Encourages full participation because all ideas are recorded	• Can lack focus • Needs to be limited to 10-15 minutes
Games	• Can be very interactive • Allows for fun in the learning process	• Games that are competitive may not be fun for some
Small group problem-solving	• Allows everyone to participate • Gives a chance to apply new knowledge	• Problems may not be relevant • Needs background information
Skits	• Presents problem in a fun way • Allows people to play a different role	• People may be too self-conscious • Need time to set up before and discuss after
Field visits	• Shows a real work setting	• Can be time-consuming
Hands-on exercises	• Develops skills • Learn by doing • Easier to remember new information	• Need practice time • Groups must be small • Requires more trainers

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The training methods you choose

After reviewing the entire manual, check the next few pages to compile a list of training methods and equipment you'll need to present the course.

Below is an example of a chart you could use to help organize before the training. The chart will help you prepare for your class in two ways. First, it will help you ensure you have everything you need to teach the course. Second, it will serve as a check to make sure you are using as many active training methods as possible. If you are only using slides and lectures, you probably need to branch out and try some of the other training methods presented in this manual.

For example

Chapter	Training Methods	Equipment Needed
One	Lecture/Slides	Slide Projector Slides Extension cord
	Skit and discussion questions	In student manual, page __
	Video and discussion questions	VCR Copy questions from instructor manual, page __

On the next page is a blank form you can use. You may need to make a few copies of it to cover all the chapters.

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5. What training materials will you need?

(See next page for equipment needed for hands-on exercises)

__ chairs

__ tables (work better than individual desks for small group activities)

__ name tags

__ student manuals

__registration forms

__ course outline

__scrap paper

__extra pens and pencils

__ additional handouts

__ blackboard or white board

__ chalk or white board markers

__ chalk eraser

__ flip chart

__ flip chart stand

__ colored markers

__ slides

__ slide projector

__ slide projector bulb

__ slide changer (remote)

__ extension cord

__ overhead transparencies and transparency markers

__ overhead projector

__ overhead projector bulb

__ extension cord

__ videotape

__ VHS videotape player

__ TV monitor

__ extension cord

__ miscellaneous (add your own items!) _____

_____

_____

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What equipment will you need for hands-on activities?

These lists can be found in the hands-on sections as follows:

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6. How will you evaluate your training?

There are two main ways to evaluate your training. The first is by evaluating how much your participants learned in the course. You will want to know not only if participants know the information, but also if they can put it into practice. If everyone does poorly on an exam, it is most likely that the training didn't work, or that you have a poor exam. The same is true if no one is able to demonstrate the skill of proper cleanup of a work area.

The second method of evaluation is to get feedback from participants and fellow instructors on how the course went. The participants are your main source of information since they can tell you best what worked and what did not. If possible, evaluate your training, both during and at the end of it, so that you can improve it.

Evaluation of how much participants learned

1. The main goal of this course is to train participants to perform abatement work safely. An evaluation of the trainees' participation for each of the hands-on activities can help ensure that trainees have learned certain tasks. Guided hands-on experience provides the trainees the opportunity to learn by doing. After the trainee has had the opportunity to learn, the trainee's skills can be tested. EPA and most state/Indian tribe training and certification regulations require a skills assessment be successfully completed by each trainee in order to receive the final course certificate. The skills check list provided on pages 23-24 can be used to verify this evaluation.

2. An exam not only tests what people learned in your class but also can tell you which parts of the course need improvement. If no one answers a test question correctly, there is a problem with either that test question or how that part of the training was presented.

   Do not forget that many people feel very anxious about taking an exam. The more comfortable you can make the trainees feel, the easier it will be for them to take an exam. Remember, you are not trying to trick a student into answering a question wrong or to provide surprise questions. You can use the exam questions as a model for review questions at the end of each training day. However, it is very important not to teach the test. Achieving 100 percent passage of the students on an exam is not the goal of this training; you are trying to determine how much each student learned.

   During the initial orientation to the class, make provisions for nonreaders. Explain that if anyone can not read, has difficulty in reading or English is their second language, the course may be more difficult. Ask them to approach you the first day so that you can arrange to have a reader for the exam. Encourage them to work with a fellow student or friend who can read the pull quotes (key points from a page "pulled" into the margin for emphasis) and key facts with them each day of the course.

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While an exam is not included in this manual, there are questions you can draw from the learning objectives, pull quotes, and key fact in each chapter. The Lead Jeopardy game can also be a source of questions for an exam.

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Sample hands-on skills assessment

Name _____ Date _____

Instructions: Take this check list with you to each hands-on station that you go to. Make sure that you complete each station. Have the station instructor initial the skills you have demonstrated. Return this check list at the end of each day. This form becomes a part of your training records and must be kept by the training center.

Instructor's initials

Chemical stripper

- MSDS hazard identification _____
- Appropriate protective gear: Identified/worn _____
- Set up area _____
- Application _____
- Removal _____
- Clean up _____

Encapsulant and enclosure

- MSDS hazard identification _____
- Appropriate protective gear: Identified/worn _____
- Set up area _____
- Application of encapsulant _____
- Caulk & enclose _____
- Clean up _____

Heat gun & wet scraping

- Tool hazard identification _____
- Appropriate protective gear: Identified/worn _____
- Set up area _____
- Proper use of heat gun _____
- Proper wet scraping _____
- Clean up _____

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Final cleanup

- HEPA vacuum (vac) _____
- Wet wash _____
- Repeat HEPA vac _____

Disposal

- Debris properly wrapped or bagged _____
- Equipment cleaned _____

Worker decontamination

- Worker adequately decontaminates _____
- Worker properly disposes/stores PPE and tools _____

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Evaluation of the course

A written evaluation can be filled out by the participants at the end of each training day or at the end of the training. (See pages 28-29 for a sample evaluation.)

A verbal evaluation is a quick way to get feedback from the participants. This is when you ask the class directly what parts of the training are going well and which are not. It can be as simple as "What parts of the chapter on health effects were hard to understand?" You may want to do this after a very technical chapter, at the end of the day, and at the end of the training.

Peer evaluation is where you and the other trainers get together and discuss what went well and what parts of the training need improvement. You may observe that some teaching methods are working better than others and change the methods for the remainder of the course. In addition, you will want to discuss who is participating in the class and who is not. This can aid you in making sure all trainees are as active as possible.

Your meetings as trainers can be simple and informal. You may want to meet at the beginning of the day to review the goals for that day. You may also choose to meet after each training day and the end of the course to determine what is working and what is not.

Avoiding instructor burnout

All trainers are at risk for "burnout." This can happen for many reasons, such as:

1. you are conducting too many trainings;
2. you do not have enough people training with you;
3. you feel unable to stay up-to-date with new information on lead abatement;
4. you are not sure your training methods are successful.

Reasons #1 and #2 imply excessive demands being put on you in your role as an instructor. One possible solution is to train other people to teach with you. Even if you have to help train these new instructors, in the long run it will help avoid burnout.

Reasons #3 and #4 can be addressed if you can get additional training or professional development for yourself.

Since lead abatement work is still an evolving field, you will need additional information and training to stay up-to-date as a trainer. Laws, building materials, work practices, etc., can all change in a short time period. Your training organization will need to ensure that you stay current. You can do this by attending conferences and training and subscribing to newsletters and magazines.

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Teaching is an art; you will always want to mold and change the techniques you use in your course. Enroll in a short course on adult education techniques, often called a "train-the-trainer" course. These are the kinds of courses that can provide additional skills to instructors. In addition, it may be helpful to attend an annual refresher course on adult educational techniques.

Instructor's Manual

Lead Abatement Worker Training Course

Sample 2-day course outline: overview

Day

Chapter	Topic	Time Allotted
Day 1	Introduction/Exercise	1/2 hour
Chapter 1	Where and What Is Lead?	1 hour
Chapter 2	Health Effects	1 hour
Chapter 3	Regulations and Laws	3/4 to 1 hour
Chapter 4	Identifying & Evaluating Lead Paint Hazards	3/4 hour
	Hands-on	1 hour
Chapter 5	Controlling Lead Hazards	1 hour
Chapter 6	Setup	3/4 hour
Day 2	Review/Lead Jeopardy (opt.)	1/2 hour
Chapter 7	Abatement Methods	3/4 hour
	Hands-on	2 hours
Chapter 8	Cleanup, Disposal & Clearance	3/4 hour
Chapter 9	Soil Abatement and Exterior Dust Cleanup	1/2 hour
	Hands-on	1 hour
	Final Review/ Lead Jeopardy	1/2 hour
	Final Examination	1 hour

Note: Many of the chapters have "hands-on" activities included in the chapter (e.g., skits, small group discussion, role plays). The time spent on those activities (which will vary depending on which activities the instructor uses) should be added to the hands-on activities listed above for a total amount of time spent doing hands-on versus lecture. It is important to check with the state/Indian tribe in which the training is approved to determine how many hours of "hands-on" activities are required.

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Sample Student Evaluation Form

1. Did the training provide you with the information you need?

   ____ Yes ____ Somewhat ____No

   Comments:

2. Was the information:

   ____ Too technical ____ Just right ____Too easy (not technical enough)

   Comments:

3. Do you think the training will help you make your lead abatement work safer?

   ____ A lot ____ Some ____ A little ____ Not at all

   Comments:

4. How would you rate the instructor(s)?

   Trainer #1 ____Poor ____Fair ____Good ____Excellent

   Trainer #2 ____Poor ____Fair ____Good ____Excellent

   Trainer #3 ____Poor ____Fair ____Good ____Excellent

   Trainer #4 ____Poor ____Fair ____Good ____Excellent

   Comments:

5. Overall, how would you rate this program?

   ____ Poor ____ Fair ____ Good ____Excellent

   Comments:

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6. How could the training be improved?

7. How would you rate the course notebook/handouts?

   ____ Too technical ____ Just right ____Too easy (not technical enough)

Comments:

8. What are some other issues of lead abatement on which you would like additional training?

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Course introduction

Instructor's notes

This session is your opportunity for the class to find out about each other and to give them a preview of how the course will be taught. It is vital that you encourage participation as soon as possible so trainees do not think the course will be a lecture format. In addition, it is an opportunity for you to find out what each trainee hopes to achieve by attending the training.

On the next page is a menu of options for conducting the Introduction. It is suggested that you allow 30 minutes to cover this material.

Training methods

It is recommended that you do either A **and** B or A **and** C

A. Class business 15 minutes

B. Introductions (Option 1—Page 33) 20 minutes

C. Introductions (Option 2—Page 35) 15 minutes

Class business

1. **Certificate.** In all states/Indian tribes no one can permanently eliminate lead-based paint hazards from a residence or child-occupied facility without being certified or licensed as a lead abatement worker or supervisor. You will need to know what your state's/Indian tribe's specific requirements are and ensure that your training is approved. (If the state/Indian tribe in which the trainees work does not have an approved program for accreditation/certification of individuals, the individuals **and** companies must apply to EPA for certification.) Make sure you have copies of the relevant state or tribal certification applications available for the students.
2. **Attendance.** You should inform participants that they must attend all of the training. If anyone has a conflict they should speak to you. If they don't attend the entire class, you cannot provide them with a certificate of completion for the course.
3. **Exam.** If you are using an exam and hands-on evaluations (skills assessments), let students know that, so it will not be a surprise. You can give them sample questions throughout the course. Let them know that the exam and skills assessments are to ensure they know how to do the work and how to protect themselves, not to try to trick them. Make sure they understand what the acceptable grade is to pass this course.

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4. **Reading ability.** If anyone has trouble reading English, let them know that you can help them as long as you know they have difficulties. People will not tell you about their reading problems in front of the whole class. Make sure you provide an opportunity for them to let you know in private about their problems with reading. Ask students to approach any one of the instructors before the end of lunch time on the first day.
5. **English as a second language.** It is likely that you will have people in your class who have a language other than English as their first language. Some people speak and understand English well, but may have trouble reading in English. You will want to know this ahead of time and include questions on your registration. If Spanish is their first language, the student manual is available in Spanish.
6. **Training methods.** Inform the class that you will not be lecturing for the entire training—in this class, we are all learning together. No one has all the answers all of the time, although we all have questions. Participants can help you improve the training by giving feedback.
7. **Review course outline.** The outline covers each individual day and will let the students know what to expect. Make sure to mention when breaks will be.
8. **Introduce the manual.** Encourage the participants to write their names on the manual. Orient the students about how to use their manual. Let them know that the manual is their "Lead Bible." Show them the different parts of the manual:

   - table of contents
   - resources section
   - glossary

   Review how to look up a subject in the manual through the table of contents. Also, point out the references at the end of each chapter and that they can order most of them through the National Lead Information Center at 1-800-424-LEAD. Inform them that many of the references are free or cost $5.00 or less.

   Point out the Pull Quotes and the Key Facts at the end of each chapter. Also point out the List of Abbreviations and Units of Measure at the end of the *Course Overview* chapter in the student manual. Inform the class that they can use these as a study guide for the exam. Students should also be encouraged to use these sections as a quick reference on specifics they might have forgotten months after the training is completed.

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9. **Logistics.** Point out the fire escapes, designated smoking areas, bathrooms, emergency phone number, and phones for their use, etc.
10. **Breaks.** Inform the class that there are breaks scheduled into each day.

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Introductions (Option 1) **(20 minutes)**

Purpose: This exercise will allow trainees to get to know each other and to begin to share their experiences. It will also allow you as the instructor to get a sense of who the trainees are and what expertise they may bring to the class.

Materials: Large Flip Chart, Markers, Tape

Directions: Have the class form pairs and have each person interview his or her partner. Each interview will consist of name, work experience, exposure to lead, and a goal that the person wishes to achieve by the end of the class. Then everyone will introduce their partner to the whole class.

Write their responses down on a flip chart.

Name	Work experience	Exposure to lead? (Specify that this is not a yes/no question!)	Goals

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You will find that people have a wide variety of work experience. This may help you in teaching the course. There may be people in the course who know more than you about certain aspects of construction, bid specifications, etc. If no one mentions housekeeping, you may want to mention it. This gives you a chance to stress the importance of cleaning on a lead abatement job. Let participants know that you will draw on their expertise throughout the course.

Make sure you introduce yourself and give your own background!

Participants' responses to the third column, "exposure to lead," will give you a sense of how much they know about lead. While not everyone will have a job exposure to lead, we all have been exposed to lead in our environment. Many of us have hobbies that expose us to lead, such as fishing (sinkers), hunting (bullets), stained glass (solder), etc. You can come back to this column at the end of this session and fill it in more completely.

The last column, "goal for the course," will be useful for you to review to make sure trainees' goals are realistic. In addition, you should keep the paper posted and have each trainee check off his/her goal after it is covered. This will let you know during the course whether you, as a trainer, are meeting the needs of the trainees.

Note: The advantage to this exercise is that people begin talking to each other in the class. It also allows you to introduce the concept of the "buddy system" by dividing trainees into pairs.

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Introductions (Option 2) **(15 minutes)**

If you have less time available, use this variation of the introduction exercise. This is not as effective as the introductions exercise explained in the previous section.

Directions: Go around the room and have each person say his/her name, work experience, any exposure to lead and personal goals for the class.

Write their responses down on a flip chart (as in the first introduction exercise).

Name	Work experience	Exposure to lead? (Specify that this is not a yes/no question!)	Goals

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CHAPTER 1

What is lead? Where is it found?

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Learning objectives

In this chapter you will learn about

- what lead is
- why lead was used
- where lead is found today
- how you can be exposed to lead
- what jobs and hobbies can expose you to lead
- the lead-based paint problem in the United States.

Instructor's notes

This chapter is an overview of the information that is presented in the entire course. It provides the large picture, with specific details to follow.

Below is a menu of options for teaching the session on Chapter 1. It is suggested that you allow 45-60 minutes to teach this chapter.

Training methods

It is recommended that you do either A, B, and C or A, B, and D

A.	True/False Quiz	20 minutes
B.	Video and discussion questions	20 minutes
C.	Lecture/Slides	20 minutes
D.	Show and Tell Lecture/Discussion	20 minutes

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True /False quiz (20 minutes)

Purpose: This exercise allows trainees to see how much they already know about lead. It will help you know what parts of the course you may have to emphasize depending on the level of knowledge of the trainees. It also provides an opportunity for you to give information after each question, after you hear the answers of the class.

Materials: Copies of exercise on page 1-4 in the student manual (reprinted below).

Directions: Have trainees work in small groups to answer the questions and have one person take notes. Go over the answers as one large group and get responses from the note takers.

True / False quiz

This is an exercise to see how much you already know about lead. It is *not* a test. Please take a few minutes to read the statements, then circle T for "True" or F for "False." Your instructor will go over the answers when everyone in the class is finished.

1. Lead is dangerous only to children under six. T F

2. We have known for thousands of years that lead is dangerous. T F

3. Experts can identify lead-based paint just by looking at it. T F

4. Lead exposure can affect a person's ability to have children. T F

5. Lead is so dangerous that there is no way you can protect yourself from it. T F

6. The law says that if you find lead-based paint in a building, you must remove it as soon as possible. T F

Answers to True/False quiz

1. **Lead is dangerous only to children under 6.**

   False: Lead can affect both children and adults, though children under 6 are most at risk because their brains are still developing. In addition, all children explore and often put items in their mouths. These objects can have lead dust on them and children can get lead dust in their mouths and swallow it. Children also absorb a greater percentage of the lead that gets in their bodies than adults. Lead paint chips may taste sweet. This sweet taste or normal mouthing behavior may result in a child eating paint chips and dust—that's why cleaning up all paint chips and dust is so important

2. **We have known for thousands of years that lead is dangerous.**

   True: Hippocrates first noted a case of lead colic in 370 B.C. Ben Franklin and others linked certain occupations that had lead exposure with lead-related diseases.

3. **Experts can identify lead paint by just looking at it.**

   False: No one can tell for sure if paint contains lead unless they test it.

4. **Lead can affect a man's ability to have children.**

   True: Lead can affect a man's ability to produce healthy sperm and his ability to have an erection. It also affects the female reproductive system.

5. **Lead is so dangerous that there is no way you can protect yourself from it.**

   False: If your employer provides proper engineering controls, such as ventilation, change areas, showers, and medical monitoring, and if you wear respirators and protective clothing, you can be protected.

6. **The law says that if you find lead-based paint in a building, you must remove it as soon as possible.**

   False: Currently, HUD requires paint testing and lead hazard control measures in federally-owned or assisted housing if the paint is either deteriorated or will be disturbed during maintenance or renovation work. HUD also requires abatement of lead *hazards* if the cost of the rehab or renovation project exceeds a certain threshold. Only a few states require the same for private housing, schools, and other public buildings. Abatement does not necessarily mean removal. It can mean covering (enclosing or encapsulating) the lead-painted surface. Replacing the building component covered with lead-based paint is the safest, most permanent abatement method.

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Here would be a good place to point out that lead-based paint that is intact is a potential hazard, especially if it is on a friction or impact surface, or an accessible surface. It is important to stress to the worker that using lead-safe work practices when disturbing paint that is either known or assumed to be lead-based paint can protect the worker and the occupants.

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Video & discussion questions (20 minutes)

Purpose: To provide an overview of the hazards of lead to children and adults.

Materials: Video player, Television Monitor, Video (*not provided*)

Directions:

1. Develop a quiz (with questions similar to those on the following pages) based on a video segment you take from a news broadcast or special local broadcast.
2. Hand out the quiz questions.
3. Show the video. Stop it after each part (if applicable) so you can have the class work on the quiz.
4. Have trainees work in pairs to answer the questions after each segment.
5. Review the answers in a large group.

Sample interactive video questions

The questions listed below are provided as examples of questions which could be used as part of an exercise to discuss a video either purchased by the training provider or taped from a local or national newscast. Select only those questions that are applicable to the specific issues presented on the video used in the training. You can also use these questions as a basis for additional questions more relevant to the video you use.

1. Where is lead found?
2. Should a homeowner or renter try to remove lead-based paint themselves? Why or why not?
3. What are the symptoms of lead poisoning for adults?
4. Can pets be affected by lead?
5. Can family members be affected by lead if they stay out of the rooms where paint removal is being done?
6. What has the federal government done over the past 30 years to remove lead hazards from our environment?
7. Is there a safe level of lead exposure?
8. What are the symptoms of lead poisoning for children?
9. A young child was lead poisoned. How often did s/he have to go to the hospital?
10. What made the young child worse?
11. Why was the house/daycare abated?
12. What actions did officials recommend to get the lead out of the water? Did it work?
13. In what year was lead-based paint illegally put on a school?
14. When is lead-based paint more dangerous?

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15. Where was the lead in the playground?
16. Will lead dust come off your hands if you wash them?
17. How was the child/adult lead poisoned?
18. Where can you find lead in your kitchen?
19. Can you test cans of food for lead content?
20. Where can you go to get lead tests?

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Lecture/Slides (20 minutes)

Purpose: To provide basic, background information to the class. It can help ensure that everyone has a basic background before proceeding with the course.

Materials: Slide projector, slides, flip chart (optional)

Directions: *Do not start your class with slides.* It will make people passive and lead them to think that all they will be doing in the class is hearing people talk at them. You do not have to use all the slides. Even a few slides can provide variety in the presentation of information.

Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Show and tell

Purpose: To provide background information to the class. It can help ensure that everyone has a basic knowledge of lead before proceeding with the course. It will indicate to trainees where lead can be found; why it was used; and that there are limitations on its current use. You can also introduce the concept of how lead can enter the body, which leads to the next chapter.

Materials: Bring in different items that may contain lead:

1. Industrial paint
2. Solder
3. Bullets
4. Paint chip
5. Painted wooden toy
6. Pool cue chalk
7. Pottery (ceramic coffee mug)
8. Fishing sinker
9. Bread wrappers (colored)
10. Sunday comic papers
11. Candy wrapper (colored)
12. Vinyl miniblind

Directions:

1. There are two ways you can run this exercise.
   a. Break the class into groups of two to four trainees and give each group two items; or for smaller classes, give each group 3 or 4 items.

      Each group answers the questions for their items. One person in each group takes notes and will report back to the entire class.

   b. Place all the objects on the table and have each group answer the questions for all objects. Go over the answers after everyone is finished.
2. Write the questions on the flip chart.
3. Encourage trainees to use Chapter 1 in their manual.

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Discussion questions for show and tell exercise:

1. Is there lead in the object (bullet, paint chip, etc)? How would you know?
2. If there is lead in the object, what is its purpose?
3. If there is lead in the product, who can it affect and how would it get into the person's body?
4. Are there any limitations to the use of these products if they do have lead?

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For more information

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

* Environmental Defense Fund, *The Hour of Lead: A Brief History of Lead Poisoning in the United States over the Past Century and of Efforts by the Lead Industry to Delay Regulation* (June 1992).

* EPA *, Lead: Identification of Dangerous Levels of Lead; Final Rule*; 40 CFR Part 745 (January 2001)

* EPA, *Reducing Lead Hazards When Remodeling Your Home* (September 1997).

* EPA, *Lead in Your Drinking Water* (April 1993).

* EPA, *Home Water Treatment Units: Filtering Fact from Fiction* (September 1990).

* EPA, *Toxics Information Series on Lead* (Pamphlet TS-793).

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

National Lead Information Center, *Lead: Some Questions and Answers* (April 1993).

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

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CHAPTER 2

Health Effects: How Lead Affects the Body

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Learning objectives

In this chapter you will learn

- how lead enters and affects the body
- why lead is especially dangerous to children
- how lead levels in the body are measured
- how lead poisoning can be prevented.

Instructor's notes

This session provides the opportunity for workers to understand how lead can affect their bodies. As the instructor, it is vital that you emphasize the prevention of lead poisoning to workers and children by keeping lead exposures as low as possible.

Some states may require that you have a health professional with an occupational health background cover this section. If you are not a health professional and have decided to teach this section, make sure you have access to a health professional before the course starts. That way you can note any questions from trainees that you do not have answers for and get answers from the health professional. If you have a health professional cover this section, make sure the individual knows how to teach working adults.

Training methods

A.	Skit and discussion	15 minutes
	How much lead exposure is too much?	
B.	Health visualization	40 minutes
C.	Lecture/slides	20 minutes
D.	Small group or class discussion	20 minutes

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Skit and discussion

Purpose: This exercise will get the class to think about the health effects of lead and how its symptoms can be confused with other health problems. It will also introduce some basic personal hygiene practices that must be followed to prevent lead poisoning.

Materials: Use the skit on page 2-4 in the student manual (reprinted below).

Directions: Ask for four volunteers from the class to do the skit. Give them a little time to review it before doing it. (Review your role as a facilitator on page Intro-14 in this manual.) Discussion questions are on the next page.

Skit: Lunchtime on the job site

Tanja, Al, Joe, and Walt are eating lunch on the back porch of a home they are renovating. They live in the community where the home is located. They have been renovating the houses in this community for nearly a month. Let's listen to them while they eat lunch:

Al: This porch is feeling like home. We've worked on these houses for a month now. We'll be done by next week.

Tanja: It'd feel more like home if we had a table and a few chairs to sit on. I'll be glad when this job is over. I'm tired. My body aches from all this work.

Joe: Women weren't made to work construction—that's why your body aches. I don't want a table or chairs. I want a clean bathroom and some cold water to drink. This porch is dirty. Maybe we could get some of that poly plastic and lay it on the porch . . . man, I'm dizzy.

Al: Tanja, I've seen you do twice as much work as Joe in a day. Are you sick?

Walt: Hey, Joe, too much partying last night? We've worked on these houses for almost a month. I won't miss this porch at all. I used to get real hungry by lunch time. I was eating two or three sandwiches. I'm working just as hard now, but I don't even want to finish one sandwich anymore.

Al: Walt, you usually eat like a horse. Ask your wife to fix your lunches again.

Walt: My wife made my favorite pot roast last night. I couldn't eat it. It tasted so good, but I wasn't hungry. My stomach hurt. All I wanted to do was go to sleep.

Joe: I wish I could get some sleep. The past week I got these headaches and people just bothered me. You know, people are getting on my nerves. The doctor says it's because I'm constipated.

Al: You all sound like you got the flu or some kind of bug. Stay away from me. I'm feeling just fine and I want to stay that way.

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Discussion questions

1. **What is going on in this conversation?**

   Some people will point out that three out of the four workers are complaining about not feeling well, though it is very possible for an illness like a flu to be spread among people who are working together.

2. **What were the workers' complaints? Circle them in the script. Is everyone feeling sick?**

   You can list the complaints on a flip chart. At the very end of the discussion you can title the list, "Signs and Symptoms of Lead Poisoning."

   Tanya: Tired, and body aches; Joe: Dizzy, headaches, people get on his nerves, wishes he could sleep, and constipated; Walt: Loss of appetite, stomach hurts, and wanted to sleep at dinner time; Al: No complaints.

   You could use Al as an example that not everyone feels symptoms of lead poisoning. Students should understand that one can be affected by lead poisoning without feeling any symptoms.

3. **Do any of the workers share the same problems?**

   Tanya, Joe and Walt all mention being tired or wanting to sleep.

4. **List some things that could be causing these complaints.**

   You can also list these complaints on a flip chart and label them "Possible Misdiagnoses for Lead Poisoning."

   - Working too hard
   - Constipation
   - Some kind of "bug"
   - Not enough sleep
   - Flu
   - Heat stress
   - Alcohol

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5. **What suggestions were made to fix the problems?**

   - Table and chairs
   - Cold water
   - Clean bathroom
   - Laying plastic on the porch

   What would you suggest?

   Some possibilities include: all of the above; no eating or drinking on the porch; washing hands and face before eating or drinking; all of them seeing their doctor to check for lead poisoning; use of personal protective equipment.

   Write the trainees' suggestions down on a flip chart. Label this page "Possible Solutions."

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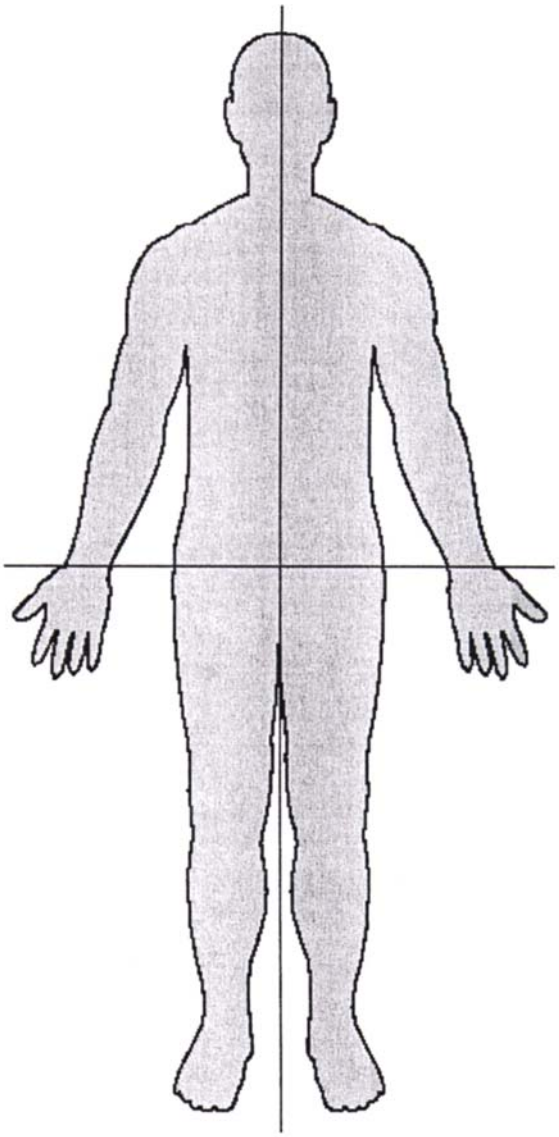
Visualization: Health effects

Purpose: This exercise will get the class to think about the different ways lead can affect different parts of the body.

Materials: Flip chart, note paper, markers and pens

Directions:

1. Break the class down into small groups (no more than four per group).
2. Tape four sheets of flip chart paper together and tape it to the wall. It needs to be big enough to trace a person on it.
3. Ask for two volunteers—one will trace the person onto the sheets of paper and the other person will have his/her body traced.
4. Have the class give the drawing a name. This will make it easier to refer to the drawing and make it more real that lead affects people.
5. Brainstorm body parts with the entire class. List the body parts on a flip chart.
6. Have each group choose a body part or body system that is listed on pages 2-9 through 2-12 in the student manual. The heart and kidneys can go together.



Have them draw the body part on sheets of note pad paper. They should then refer to the manual and look up how lead affects these body parts. Give the groups 10 minutes to prepare. If students are embarrassed to draw the reproductive organs, tell them they have the option to write out "female reproductive organs" and "male reproductive organs." Do not allow embarrassment to prevent discussion of the effects lead poisoning can have on both the male and female reproductive systems.

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7. Each small group will report on their body parts and their drawing will be placed on the big drawing.
8. Allow for discussion as each body part gets posted. Encourage the participants to cover the information in detail. When the group has finished, ask the class if there are any questions. Assist the group in answering questions. Add any information from the student manual that the participants forgot. Clarify any information that may be inaccurate. Applaud the groups' efforts.

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Lecture/Slides (20 minutes)

Purpose: To provide basic, background information on health and medical monitoring to the class. This foundation on health is vital for the rest of the course. It provides the concrete reasons to be motivated to work more safely.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any relevant personal experience that you may have. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Discussion question guide (30+ minutes)

(Time may vary depending on whether you break the class down into small groups.)

Purpose: To provide the class with an opportunity to give their own answers to these questions and to generate discussion.

You can do this in two ways:

A. Break the class into small groups of 4-6 individuals and make sure each group has a notetaker that records the answers to each question. Trainees can use their manual. Allow time for the small groups to report back to the entire class. You can save time by having each group report back on just some of the questions.

B. Conduct a discussion with the entire class using the questions as a guide.

1. **How does lead enter your body? What is the main route of exposure for adults? For children?**

   Lead can enter your body primarily by ingestion or inhalation. The lead that was previously used in gasoline could enter your body through your skin. (This is not usually a route for lead-based paint.) The main routes of entry for adults are ingestion and inhalation, and for children it is ingestion.

2. **What parts of the body can lead affect?**

   Lead can affect almost every organ system in the body except the lungs. It can affect the nervous system (including the brain), kidneys, cardiovascular system and reproductive system.

3. **Can you get poisoned by lead without any symptoms?**

   Yes! Although, the higher your blood lead level, the more likely it is that you will suffer from symptoms. There are individuals who can be poisoned without suffering from symptoms or whose symptoms are mild and do not obviously point to lead poisoning. It is very important to have blood lead levels taken to find out if lead is affecting you.

4. **Is there a safe level of lead exposure?**

   We know that lead does not serve any purpose in the body. It has been found that some degree of harm can be caused by smaller amounts of lead than previously thought. The lower the amount of lead exposure, the less chance for lead to get into the body.

   Another concern is that lead is stored in the body, especially in the bones. This means that even a small amount of lead exposure over time will build up in our bones. Lead buildup may be harmful if the lead is released from the bones later on. Lead can be released from bone tissue whenever the body is under stress. Your body can be under stress when you are sick or if you get pregnant. We are still learning about this.

   The bottom line is: Keep the amount of lead exposure as low as possible.

Instructor's Manual

5. **Why is it important to have a medical exam and tests before you begin working as a lead abatement worker?**

   It is important for two reasons:

   a. To provide a baseline for how much lead is now in your body. It will allow a doctor to monitor whether the amount of lead in your body goes up as you work with lead-based paint.

   b. To make sure that you don't already have too much lead in your body from recent exposures. If the level of lead in your system is too high, it can be harmful for you to do lead abatement work. An exam also determines whether you have any medical condition that would be adversely affected by additional lead exposure (e.g., rise in blood pressure, kidney problems, pregnancy, etc.)

6. **How are reproductive systems affected by lead, male and female? Can women be banned from jobs with lead exposure by their employer?**

   Both men and women can have their reproductive systems seriously affected by lead. If a woman is pregnant, she must be extremely careful because her body will absorb more lead than usual and the lead in her blood can cross the placenta and enter the baby's blood stream. There is also a concern that since lead can be stored in the bone, some of this lead can be released into the bloodstream of the pregnant woman and affect the developing fetus.

   Men who are lead poisoned can have odd-shaped sperm that cannot penetrate the egg. The ability of the sperm to move is also decreased. Men lose interest in sex and have difficulty getting an erection.

   In the past, many companies developed what were called "fetal protection policies." The stated purpose behind these policies was to protect the fetus from the effects of workplace hazards, including lead. In practice, women who wanted to keep jobs where they risked exposure to lead and other hazardous materials were forced to prove that they could not have children. In some cases, women had to be sterilized to keep their jobs. Often the jobs under such fetal protection policies were higher-paying jobs. In 1991, the Supreme Court struck down "fetal protection policies" as unconstitutional. Such policies discriminate against women, the Court reasoned. Men's reproductive health is also affect by lead. The Supreme Court ruled that women can not be barred from jobs with lead exposure. The employer must provide a safe workplace for both female and male workers. (Refer trainees to the student manual, page 2-12.)

Instructor's Manual

For more information

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

* CDC, *Preventing Lead Poisoning in Young Children* (October 1991).

* Environmental Defense Fund, *Legacy of Lead: America's Continuing Epidemic of Childhood Lead Poisoning* (March 1990).

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

Murphy, J. "Fetal Protection v. Women's Jobs: Case Is Before the Supreme Court," *The Nation's Health: Official Newspaper of the American Public Health Association* (November 1990).

National Association of Demolition Contractors, *Lead Safety in the Demolition Industry* (video), 800-541-2412.

National Lead Information Center, "Lead Poisoning and Your Children."

Instructor's Manual

Instructor's Manual

CHAPTER 3

Laws, Regulations, Standards

Instructor's Manual

Instructor's Manual

Learning objectives

In this chapter you will learn about

- the federal guidelines on lead
- the federal laws and regulations that protect workers and the environment
- your state, tribal, and local laws and regulations for lead.

Instructor's notes

The purpose of this chapter is to review all of the current laws, regulations, and standards relevant to lead-based paint abatement work. Regulations issued by EPA, HUD, and OSHA primarily in response to Title X are addressed in detail.

While this chapter in the student manual includes a lengthy discussion of the OSHA lead standard, **this course is not meant to replace the OSHA training required under that standard**. In a two-day course, as this was designed to be, there is not enough time to adequately cover all the very important aspects of the worker safety and health issues covered by OSHA. Therefore, the discussion on OSHA should be a general discussion stressing that the employer **must** supplement this training course with additional training on respirators and other PPE, as well as worker's rights, other safety and health standards and their requirements applicable to lead abatement projects.

Finally, the instructor should address specific issues concerning the state or Indian tribe regulations governing work in the state or tribe in which the workers will be conducting lead-based paint abatement. Many states have varying requirements and the worker needs to know those requirements as well as which ones apply to their job.

Training methods

It is recommended that you do both A and B.

A.	Lecture/Slides	20 minutes
B.	Small Group Activity	40 minutes

Instructor's Manual

Instructor's Manual

Lecture/Slides (20 minutes)

Purpose: To provide basic, background information to the class. It can help ensure that everyone has a basic background before proceeding with the course.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

Instructor's Manual

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Small group activity (40 minutes)

Purpose: This exercise will help trainees to review the OSHA lead standard, Title X, HUD and EPA lead-based paint regulations. In addition, they will become familiar with the major sections of the OSHA standard and EPA and HUD regulations. This will help them look up any questions they may have once they start doing lead-based paint abatement work.

Materials: Flip chart, markers, copies of the question sheets on the following pages.

Directions:

1. Break the class into three small groups with a minimum of three people in a group.
2. Have trainees turn to the Laws, Regulations, and Standards section of the student manual.
3. Photocopy the question sheets on the OSHA Lead Standard and Title X, EPA, and HUD regulations and assign each group a section. (It may also be valuable to design another sheet which addresses a state's or Indian tribe's requirements for workers.)
4. Make sure each group has a notetaker recording answers to the questions in their section.
5. Inform the class that they may have an opinion question. This means they will not find the answers in the manual, but they should have a discussion and give their own opinion.
6. After each group has answered its questions, review the answers as a class.

Instructor's Manual

Questions about the OSHA Lead Standard

Group 1

Directions:

Your instructor will divide the class into small groups for this exercise. Your group will answer the questions listed on this page. Use the "Airborne lead exposure" section of the manual (page 3-7) to answer the questions.

1. What is the Action Level for lead?

   What must your employer do if you are exposed above the Action Level?

2. What is the PEL for lead?

   What must your employer do if you are exposed above the PEL?

3. When must your employer give you the results of air sampling?

Instructor's Manual

4. What can you do if your employer does not give you the air sampling results? (Give your own opinions.)

5. What kind of protection must you get before air sampling is done?

Instructor's Manual

Questions about the OSHA Lead Standard

Group 2

Directions:

Your instructor will divide the class into small groups for this exercise. Your group will answer the questions listed on this page. Use the "Regulations, Laws & Standards" section of the manual to answer the questions.

1. When must your employer provide you with a PAPR?

   Under what conditions should your employer not give you a PAPR?

2. List two types of respirators your employer must provide to you if you are welding lead.

3. Name two respirator types your employer may provide to you if air sampling results show an exposure of 700 µg/m^3.

   Would a full-face, air-purifying respirator be adequate?

4. If you are using a heat gun (and no air sampling has been done), does your employer have to provide you with protective clothing and equipment?

   If yes, how often must cleaned or new clothing be provided?

Instructor's Manual

Questions about Title X and EPA's and HUD's lead regulations

Group 3

Directions:

Your instructor will divide the class into small groups for this exercise. Your group will answer the questions listed on this page. Use the "Title X fact sheet" to answer these questions.

1. Why was Title X passed by Congress?

2. What lead professionals are required to be certified by your state or tribe (or EPA if your state does not have a accreditation/certification program)?

3. How is the federal government informing owners and renters of housing about the hazards of lead-based paint?

Instructor's Manual

4. What has EPA defined as a lead-based paint hazard?

5. Who has established standards for many products and services used in the lead detection and abatement field?

6. How is HUD making HUD-assisted housing lead-safe?

7. List five abatement activities that are prohibited by HUD and EPA when working in target housing or child-occupied facilities.

   a.

   b.

   c.

   d.

   e.

Instructor's Manual

For more information

These publications 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 copies by calling 1-800-424-LEAD.

*EPA, *Lead: Identification of Dangerous Levels of Lead; Final Rule;* 40 CFR Part 745 (January 2001).

EPA, *Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households*, Interpretive Memorandum (July 2000).

EPA, *Lead: Requirements for Hazard Education Before Renovation of Target Housing; Final Rule*; 40 CFR Part 745 (June 1998).

*EPA, *Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities*; 40 CFR Part 745 (August 1996).

EPA and HUD, *Lead: Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing; Final Rule;* 40 CFR Part 745 and 24 CFR Part 35 (March 1996).

*HUD, *Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance; Final Rule* (September 1999).

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

*OSHA, *Interim Final Lead in Construction Standard*, 29 CFR 1926.62 (May 1993).

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

Instructor's Manual

Instructor's Manual

CHAPTER 4

IDENTIFYING LEAD-BASED PAINT HAZARDS

Instructor's Manual

Instructor's Manual

Learning objectives

In this chapter you will learn about

- lead dust
- lead inspections
- when lead-based paint inspections are required
- risk assessments
- how inspectors and risk assessors test for lead-based paint and lead-based paint hazards using
    - paint chip analysis
    - X-ray fluorescence analysis
    - dust wipe tests
    - anodic stripping voltametry
    - wet chemical field tests
    - soil sampling.

Instructor's Manual

Instructor's notes

This chapter will provide the class with a clear understanding of the role of the lead inspector and risk assessor and how lead in paint, dust, and soil can be identified.

Often when lead abatement workers arrive at a job site, they will be told which surfaces are coated with lead-based paint. The supervisor should have a copy of the lead inspection or risk assessment report.

It may be helpful, at first, to enlist the aid of a trained lead inspector for this aspect of the course. (Your local health department may have staff that conduct a type of risk assessment after it is discovered that a child is lead poisoned. These inspectors/risk assessors often have a lot of experience.) Make sure that the presentation is not too technical. You can also request that the inspector or risk assessor bring all sampling equipment used, including an X-ray fluorescence analyzer so it can be shown to the class, if time permits.)

Training methods

It is recommended that you do both these activities.

A. Lecture/Slides 25 minutes

B. Skit 20 minutes

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Lecture/Slides (25 minutes)

Purpose: To provide information on the role of a lead inspector and risk assessor and how lead-based paint is sampled. In addition, it introduces how to assess whether lead-based paint poses a hazard or potential hazard.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Instructor's Manual

Recognizing lead-based paint (20 minutes)

Purpose: To allow for some real work issues to get introduced. It also allows you as the instructor to provide some important information on the hazards and location of lead-based paint.

Materials: Use the skit on page 4-4 of the student manual.

Ask for two volunteers from the class to do the skit. Have them look at it together in private for a few minutes so that they "ham it up" a little and don't just read it. Review your role as facilitator on page Intro-14 of this manual. Discussion questions are on the next page.

Skit: Recognizing lead-based paint

Spiker and Vinnie are getting ready to set up for a rehab job. Let's listen in on their conversation.

Spiker: Let's get the windows and doors out before we set up. It will save us some time, and we're already behind schedule.

Vinnie: Is that safe? How do you know there isn't any lead-based paint on them?

Spiker: The owner said replace all the windows and doors. You know, combine rehab with the lead abatement job.

Vinnie: Yeah, I know. But what if there's lead-based paint on them?

Spiker: Look, they were painted just last year. What are you worried about? If the windows had lead-based paint, don't you think the owner would know? Come on, stop trying to stall. Grab a tool and let's get started!

Vinnie: OK, you're the boss. Or at least you act like him.

Instructor's Manual

Instructor's Manual

Discussion question guide

1. **Is there a chance that the windows and doors would have lead-based paint on them? Why or why not?**

   Yes, lead-based paint is frequently found on windows and doors. Its ability to resist mildew and expand and contract with temperature changes made it useful on these surfaces.

2. **Are lead-based paint and dust dangerous if they get on your clothes?**

   Yes. The danger is that you could be poisoned and bring home lead dust to your family. Your employer must provide you with disposable clothing or wash and dry your protective clothing, or give you new clothing. This must be done either daily or weekly depending on the amount of lead in the air and/or the job task you are doing.

3. **Can you tell if paint contains lead by looking at it?**

   No. The only sure way to know is by testing the paint. This is the job of an inspector. The methods that are used are XRF analysis or paint chip analysis. Sometimes wet chemical methods such as sodium rhodizonate or sodium sulfide are used, but these are not recommended by EPA or HUD and may not be allowed by your state or Indian tribe.

4. **What would you do if you were Vinnie?**

   Possible answers include: "Vinnie could try and educate Spiker." "Vinnie could refuse to work, though he may risk losing his job." "He may be able to call his steward if he's in a union."

Optional exercise

Role play **(20 minutes)**

Workers and community residents—Part 1

Purpose: To allow trainees to practice answering questions posed to them by occupants or community residents. You can remind them that they can defer to their supervisors in a real setting.

Materials: Make copies of the role play on the next page. Trainees can use their manuals to explain the work that is being done.

Directions:

1. Ask for volunteers to play the two lead abatement workers and the two neighbors in the downstairs apartment.
2. Give the volunteers who are playing the neighbors an opportunity to come up with any additional questions before starting the role play.
3. Any class member can "come to the aid" of the lead abatement workers by coming up to the front of the class. The class member can "answer" for the lead abatement worker by touching the worker's shoulder. After answering, the class member returns to the audience.
4. As the role play progresses, record of the questions asked on a flip chart. After the role play is finished, ask the class if they have any additional questions that neighbors in such a situation might pose to lead abatement workers.
5. Post the flip chart where all the students can see it as the rest of the course proceeds. Have the class answer the questions as they progress through the material. If possible, provide a little time at the end to ask the volunteers how it felt to pose questions as the neighbors and to answer them as the lead abatement workers.

Instructor's Manual

Role Play: Workers and Community Residents

Tammy and José are lead abatement workers who just started a job on the second floor of an apartment building in the inner city. The job is in federally-assisted housing that was built before 1960. The unit is being abated because a 6-year old child, Manuel, had a blood lead test come back showing 25 µg/dL. The family has moved out with their belongings until the job is finished.

Ned and Millie live downstairs and are retired. They are concerned about Manuel because they are very close to him and his parents. After school he usually stays with Ned and Millie until his parents come home.

Tammy and José have spent the morning unloading their equipment, setting up the change area on the second floor and laying poly in the apartment and even on the steps coming down to the first floor. They are sitting in their truck having lunch when Ned and Millie venture out of their apartment and spot them.

Volunteers playing Ned and Millie: Can you think of some questions they might ask? Be sure to ask the questions when you do the role play in a few minutes. The rest of the class will help you come up with other questions you might not have thought to ask.

Volunteers playing Tammy and José: In a minute you will be doing a role play. Try to answer the questions as best you can. The rest of the class will help you out with some of the answers or provide other possible answers.

The entire class: As you go through this class, think of how you might answer Ned and Millie's questions as well as other questions community members might ask you while your are doing lead abatement work.

Instructor's Manual

For more information

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

Alliance to End Childhood Lead Poisoning, *Guide to State Lead Screening Laws* (October 1991).

Alliance to End Childhood Lead Poisoning, *Resource Guide for Financing Lead-Based Paint Cleanup* (October 1991).

Environmental Defense Fund, *At a Crossroads: State and Local Lead Poisoning Prevention Programs in Transition.*

* EPA, *Lead: Identification of Dangerous Levels of Lead; Final Rule*; 40 CFR Part 745 (January 2001).

* EPA, *Reducing Lead Hazards When Remodeling Your Home* (September 1997).

* 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).

* National Lead Information Center, *Testing Your Home for Lead*, Fact Sheet (1993).

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

Instructor's Manual

Instructor's Manual

CHAPTER 5

Controlling Lead-based Paint Hazards

Instructor's Manual

Instructor's Manual

Learning objectives

In this chapter you will learn about

- Title X
- six situations where lead is a hazard
- who will reduce lead hazards
- lead-paint abatement
- interim controls
- special cleaning
- how to use interim controls for a home
- operations and maintenance programs
- the parts of a HEPA vacuum
- how to use a HEPA vacuum
- how to use the four-step system.

Instructor's notes:

This chapter will give trainees an overview on how lead hazards can be controlled. It is important to realize that the elimination of all lead hazards is probably not possible, so decisions need to be made about who is most at risk, which housing units need action, and what action will be taken.

In this chapter you can fully review the importance of special cleaning methods: HEPA vacuuming and wet cleaning with an all-purpose cleaner or a cleaner made just for lead dust cleanup. How much time you spend on abatement, interim controls and operations and maintenance will depend on who is in your class and what states they work in. Some states do not allow interim controls in certain situations. Also, if most people in the class are from the custodial staff of a hospital or school, you will spend more time on operations and maintenance. (Remember, EPA and HUD have an Operations and Maintenance model course available from NTIS [703-605-6000]. Another useful resource for training maintenance, rehab or renovation workers is the *Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work;* see the For More Information section of Chapter 5 of the student manual).

Note that Chapters 8, 9 and Appendix A go into **much** more detail on lead-based paint abatement methods, so you can choose to just outline the methods in this chapter.

Training methods

A. Skit and discussion 30 minutes

B. Lecture/Slides 30 minutes

Instructor's Manual

Skit and discussion

Purpose: To get the class to talk about the risks involved with setup and factors that affect decision making about health.

Materials: Use the skit on page 5-4 in the student manual.

Directions: Ask for two volunteers from the class to do the skit. Give them a little time to review it before doing it. (Review your role as a facilitator on page Intro-14) Discussion questions are on the next page.

Skit: What do you need to know about lead?

Sandy and Tim are maintenance workers at a local elementary school. The school was built in 1960 and needs repair. Since summer is coming and school will be out, Sandy and Tim are told to take care of the lead-based paint in the building. The school district can not afford complete abatement.

Sandy: I'm a little concerned about this lead-based paint. That's all you read about in the papers.

Tim: Well, it should not be such a big problem. I hear the main thing to deal with is the windows.

Sandy: I don't know. I wish I knew more about it.

Tim: Don't make such a big deal. Look, we'll scrape the peeling paint, vacuum everywhere and then paint over it. That should take care of it.

Sandy: I'm not sure.

Instructor's Manual

Discussion questions

1. **Do Sandy and Tim seem to know enough about lead-based paint to take on the job?**

   Sandy says he is not sure. Tim mentions windows as the most important area, which is usually true. However, his plan includes scraping, vacuuming, and repainting. There is no mention of wet scraping, covering window troughs, using a HEPA vacuum and washing with a cleaning solution before and after the repairs are made.

2. **What should Sandy and Tim do before they begin any work?**

   Review any lead-based paint inspection reports (if available), obtain lead safe work practices training, study a written occupant protection and safety and health plan (if applicable), attend lead-based paint awareness, O&M, or worker training, as applicable to their job.

3. **What surfaces should be a high priority for Sandy and Tim?**

   Windows and other friction or impact surfaces such as floors and doors.

4. **What type of interim controls can they use on these surfaces?**

   HEPA vacuum and wet wash the whole school. Cover the window troughs with sheet metal. Wet scrape the interior window sills (also referred to as "stools"). Wet scrape any loose, peeling paint. Wet wash and HEPA vacuum the entire school again. Repaint window sills (stools) and other surfaces that need it.

5. **What components are essential to a good Operations and Maintenance program?**

   Training, written program to identify lead sources, manager in charge, ongoing monitoring of the condition of lead painted surfaces, recordkeeping of all inspections, work activities, monitoring, worker medical exams, waste disposal, clearance sampling results, etc.

Instructor's Manual

Instructor's Manual

Lecture/Slides

Purpose: To provide information on Title X and the role of the Federal government, the location of lead hazards in a dwelling, and introduce abatement and interim control strategies.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

Instructor's Manual

Instructor's Manual

For more information

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

Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of the Housing and Community Development Act of 1992).

EPA, *Minimizing Lead-Based Paint Hazards During Renovation, Remodeling and Repainting* (September 2000).

EPA and HUD, *Addressing Lead-Based Paint Hazards During Renovation, Remodeling and Rehabilitation in Federally Owned and Assisted Housing* (February 2001).

EPA and HUD, *Lead-Based Paint Maintenance Training Program* (1997).

HUD, EPA, 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* (July 1995).

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

National Technical Information Services (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161. Telephone number: 703-605-6000.

Society for Occupational and Environmental Health, *Protecting Workers and Their Communities from Lead Hazards: A Guide for Protective Work Practices and Effective Worker Training* (1993).

Instructor's Manual

Instructor's Manual

CHAPTER 6

SETUP

Instructor's Manual

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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

Instructor's notes

The purpose of this chapter is for trainees to learn how to properly begin a lead-based paint abatement job. It must be stressed that proper setup can dramatically cut down on the spread of lead dust. This will help to ensure a successful job and make cleanup easier.

An instructor who has had a lot of experience in lead abatement work will reinforce how important setup is. Check into your state's or Indian tribe's regulatory requirements and make sure you discuss any information not included in the manual.

You can also contact a distributor of commercial-grade HEPA vacuums and have them provide a guest speaker. You will want to make sure that the presenter understands the equipment well and is not just a salesperson.

It is suggested that you allow 45 minutes to teach this section.

Training methods

A.	Skit and discussion	15 minutes
B.	Lecture/Slides	30 minutes
C.	Hands-on: Setup	1 hour & 15 minutes
	Preparation of job site and decontamination area	

Instructor's Manual

Skit and discussion (30 minutes)

This exercise allows the class to talk about the risks involved with setup and factors that affect decision making about their health.

Materials: Use the skit on page 6-4 in the student manual.

Directions: Ask for two volunteers from the class to do the skit. Give them a little time to review it before doing it. (Review your role as a facilitator on page Intro-14 of this manual.) Discussion questions are on the next page.

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.

Instructor's Manual

CAUTION
LEAD
HAZARD
KEEP
OUT!!

Discussion questions guide

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.

   If trainees agree with this statement, how do they know it is safe? Do we know where the lead dust is? Will the setup work disturb the lead dust?

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

   Answers will vary. "No, it's not." "Ed can do what he wants." "Juan cares about Ed." "It doesn't reflect well on Juan if his work buddy gets lead-poisoned." "Ed's lack of respirator use may influence Juan to not use his."

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

   Under the OSHA Lead Standard PAPRs must be available to any worker who requests them. A fan may not help much and could spread the lead dust if it's not set up correctly, so how and where it is set up needs to be thought out. The foreman could allow workers to get used to the heat by allowing frequent breaks and providing plenty of fluids.

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

   Answers will vary. "He needs the work." "It's his life, his decision." "The risk isn't very high." "His decision also affects his family."

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

   Answers vary here and usually reflect trainees' personal experiences.

2. **Why is Ed in such a hurry?**

   "Ed is hot and uncomfortable." "He feels he works slowly." "It's his first job in three months and he wants to keep it."

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

   "Juan can offer to help teach short cuts that can increase his work pace, but not wearing a respirator isn't one of them." "Juan could inform him about the hazards of lead to himself and his family."

Instructor's Manual

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

   - Allow breaks
   - Provide PAPRs
   - Stress the importance of safety over work pace
   - Ensure adequate ventilation

Instructor's Manual

CAUTION
LEAD
HAZARD
KEEP
OUT!!

Lecture/Slides (30 minutes)

Purpose: To provide the basic information on the rules for lead work and the components of a proper setup.

Materials: Slide projector, slides, flip chart, markers

Directions: Make sure you involve the class in the slide presentation. One way is to ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

You can start off this section by using a flip chart and posing the following questions. You can write their answers on the flip chart

Ask the class what tasks are a part of setup. (A checklist is on page 6-8 in the student manual.)

Ask the class why setup is so important.

Possible answers include: Make the job and cleanup easier. Make the workplace safer. Ensure that lead dust is contained. Prevent safety problems.

When is lead a health hazard?

Possible answers: Whenever the lead paint surface is disturbed. When it peels, chips or flakes. When there is friction or impact. Anytime dust is created.

What activities create lead dust and fumes?

Possible answers: All abatement methods. Any burning of lead can create lead fumes. Dry sanding or scraping. Using a heat gun on the high settings.

Name some ways lead dust and fumes could be decreased.

Possible answers: No burning of lead paint. Never use a heat gun over 1100º F. Always use wet methods. No dry scraping or sanding. Use a HEPA vacuum. Cleanup as you work.

Name some rules for working with lead.

Record their answers and compare to slide 4.

What kind of protection must your employer provide when you work with lead?

Note: This is an EPA-model course; it does not adequately cover topics required under the OSHA Lead in Construction Interim Standard. Some trainees may not have yet had OSHA training and may not be familiar with the OSHA requirements. Do not go into great detail here; this is to serve as a reminder of the information covered in Chapter 3.

Instructor's Manual

This protection must include:

a. Appropriate respiratory protection

b. Protective clothing

c. Hand washing facilities and a shower, if feasible

d. Change area

e. Bloodtests

f. Training on the hazards of lead, respirator use, and safety issues

g. Separate lead-free break area

h. Warning signs within the work area

Note: If the employer has not done an exposure assessment yet, but the worker is doing a lead-related task, then interim protection must be provided. This same protection must be provided if you are exposed above the PEL.

What kind of protection must your employer provide for the occupants?

EPA or state/Indian tribe regulations require an occupant protection plan be written before beginning any lead-based paint abatement activity in target housing or child-occupied facilities (e.g., daycares). This is the responsibility of the employer, but the worker should be familiar with its contents to ensure that the protections are maintained throughout setup, abatement, and cleanup.

Instructor's Manual

CAUTION
LEAD
HAZARD
KEEP
OUT!!

Now, you will want to start the slides.

Instructor's Manual

Hands-on exercises (1 hour & 15 minutes)

Job site setup

Objectives: Trainees will be able to

1. List at least six items that are needed for setup.
2. Identify at least three potential job site hazards.
3. Define at least one way to decrease the tracking of lead dust.
4. State why decontamination areas (decons) are important.
5. Assist in setup of hands-on area.

Directions:

Have the participants break into four groups. Each group will assign a notetaker and a reporter. Each group is to write up a design for setup in the hands-on area. Give them 20 minutes to walk through the area and discuss setup.

Then, have each group report on their setup plan to the whole class. Have them limit their report to five minutes per team. Write each group's plan on a flip chart. There may be much discussion about what should happen first. This is good!

Next, have the participants use the student manual checklist to make sure all parts of setup are covered. Have the class fill in any gaps they may have missed—you can help bring up points, too. Have the class agree to an action plan for setup.

Now tell the class you will be talking about setting up a decontamination area.

Instructor's Manual

Decontamination unit (decon) setup

Objectives: Trainees will be able to

1. Diagram on a piece of paper the three areas of a decon.
2. Explain why each area is important.
3. List the materials needed to build a decon.
4. Design at least two ways of setting up the three separate areas of a decon.
5. Assist in constructing decontamination areas—clean room, shower (wash room), and dirty (equipment) room.

Instructor's notes:

The concept of a decontamination unit is often hard for students to grasp. You can make handouts and overheads to introduce this section (use the illustrations on the next page). Reinforce the information as the trainees build the decon areas in the hands-on exercise.

Directions:

Explain to the class what a decontamination unit/area is. The decon area is used to make sure that lead is not carried out of the contained work area. By keeping lead in the work area, workers protect building occupants as well as their own family members from lead poisoning.

There are different types of decons. A typical decon consists of a clean room, a wash room/shower, and a dirty/equipment room. Some are actually three separate rooms, some are portable units, others are constructed on site. A shower and wash basin may be a more realistic decon station for trainees who work for small contractors.

To construct a decon on site you need 6-mil poly, duct tape, and framing materials.

Common mistakes in constructing a decon occur when you build the frame or put up the poly. Ask the class if they have had any experience putting together a decon on site.

Did they have any problems? How did they solve them?

Instructor's Manual

Hands-on practice

Now break the class into two groups. Have one group set up the work area. Have the second group build the decon. If for some reason you can't build a decon on site, portable decontamination chambers can be bought at most industrial safety equipment distributors.

Group 1

Materials:

- barrier tape
- warning signs, with big letters
- rolls of 6-mil plastic sheeting (poly)
- duct tape
- staple gun and industrial staples
- spray poly
- materials for building decon
- flipcharts, paper, and pens
- movable objects in the room (chair, table, etc.)
- lock out tags
- ground fault circuit interrupter (GFCI)
- negative air machine
- HEPA vacuum
- labeled container for dirty clothes

WARNING
LEAD WORK AREA
POISON
NO SMOKING, EATING, DRINKING

WARNING
LEAD PAINT REMOVAL
NO ENTRANCE BY UNAUTHORIZED PERSONNEL

Instructor's Manual

CAUTION
LEAD
HAZARD
KEEP
OUT!!

Checklist

Make sure the students do the following:

___Post warning signs

___Move all portable items out of the area

___Turn off HVAC system (HVAC and electrical boxes should be locked and labeled with a tag saying **DANGER/DO NOT OPEN**. If these boxes are not in the area designated for training, then instructors can post signs on the wall labeled "electrical box" and "HVAC control unit.")

___Cover air vents with poly and sealed with tape;

___Bring a negative air machine into the work area (optional);

___Clean everything left in the room with a wet wash and a clear rinse;

___Cover and seal with 6-mil poly and duct tape everything left in the room;

___Cover the floor with two layers of poly (students should note that carpets should be removed and discarded with the owner's permission);

___Bring equipment and tools into the work area;

___Seal the work site off from the rest of the building (using duct tape, poly and industrial staples);

___Lay out a path of poly to enter and exit the work area.

Instructor's Manual

Group 2

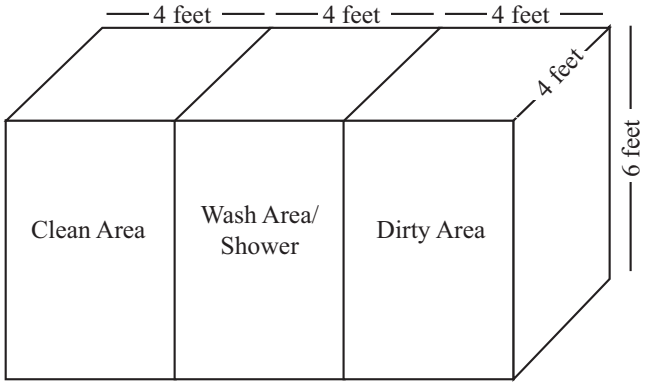
The hands-on exercise must be done in a space big enough to accommodate 20 to 30 students. Make sure that there are enough materials on hand for the students to use and that everything is of good quality. You should have assistant instructors for this section to serve as facilitators. They must not do the work for the trainees, but give hints as needed if students ask questions or seem hung up on something.

Materials:

- 6 12-foot 2x4's (or PVC piping)
- 10 8-foot 2x4's (or PVC piping)
- 1 roll of 6-mil poly
- 6 rolls of duct tape
- 1 box of T-50 staples
- 2 T-50 staplers
- 2 hammers
- 2 utility knives
- 1 measuring tape
- 1 box of nails (10 penny)
- 1 hand saw or electric saw

Instructor's Manual

The unit will stand 12 feet long, 4 feet wide, and 6 feet high. It will be separated into three sections, each 4 feet long.



Checklist

Make sure the students do the following:

1. Construct the frame.
2. Cover the floor with two layers of poly, sealing each one down with duct tape.
3. Make walls and a ceiling. Use one layer of poly. Overlap the ends of the poly by 6 to 12 inches and duct tape them.
4. Make the door flaps. Each flap should consist of one layer of poly. Each door should have two flaps. The first flap should open in the opposite direction from the second flap. (This helps to prevent dust from leaking out of the work area.) There should be four doors with flaps: (1) the entrance, (2) the exit, (3) between dirty area and wash area, and (4) between wash area and clean area.

Outside setup

(Optional addition to setup hands-on discussion and exercises)

Ask the class to compare and contrast outside work and inside work.

(Answer: Similar because you try to keep people out and cover surfaces with poly. Different because it is much harder to contain lead dust and it may be harder to keep people away at the outdoor sites.)

Ask the class how they have managed to keep curious neighbors away from dangerous work areas.

Setup for outside work:

1. Post warning signs.
2. Rope off the area.
3. Put out the poly.
4. Build trenches to direct liquid waste.
5. Daily cleanup.
6. Store waste in a locked area until you can dispose of it.

Instructor's Manual

For more information

These publications or resources have more information on the topics covered in this chapter. You should have 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* (September 1997).

*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.

Instructor's Manual

CHAPTER 7

ABATEMENT METHODS

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Learning objectives

In this chapter you will learn about

- replacement
- enclosure
- encapsulation
- paint removal by
  - wet scraping and planing
  - electric heat guns
  - HEPA sanders
  - HEPA needle guns
  - chemical strippers

Instructor's notes

This chapter follows the appropriate work rules you went over in Chapter 6, Setup. The challenge of this chapter is to make it as realistic and practical as possible and, at the same time, integrate work controls and safe work practices. It should be emphasized that in choosing an abatement method, you must always consider the amount of lead dust that will be generated.

Be aware that while in some states methylene chloride is banned for use in residential lead abatement, it is available in hardware store across the country. There are other chemical strippers without methylene chloride that are also readily available.

This section should be taught by someone who has **practical** experience—an individual who has done the work and has seen the outcome of the choices made. Remember, though, that this is an introduction to abatement methods, which are covered in much greater detail in Appendix A (for use with hands-on activities). If you yourself do not have this experience, you may still be able to teach this section with backup assistance from someone who does.

On the next page is a menu of options for teaching Abatement Methods. It is suggested that you allow 60 minutes to teach this chapter.

Training methods

It is recommended that you do A, B, and C

A.	Skit and discussion	10 minutes
B.	Lecture/Slides	30 minutes
C.	Small Groups: Who is at risk and why?	20 minutes

Instructor's Manual

Skit and discussion (10 minutes)

Skit: On the job

Abdul and Ed have been working on a house in an older neighborhood for the last two weeks. Their boss told them that the job should not take more than three weeks.

Abdul: Hey! Slow down buddy. What are you doing dry scraping that trim? You know the specs say no dry scraping.

Ed: Don't worry about it. You can just clean up underneath me as I go. I'll help you clean up once I'm done.

Abdul: Yeah, but dry scraping creates a lot of dust.

Ed: No problem. You're wearing your respirator, right?

Abdul: Respirators will only protect you so much. We're going to have a tougher time doing clean-up. You really need to slow down and cut out the dry scraping.

Ed: And you need to quit talking and start cleaning. If you can't keep up with me, that's your problem, not mine.

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Discussion questions

1. **Who is right, Abdul or Ed?**

   Abdul—the specs say no dry scraping. EPA, HUD and state/tribal regulations do not allow dry scraping for large areas of paint removal.

2. **Is there anything wrong with dry scraping if you clean it up immediately?**

   The problem with dry scraping is that it generates a lot of lead dust. The lead dust will fall downwards, but not necessarily immediately. It can also be found as much as six feet away from where it is generated. It sticks to surfaces and is not always visible. For all of these reasons, it's best not to create lead dust because it is so hard to clean up.

3. **Why is Abdul concerned about the dry scraping if he is wearing a respirator?**

   Abdul is right to say that a respirator will protect you only so much. We do not know what kind of respirator he has, so we do not know the protection factor. But, we do know that the more dust generated, the higher the worker exposure.

4. **Do you agree or disagree with the following statements?**

   _____ Abdul should work faster and clean up after Ed.

   _____ Ed should slow down and stop dry scraping.

5. **Why do you think Ed is in such a hurry?**

   Answers can vary. "Maybe, he wants to win over the foreman." "He has plans after work." "His pay depends on getting the job done on schedule." "There a bonus if the job gets done early."

6. **What could the supervisor do to ensure that no dry scraping occurs at the site?**

   Possible answers: "Outline the abatement methods to be used for each surface ahead of time." "Provide enough wet misters and water sprayers." "Threaten to discipline anybody who is caught dry scraping." "Educate the work crew that dry scraping will make it harder to do cleanup."

Instructor's Manual

Instructor's Manual

Lecture/Slides

Purpose: To provide information on the advantages and disadvantages of the different lead-based paint abatement methods and identify methods that are prohibited and methods that are not recommended in residential abatement.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Small groups (20 minutes)

"Who is at risk and why?"

Purpose: To allow trainees to build on the information they've learned so far. It gives an opportunity to assess which work practices cause exposure and who is most at risk. It also serves as a review of control methods, equipment, and blood lead levels.

Materials: Blackboard or flip chart, chalk or markers, and copies of the story and Data Sheet.

Directions:

1. Hand out the story.
2. Have trainees break into groups of three to six people.
3. Let them answer the questions in the small groups.
4. Go over the answers in a large group.
5. Hand out the data sheet and review it.
    a. Review how symptoms do not always indicate how serious blood lead levels are.
    b. Review how chelation treatment may not be a one-time event since blood lead levels can "bounce back" as lead stored in the bones is released.
    c. Point out how susceptible children and fetuses are.

Instructor's Manual

Small group exercise

Instructions:

The following story is a true one. It was taken from the October 1990 issue of the *American Journal of Public Health*. In small groups, read the story and answer the questions together. Have one person write down your answers. Use your manual to look up any information you need.

Mr. and Mrs. A had two children, a five-year old daughter and a 20-month old son. They moved into a Victorian farm house in rural upstate New York in June, 1987.

A crew of workers renovated the farm house from August to October. They restored the floor, doorways, and wooden moldings. Two workers used rotary and hand sanders to remover old paint and wallpaper from the floors and walls. They used torches, heat guns, and chemical wood stripper to remove paint from the moldings and door frames.

During part of the renovation, the family was on vacation. Their dogs stayed behind. One of the dogs liked one of the workers and hung out with him a lot. Only partial cleanup had been done before the family got back. The job was not done. Work areas had not been sealed off while the work was performed. Mrs. A helped finish the work by torching some of the moldings in the front yard.

The family tried to stay out of the way until the job was done. This was easy for Mr. A, who worked in New York City and traveled a lot. Mrs. A continued to work out of her office in the house. To make sure the children were safe, they hired a baby-sitter to keep the children outside of the house. The baby-sitter brought her two children. In January, Mrs. A discovered she was eight weeks pregnant.

It was later discovered that the painted surfaces had high levels of lead.

Instructor's Manual

1. Who is at greatest risk of getting lead poisoned?

2. Who has the least risk of getting lead poisoned?

3. How could lead poisoning have been prevented?

4. How could the workers have protected themselves?

5. How do you think they found out the family and workers were getting lead poisoned?

When you finish answering these questions, your instructor will review them with the whole class. Your instructor will also hand out a data sheet that has information about the symptoms that the people in the story experienced and how they responded to chelation treatment.

Instructor's Manual

Small group exercise (answers)

1. **Who is at greatest risk of getting lead poisoned?**

   Answers can vary but should include Mrs. A, her fetus, the A's children and dogs (the baby-sitter's children would also be an acceptable answer). Very low levels of lead exposure can affect a fetus. In addition, Mrs. A was doing torch work without proper protection. The A's children are at risk because there was not complete cleanup before they returned from vacation. The dogs are high-risk because they stayed behind during the entire renovation.

   We don't know about the workers but we can assume they were not adequately protected (especially since this project was done before OSHA issued a lead in construction standard [although the OSHA general duty clause was enforceable during the time of this project]). They used work methods that can cause high exposure to lead.

2. **Who has the least risk of getting lead poisoned?**

   Mr. A is the least likely to have gotten lead poisoned.

3. **How could lead poisoning have been prevented?**

   The contractor should have had the workers use better work practices—that is, no rotary or hand sanders used without HEPA-attachments. The contractor should have had them seal off the work area and setup for any outside work to protect the soil. They should have finished the work and cleaned up before the family returned. The family should not have been allowed back in the house until after the work was finished, including cleanup. (Discuss how in some situations, moving out of the house is not an option for financial reasons. In that case, the setup and sealing off the work areas is even more important.) The dogs should have been kept away from the work area. Mrs. A should not have done any abatement work.

4. **How could the workers have protected themselves?**

   The contractor should have provided training and instructions on appropriate and inappropriate work methods (e.g., sealing off the work area(s) from the rest of the house; using PPE to protect the workers; proper worker decontamination and personal hygiene; not using high heat or burning to remove LBP; not allowing dust and debris to accumulate and possibly get tracked, etc.). The contractor could also have provided all the necessary protective clothing and equipment necessary, a clean break area away from the work area, a decon so workers could clean up when they left the work area and so their street clothes wouldn't get contaminated with lead.

Instructor's Manual

5. **How do you think they found out the family and workers were getting lead poisoned?**

   Many answers could be right, but it turns out that the dog had severe symptoms and the veterinarian took a blood lead sample.

Instructor note

Hand out the Data Sheet on the next page after people work in groups. As you go over the sheet with the class, review the symptoms and health effects of lead poisoning and the purpose of chelation treatment.

Instructor's Manual

Data sheet

Victim	Initial blood lead level	Symptoms	Treatment	Results
Dog 1	51 µg/dL	Shaking and twisting	Chelation	Improved, but died 3 days later of kidney failure.
Dog 2	65+ µg/dL	None	Chelation	Recovered
Mrs. A	45 µg/dL	Tired and weak	Chelation at hospital	Still tired and 2 weeks later found out she was pregnant. Opted for therapeutic abortion.
Daughter (5 yrs. old)	54 µg/dL	Stomach aches	Chelation at hospital	Blood lead level went down to 36 µg/dL. Required 1 more round of chelation.
Son (20 mos. old)	84 µg/dL	Not available	Chelation at hospital	Blood lead level went down to 52 µg/dL. Required 4 more rounds of chelation.
Mr. A	38 µg/dL	One episode of nausea	None	No apparent problems
Babysitter	16 µg/dL	Not available	Not available	Not available
Daughter (2 yrs. old)	65 µg/dL	Not available	Chelation at hospital	Blood lead level went down to 18 µg/dL
Son (3 yrs. old)	55 µg/dL	Not available	Chelation at hospital	Blood lead level went down to 14 µg/dL
Workers	No information	??	??	??

Instructor's Manual

Instructor's Manual

Hands-on exercises

Station 1: Replacement and removal

Preparation

1. Wall with windows
2. Table
3. Tools, equipment, and materials

Tools and equipment

1 hammer
1 saw
8 2x4 boards
1 8-foot x 4-foot sheet plywood
1 box of nails (10D common)
1 box of small finishing nails
1 4-foot-long baseboard molding strip
1 4-foot-long crown molding strip
1 4-foot-long chair rail (optional)
1 wooden window or double-hung door
1 vinyl replacement window
1 roll of duct tape
1 gallon of latex paint
1 quart of trim paint (optional)
1 lead warning sign
1 30-foot sheet of 6-mil poly
2 heat guns
1 tape measure (210 feet)
2 spray bottles with water
2 utility knives
2 multi-head scrapers
2 4-inch 4-way scrapers
2 6-inch 4-way scrapers
4 pairs of gloves (cotton grip)
2 safety goggles
1 ABC fire extinguisher
1 HEPA vacuum
1 box respirator cleaning wipes
1 roll barrier tape (red or yellow)

Instructor's Manual

To construct the hands-on station:

1. To start, you should build a 8-foot x 4-foot 2x4 frame. Cut two feet from the top of the plywood sheet. Cut an opening to the measurements of window to be inserted. If a handsaw is used, the window square should be cut on the side of the plywood. If a circular power saw is used the window may be placed in the center of the plywood.
2. Place cut plywood on 2x4 frame and nail or screw to back of plywood. This will provide support for the window.
3. Place window into frame. To demonstrate replacement of window, do not permanently secure the window. Make a hole in the 2x4 window frame and adjacent hole in the window. Secure with 4" to 10" lag bolt which can be removed and inserted when needed. Add a strip of baseboard molding to the bottom, and a strip of crown molding to the top. A chair rail molding for the center is optional. Small finishing nails should be used so you will not crack molding.

4. Cut two 2x4's into 3 1/2-foot long boards to be nailed or screwed to bottom sides of plywood frame. These are feet and allow the wall to be free standing.
5. Paint wall with two to three coats of latex paint. Trim paint may be used for molding. Other methods of support may be used as desired.

Do not use lead-based painted surfaces during hands-on activities!

Participants need to practice skill on nonhazardous materials.

Hands-on practice

Objectives: By the end of this rotation, trainees will

- suit up with appropriate PPE;
- demonstrate safe use of a heat gun;
- demonstrate use of wet scraping and wet planing;
- demonstrate replacement of windows/door;
- assist in daily clean up.

Directions:

1. Have trainees suit up and fit check their respirators (**only use respirators if trainees have previously had OSHA respirator training**).
2. If the area was not set up in the set up exercise, have trainees set up the area around the station with signs and tape. Have them lay poly on floor by the wall. Make sure there are two layers. Warn trainees that they should cut the poly away from themselves.
3. Have trainees identify areas of impact and friction on the window.
4. Demonstrate how to use a heat gun along with a PAPR.

   Demonstrate the proper use of the PAPR respirator by wearing one for this demonstration. When demonstrating how to use a heat gun, explain to the students that most heat guns have two settings: low (600 degrees) and high (1,100 degrees). Using a heat gun at temperatures above 1,100 degrees is prohibited for work in residential or child-occupied facilities (e.g., child care centers). Some heat guns will turn off automatically if the heat gun gets too hot.

   How effectively the heat gun removes lead paint depends on the substrate. If you have difficulty removing paint from a substrate without using a high setting, consider a different removal method. Emphasize that heat guns must not be used on hollow surfaces. Heat guns should only be used on solid wood.

Instructor's Manual

Always point the heat gun away from you. Emphasize to the students that heat guns can cause serious burns even if used at the lower setting. The immediate treatment for serious burns is to run cold water over the burned skin for at least 15 minutes. Call for emergency help.

Heat guns can cause a smoldering fire and must be used carefully. Always have a fire extinguisher available whenever you use a heat gun.

5. Demonstrate how to wet scrape.

   When demonstrating wet scraping, emphasize that this method is used primarily as a preparation for small areas. Wet scraping takes a lot of time. It is not a cost-effective method for removing paint from large surfaces.

6. Demonstrate how to wet plane.

   Demonstration of wet planing can also be provided. Both wet scraping and wet planing can be used as interim controls, as well as abatement removal.

7. Break the class into three groups. Keep trainees with their buddies. Assign each group to one of the three removal activities. Then rotate the groups. Allow each trainee to practice using the heat gun, wet scraping, and wet planing. Make sure PAPRs are used by all trainees when they use the heat gun. Allow at least 15 minutes for each activity.

   Each trainee must remove paint successfully using both a heat gun and wet scraping. "Successfully" means being able to remove paint as well as keep the substrate in good condition. Remind the participants that removal by these methods is slow and tedious.

8. Demonstrate how to replace building components.

   Have the trainees set up poly on the ground outside as well as inside of the window area. The poly can be taped on the wall area just below the window. Have trainees HEPA vacuum the entire window.

   Wet mist the window before removal. Simulate removal by unscrewing the bolts to dislodge the window.

   Have trainees remove the window place it on poly, and wrap it as large debris. Then have trainees HEPA-vacuum the area where the window was removed. Replacement cannot occur on a job until this cleanup has occurred. This keeps the new window from getting contaminated. Discuss how to replace the new window, including caulking.

   You may consider demonstrating the interim controls which are described in the student manual (Chapter 5). If so, make sure to poly the outside of the window as a part of setup for the interim control. In addition, make a list of the additional equipment you will need for the demonstration.

Instructor's Manual

9. Have the trainees assist in daily cleanup. Wrap large debris, wet mop and HEPA vacuum all surfaces. Check the containment for rips and tears.
10. Initial the check off sheets for each trainee in this rotation.

Instructor's Manual

Station 2: Encapsulation

Preparation

Setup

1. Wall with molding
2. Table
3. Tools, equipment, and materials

Tools and equipment

1 gallon of three different encapsulants, MSDSs for each encapsulants
1 tape measure
1 box of small finishing nails
1 hammer
1 saw
1 box of 10D common nails

(Have at least three types of encapsulants available. Make sure you have MSDSs for all products that are demonstrated.)

8 2x4 boards
1 sheet 8-foot x 4-foot plywood
1 6-foot baseboard molding
1 6-foot chair rail molding (optional)
1 6-foot crown molding
2 paint rollers
1 paint roller pan
2 disposable paint trays (plastic)
1 gallon of latex paint
1 HEPA vacuum
1 30-inch sheet of 6-mil poly
2 PAPRs**
2 flat 2-inch scrapers
2 spray bottles
2 2-inch paint brushes
2 utility knives
2 4-inch paint brushes
1 roll of duct tape
1 lead warning sign
1 red barrier tape
1 30-inch sheet of 6-mil poly

**PAPRs only to be used if trainees have already had the OSHA training on respirator care and use.

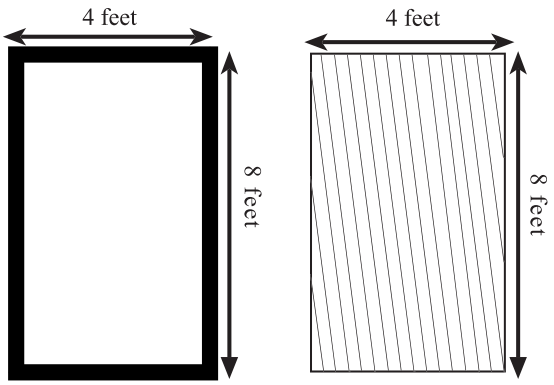
Instructor's Manual

To construct the hands-on station

1. To start, build an 8-foot x 4-foot square frame with 2x4's.

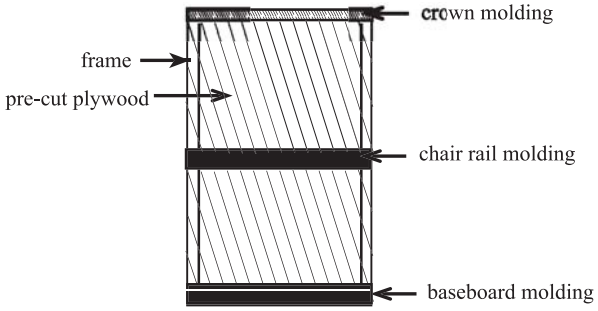
   Use nails and screws to hold the 2x4's together.

   Place a precut 8-foot x 4-foot sheet of plywood to the frame.



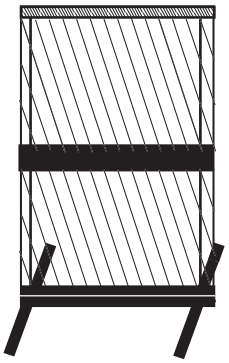
Frame **Pre-cut plywood**

2. Add a strip of baseboard molding to the bottom, a strip of crown molding to the top, and chair rail molding at the center (optional).



Add molding to the "wall"

3. Cut two 3' 1/2" long 2x4's to be nailed or screwed to the bottom sides of the plywood framed wall. These boards will serve as "feet" for the wall to stabilize it and allow it to stand freely. (Other methods of support may be used for the feet.)



Feet will balance the wall

4. Paint the wall with two to three coats of latex paint. You can use trim paint for the molding.

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Objectives

By the end of the rotation, trainees will be able to:

- use MSDSs to figure out the proper personal protective equipment needed when using an encapsulant;
- demonstrate how to prepare a surface for encapsulation;
- demonstrate how to do a patch test;
- demonstrate the use of an encapsulant;
- assist in daily cleanup.

Directions

1. Show trainees all the materials that you have set on the table which will be used during this rotation. Have at least three types of encapsulants available. Make sure your state allows you to use the encapsulant materials you have chosen.

   Explain to the students that some encapsulants involve only one step while others are a two-step process. One-step encapsulants have a primer and finish combined and can be hand painted with a brush, or sprayed with a low pressure sprayer onto a lead surface all at once. Two-step encapsulants have two separate coats of paint—a primer, and a finish coat—which must be applied separately. Fiber mesh is also used with encapsulants. It forms a bridging on walls for added support.

2. Review with the class the MSDSs for all the materials. Explain to them that all products with hazardous chemical ingredients must come with an MSDS. They need to read the MSDS of the encapsulant they will be using so they know about the hazards of the product.

   Encourage students to look at the MSDSs when they purchase encapsulants in the future. Tell them to make sure that the one they choose is effective and being used by others. It is also very important that they find out if their state allows the use of encapsulants.

   Have the trainees choose which encapsulant they will use.

   (If they pick an encapsulant that is not as safe as others, have them look at the MSDSs more closely.) Ask them to identify the appropriate personal protective equipment required for the product they choose. Make sure you have the appropriate personal protective equipment available for them. They must know what kind of respirator filter they need (e.g., do they need an organic vapor cartridge as well as a HEPA cartridge?) and any other kind of protection.

3. Have the trainees suit up and fit check their respirators.

4. Have trainees set up the area around the station with barrier tape and warning signs. Have them clean the area. HEPA vacuum to remove the small lead dust particles on and around the surface to be encapsulated.

   Then, have trainees lay out 6-mil poly on the floor below the wall and tape it with duct tape. If the baseboard does not have lead paint, then the poly can be taped to the baseboard. (If it is the trainees' first rotation, have them lay down two layers.) Remind students to always cut the poly away from themselves.

5. Guide the trainees through surface preparation—be sure to let them do it. Emphasize to students how important surface preparation is. Emphasize to the students that they must follow the manufacturer's instructions on how to prepare the surface they are encapsulating. The wall or surface must be in good condition for an encapsulation to be successful. Encapsulation will not work if the wall is separating from wood or metal lath. It will not work if the surface is damaged.

   To prepare the surface, trainees need to:

   - Lightly wet scrape any loose paint with a 2-inch scraper.
   - Then, wipe down the walls with towels and a bucket of cleaning solution (an all-purpose cleaner or a cleaner made just for lead cleanup). This cleans off any dirt, grease, or anything else that could cause the encapsulant to not stick properly to the surface.

   Emphasize to students that they need to follow the manufacturer's instructions that come with the product.

6. Have the trainees do a "test patch" to see if the encapsulant will work on the given area. The students should measure a small area on the surface to be encapsulated (about 1 square foot for walls; less for smaller areas). One of the students should take a piece of duct tape and place it across the marked area. Apply the encapsulant over the duct tape. Leave a corner of the duct tape uncovered.

   Have the students use the wet film thickness gauge (usually provided with an encapsulant) to determine if they have spread it thickly enough. Students should refer to manufacturer's instructions. Let it dry for the amount of time specified by the manufacturer. Emphasize to students that they need to follow the instructions that come with the product.

   When the encapsulant is dry, try to pull tape away from the wall. (You may need to wait until the next training day.) If it does not pull away from the wall, the test patch is a success and the encapsulant is good for that surface. If the tape does pull away from the wall, or if the test patch bubbles or wrinkles, the test patch fails. Suggest that students try another brand of encapsulant or choose another abatement method for that surface.

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7. If the test patch is a success, continue applying the encapsulant to the whole wall surface. Guide the trainees as they apply the encapsulant. Emphasize to students that they need to follow the instructions that come with the product.

   The encapsulant must be evenly applied on the surface. On small jobs, you can often use a brush or roller to apply an encapsulant. For large jobs, sometimes an airless, low-pressure sprayer is used.

   Follow the manufacturer's instructions. Most encapsulants are applied to a thickness of 18 mils (that is, the thickness of three layers of 6-mil poly together). The manufacturer usually will send a tool to measure the thickness of the application (called a wet film thickness gauge). Often two coats are needed, since encapsulants usually shrink once they dry. If you are using a fiber mesh system, be careful to avoid air pockets between the mesh and the surface.

8. Have students go through the steps of daily cleanup.

   The students should wrap all large debris in 6-mil poly and seal with duct tape. (At this station the primary debris will be extra plywood from the enclosure.) Next they should wet mop the floor and bag the small debris in 6-mil poly. All surfaces should be HEPA vacuumed each day as part of daily cleanup. The last step in daily cleanup is to check the poly and repair any tears or rips.

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Station 3: Enclosure

This station can be managed along with station two in one rotation time.

Preparation

Setup

1. Training stairs of three to four steps, movable floor with pre-floor and primary floor.
2. Table
3. Tools, equipment, and materials

Tools and equipment

3-foot high staircase
1 30-foot sheet of 6 mil poly
1 sheet of luan plywood
1 sheet of 8-foot x 4-foot plywood
Various samples of rubber tread
1 rubber treading (measured to staircase)
1 saw
1 caulking gun
1 tube caulking
1 210-foot tape measure
2 utility knives
1 roll of duct tape
1 lead warning sign
1 roll of red barrier tape
2 PAPR
HEPA vacuum

To construct the hands-on station

1. For the stairs, either purchase or build a 3-step or 4-step set of stairs. Measure and cut a piece of rubber treading for the tread. Measure and cut a piece of luan plywood for the riser face. Back-caulk the plywood: apply a bead of caulk around the edges and a serpentine bead down the center of the plywood. Allow the caulk to dry. This way you can show the trainees how to back-caulk without permanently placing the plywood to the stairs. Purchase some nonstick glue from a toy store for trainees to use to demonstrate back caulking. Have metal nosing for the stair lip—this will form the final piece of the enclosure.
2. For the floor enclosure, either use a 4' x 4' floor or use a corner in the training area. Have plywood available for the pre-floor covering and a primary floor of either tile or wood. Either measure and cut the pre-floor and primary floor before the hands-on exercise or have the trainees measure and cut as part of the exercise.

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Objectives

By the end of this station, trainees will

- list three situations where an enclosure could be used;
- demonstrate appropriate setup;
- demonstrate surface preparation for enclosure;
- define dust tight and why it is important to have the enclosure be dust tight;
- demonstrate appropriate back-caulking;
- enclose a step or piece of floor.

Directions

1. Have trainees suit up and fit check their respirators (**only use respirators if trainees have previously had OSHA respirator training**).
2. Have trainees set up the work area.
3. Have trainees demonstrate surface preparation for areas to be enclosed. Review with the trainees that all the chipping and flaking paint must be removed from the area that will be enclosed. Any "source problems" such as water leaks must be repaired. If the source problem is not addressed or the surface is not adequately prepared, the enclosure will fail. The words "Lead Paint" should be written on the steps, so that if an enclosure fails or is removed the hazard is identified.
4. Demonstrate appropriate enclosure methods for stairs and floor.

   Materials to build enclosures include: aluminum, panelling, filter board, plywood, and dry wall. (These are listed in the student manual on page 7-7.) Rubber treading can be used to enclose stair treads. Thin plywood can be used to enclose the risers.

   Enclosing stairs demonstration

   Have the students measure the width and length of the risers. With the saw, cut 1/4-inch thick luan plywood to the exact measurements of riser. Then, back-caulk the cut piece of plywood with nonstick glue: apply a bead of caulk around the edges and a serpentine bead down the center of the plywood. (For training purposes, instructors may place a piece of luan plywood without caulking into place on riser.)

Let students cut a separate piece of plywood to practice the caulking technique.

Have the students measure the width and length of the treads. A tread pad (or treading) is selected for the type of nose it has. Industrial treads are thicker and stronger and have more durability than other treads. Explain to students the importance of using metal nosing in addition to the nose on a tread pad for additional strength.

Enclosing floors demonstration

Use an 8-foot x 4-foot sheet of plywood, vinyl tiles (non-asbestos), and a strip of shoe molding.

The first stage: a pre-floor is put in place over the lead painted floor with mastic or caulking and nailed secure. Seams of the plywood floor should be caulked as well. This provides an airtight enclosure.

The second stage: new floor materials are installed on top of the plywood pre-floor. Back caulk the vinyl tiles and install them (you should be able to get four squares across).

Then install shoe molding along the perimeter of the floor (i.e., where it would meet the wall) with caulk and small finishing nails. Shoe molding provides an airtight seal around the edges of the floor enclosure. It must be back-caulked and bottom-caulked. It should fit snugly against the enclosed floor and the wall.

5. Have each trainee demonstrate an appropriate enclosure.
6. Have the group finish the rotation with daily cleanup.

   The students should wrap all large debris in 6-mil poly and seal with duct tape. (At this station the primary debris will be extra plywood from the enclosure.) Next they should wet mop the floor and bag the small debris in 6-mil poly. All surfaces should be HEPA vacuumed each day as part of daily clean up. The last step in daily cleanup is to check the poly and repair any tears or rips.

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Station 4: Chemical stripping/removal

Preparation

Setup

1. Simulated fireplace mantle
2. Table
3. Tools, equipment, and materials

Tools and equipment

1 tape measure
1 hammer
1 box of nails (common)
1 saw
1 box of finishing nails
4 2x4 boards
10 feet of 4-inch-wide decorative crown molding
3 9-inch x 2-inch boards (6 ft. long)
1 mop
1 case of polyethylene suits
1 case of disposable booties
1 case of disposable suits
1 roll of red (warning) barrier tape
1 75-foot of sheet poly
1 package of litmus paper
1 roll of duct tape
1 gallon of caustic paste paint remover
MSDS for paint remover
1 gallon of neutralizer (if applicable)
MSDS for neutralizer
2 plastic trowel applicators
3 3-inch flat scrapers
2 spray bottles with water
1 box of all-purpose cleaner, MSDS
2 buckets
1 bag of rags
1 lead warning sign
1 HEPA vacuum
6 pair of rubber gloves
4 pairs of goggles
respirators with organic/vapor HEPA filters (enough for all participants)
1 eye wash station

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To construct the hands-on station:

1. For shelf: cut a 1-foot-long segment of a 9-inch x 2-inch board.

   For legs: cut two 4-foot-long segments of 9-inch x 2-inch boards.

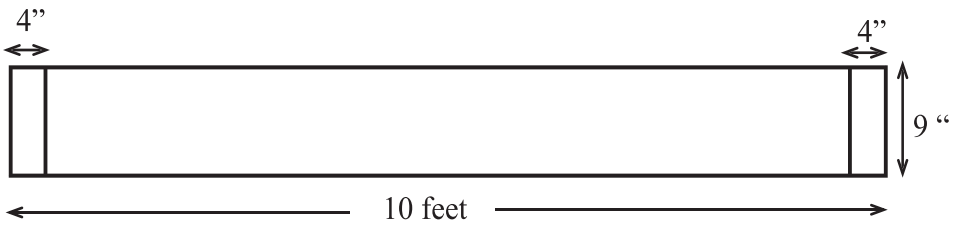
   For feet: cut two 3-foot-long segments of 2x4's.

   For support blocks: cut two 9-inch-long 2x4's.

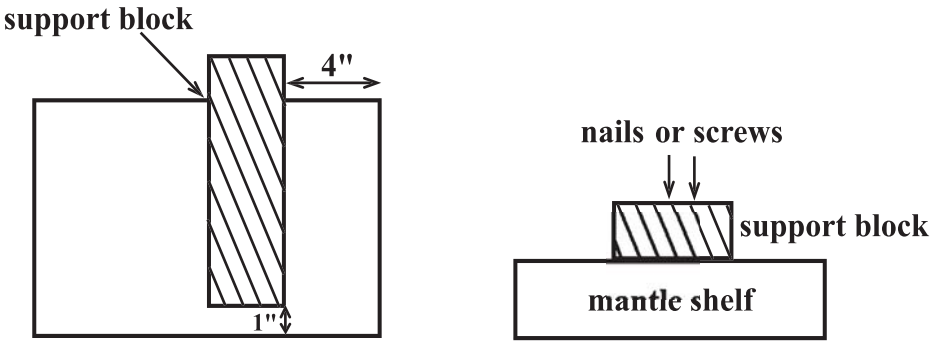
   For support beam (optional): cut a 9-foot, 4-inch-long 2x4.

2. Measure and mark off four inches in from each end of the mantle shelf. Then measure and mark off one inch from the front side of the mantle shelf.

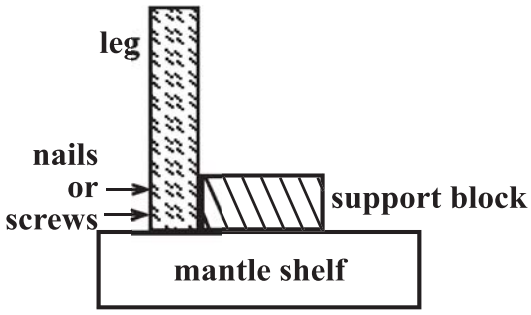
Place the support blocks along the inside of the 4-inch mark and up to the 1-inch mark. Note: The blocks will hang over the back of the shelf by one inch. Using nails



or screws, secure the support blocks to the shelf.



3. Line up the legs against the support blocks and the shelf. Note: The back edge of the legs will hang over the back of the shelf by one inch. Using nails or screws, secure the legs to the support blocks.



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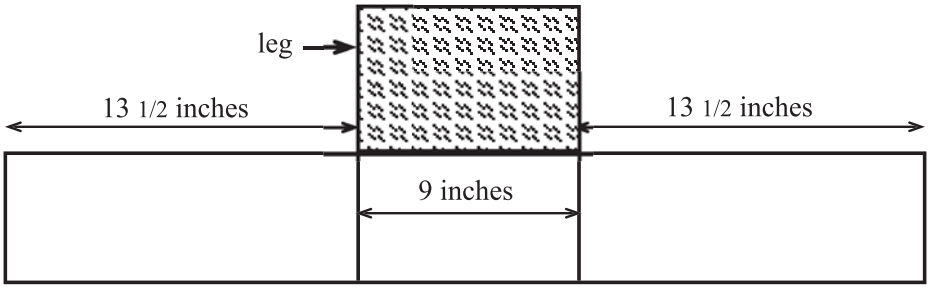
4. Measure and mark off 13 1/2 inches in from each end of the feet. Using these marks, center the feet along the inside of the legs. Using nails or screws, secure the feet to the legs.



5. (Optional) For added leg support, measure to the halfway point of legs and mark with pencil. Line up the 9-foot, 4-inch-long support beam with these marks between the legs. Secure it to both legs with nails or screws. For even more support, cut another 9-foot, 4-inch-long 2x4 and line attach it at the bottom of the leg boards.

6. Cut the decorative molding at a length that matches the distance between the far edge of one leg to the far edge of the other leg (about 9 feet, 8 inches). Place the molding against the front edge of the legs and support blocks, under the mantle shelf (where it hangs over). Secure the molding to the support blocks with finishing nails.

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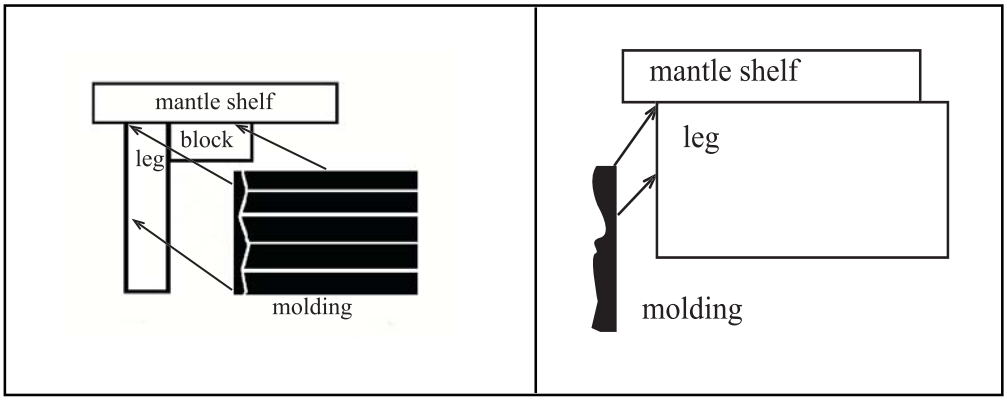

Front view **Side view**

7. Paint the entire mantelpiece with three to four coats of latex paint. Make sure you use at least three different colors of paint on the surface area that you will be using to demonstrate the stripping.

Hands-on practice

Objectives

By the end of this station, trainees will

- list the situations where chemical stripping could be used;
- chose the most appropriate stripper available at the station;
- identify and put on the proper protective gear;
- demonstrate appropriate setup;
- demonstrate application of chemical stripper;
- demonstrate proper removal of the painted surface;
- demonstrate appropriate waste disposal;
- demonstrate daily clean up.

Directions

1. Review the product MSDS.

   Provide at least two types of chemical stripper and their MSDSs. Have the trainees break into two groups. Each group will be responsible for reviewing one of the stripping agents and presenting the pros and cons of using that agent to strip the fireplace. Encourage the trainees to carefully review the product MSDS, especially the sections on ingredients, special precautions, health data, and required protective gear. Have the NIOSH pocket guide available for the class to look at as well. Give the class 10 to 15 minutes to prepare their presentation.

2. Have each group present their product.

   Following the presentations, have the group decide which of the two products they prefer to use and why. Guide the group toward using the safest product.

3. Have the group choose a foreman. Have that person read the directions for application of the product chosen.

4. Have trainees suit up in the proper protective gear and fit check their respirators.

   Make sure that all persons in this hands-on area are wearing eye protection. (This includes the instructor. It is important for the instructor to be appropriately suited up).

5. Have trainees set up the work area.

   Emphasize the need to protect the surfaces and the area surrounding the surface to be stripped. Two layers of poly are needed for the floor area. If there is wall-to-wall carpeting in the training room, you may want to protect the carpet with a subfloor or additional poly.

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Talk about carpet removal. If there was wall-to-wall carpeting on an actual abatement job, workers would probably remove it before doing any abatement work. Emphasize that workers need to wear protective clothing and respirators when handling lead-contaminated carpeting. They should wet mist the carpet prior to removing it to reduce the amount of lead dust that gets in the air. Ask the class where you will be kicking up the most dust when removing wall to wall carpet. Ask the class where you might find the largest amount of lead dust on the floor. (Both answers: Close to the walls).

6. Have the trainees apply the stripping agent, with the class foreman directing the activity. Make sure that the foreman is providing the appropriate directions (that is, following the manufacturer's directions).

   If you are using a stripper that requires 12 to 24 hours between application and removal, you will need to apply the stripper the day before the rotation. Apply in small patches of less then 12 inches in length, so that the waste produced is minimized.

7. Have the group select a second foreman to direct the removal of the stripper. Have the trainees remove the paint with the stripper, with the second foreman directing the activity.

   Make sure to discuss waste disposal before removal begins. Hazardous waste may be generated when you use chemical strippers. Make sure that you comply with the local laws for waste disposal with the training waste. Use a strong 5-gallon plastic bucket to collect the removal waste. Have the students set up a funnel with poly to capture any water waste as the area is being cleaned.

   We recommend that only a very small area be removed by each student to minimize the amount of waste produced. Emphasize the need to carefully remove the stripper and paint so as not to damage the surface material.

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   It is best to have at least three layers of different colored paint on the surface that will be stripped. This way students can appreciate the need to get off all layers of paint. If all the paint layers do not come off, inform the trainees that on an actual abatement job they would need to reapply the stripper. For training purposes, proceed with the Station so that the entire stripping process is covered.

8. Have the students carefully and thoroughly clean the surface after removing the stripping agent. You will need at least two buckets of water and many rags and one or two brushes. Cleaning is tedious and time consuming. Make sure that all the water waste is collected. Make sure the students have set up a funnel with poly to capture any water waste.

9. Then the surface needs to be neutralized (if applicable). Make sure the area is well ventilated.

   You can move the air flow by using a negative-air machine at this Station.

   Use litmus paper for a visual demonstration of the acid and base neutralization process. Litmus paper can also be used to demonstrate the change in the wash water before and after cleaning the stripped area.

   Have the second foreman read the instructions for the proper method of neutralizing the surface. Have the trainees read the MSDS for the neutralizer to make sure that they are properly protected. Have the trainees apply the neutralizer.

   The neutralizer will have to be left to dry on the surface. This takes six or more hours. This is another day! If the class is back on the next day, you can take them back to this Station and test the surface to see if it is neutral. Most likely it will not be neutral and you will have to pre-wash and neutralize the surface again. Again, return after six hours and test to see if it is neutral. (**If this is only a two-day course based on this EPA worker curriculum, there may not be enough time to complete the neutralization process. Make sure the students understand that this process must be completed before repainting or resealing.**)

   Several steps are always involved in any chemical stripping process and it is a time-consuming process.

10. Readdress the waste disposal issue with the class. All of the requirements stated in Chapter 8 of the student manual can be discussed at this point. Waste disposal is of special concern with chemical stripping. If you are teaching in a state which follows EPA guidance (August 2000) stating that lead abatement waste from *residential structures* is exempt from hazardous waste requirements, then all wastes can be handled as nonhazardous (see Chapter 8, Appendix A). However, some states or localities require concentrated lead wastes, including chemical stripping "sludge" to be tested. Make sure that you make trainees aware of the local, state, tribal, and federal requirements for waste disposal. (Remind the students that their employer and supervisor will be responsible for ensuring that the waste is contained and disposed of properly—See Chapter 8 in the student manual.)

11. Have the group finish the rotation with daily cleanup, if the neutralizer is dry. If the neutralizer is still wet, then have the trainees discuss what would be done for daily clean up. You may choose to keep the second layer of poly down to catch the wet neutralizer.

Instructor's Manual

For more information

These publications have more information on the topics covered in this chapter. You should have a copy of the publications marked with a star (*). You can order copies by calling 1-800-424-LEAD.

*EPA, *Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households*, Interpretive Memorandum (July 2000).

*EPA, *Lead: Requirement for Lead-Based Paint Activities in Target Housing and Child-occupied Facilities*; 40 CFR Part 745 (August 1996).

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

*NIOSH, *Preventing Lead Poisoning in Construction Workers* (April 1992).

*OSHA, *Interim Final Lead in Construction Standard,* 29 CFR 1926.62 (May 1993)

OSHA, *Lead in Construction, OSHA 3142* (1993).

Society for Occupational and Environmental Health, *Protecting Workers and Their Communities from Lead Hazards: A Guide for Protective Work Practices and Effective Worker Training* (1993).

Instructor's Manual

CHAPTER 8

Cleanup, Disposal, and Clearance

Instructor's Manual

Instructor's Manual

Learning objectives

In this chapter you will learn

- the importance of good cleanup
- what cleanup materials to use
- how to do daily cleanup
- how to do final cleanup
- what the clearance levels are
- how to handle waste
- how to dispose of hazardous waste.

Instructor's notes

The purpose of this chapter is for trainees to understand that a successful lead abatement job depends on quality cleanup work. The housing unit must be able to pass clearance dust levels.

An instructor with work experience in lead abatement will give credibility to the importance of cleanup. The instructor also needs to know the regulations for hazardous waste and be able to explain them in everyday language.

Make sure you also cover any additional information that may be required in your state on cleanup and waste disposal.

On the next page is a menu of options for teaching the session on cleanup and disposal. It is suggested that you allow one hour to teach this chapter.

Training methods

It is recommended that you do all of the following:

A.	Skit and Discussion	20 minutes
B.	Lecture/Slides	20 minutes
C.	Video Segments	20 minutes

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Skit and discussion (20 minutes)

Purpose: This exercise allows the class to discuss safe work methods when conducting lead abatement work.

Materials: Use the skit on page 8-4 in the student manual (reprinted below).

Directions: Ask for two volunteers from the class to do the skit. Give them a little time to review it before doing it. (Review your role as a facilitator on page Intro-14.) Discussion questions are on the next page.

Skit: A home abatement job

It's 4:30 in the afternoon, and Paul and Pam are just finishing cleaning up for the day.

Pam: Hey, I can see a little bit of dust left on the floor. I'll bring in the shop vacuum and clean it up.

Paul: Don't do that. Use the HEPA vacuum.

Pam: Didn't you hear that the HEPA vacuum broke this morning? Besides, we already did a thorough vacuuming yesterday.

Paul: Why don't we spray it down and then sweep it up?

Pam: That will take too much time. I've got a date tonight and I want to get out of here before the next shift comes in and removes the poly. Don't worry about it. I'm gonna vacuum and when I'm done it'll look really good.

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Discussion questions

1. **Is it okay to use a regular shop vacuum to clean up the lead dust as long as you're inside the contained area?**

   No. It doesn't matter that you are inside the contained area. The shop-vacuum will just blow the lead dust out without capturing it. The lead dust is too small to be caught by a shop-vacuum.

2. **If you are inside of the enclosed area, do you need to worry about kicking up the lead dust?**

   Yes. The lead dust will settle on more surfaces and will also be in the workers' breathing zone.

3. **What makes lead-paint dust and chips so hard to clean up?**

   Lead dust tends to stick to surfaces and is not always visible to the naked eye. It is small in size and yet heavy enough so it will settle downwards.

4. **If Pam uses the shop vacuum, how could it affect the people on the next shift?**

   The next shift plans on taking up the poly. They will assume that proper, daily cleanup has occurred. Because cleanup wasn't done properly, they may spread the lead dust around as they remove the poly.

   How could it affect the next person who uses the shop vacuum?

   The shop vacuum is contaminated with lead dust. The next person who uses it will get exposed to lead dust and may also spread the lead dust to other areas.

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Lecture/Slides

Purpose: To provide information on daily and final cleanup, the use of dust levels for final clearance and how to dispose of waste safely.

Materials: Slide projector, slides, flip chart and markers

Directions: Before starting the slides on a flip chart, write the question, "What are the characteristics of lead dust?" Let the class brainstorm answers with you writing them down. (Responses include: very fine, may not be visible, sticks to surfaces, needs to be rubbed off, and collects and packs into cracks.)

Another question you can write on the flip chart is "What materials are needed for cleanup?" (Answers are listed in the Student Manual on page 8-6.) Review what cleaning is done before, during, and after abatement.

Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Hands-on: final cleanup

Preparation

Final cleanup is the most important part of the lead abatement job. Time must be provided for the students to practice final cleanup.

Setup

1. The hands-on area, including the decontamination areas
2. Table
3. Tools, equipment, and materials

Tools and equipment

Whatever remains in the hands-on area after the daily cleanup will be there for this exercise. Removing these objects will be a part of the set up for final cleanup.

HEPA vacuum

3 Buckets

all-purpose cleaner (or lead-specific cleaner) and wash container

Rags

Mops

Resealing materials

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Hands-on practice

Objectives

By the end of this rotation, trainees will

- state why final cleanup is so important;
- choose the most appropriate method for final cleanup and identify how tracking; of lead dust will be minimized;
- identify and put on the proper protective gear;
- demonstrate appropriate set up for the clean up;
- demonstrate appropriate sequence of HEPA vacuuming;
- demonstrate proper wet wash sequence;
- demonstrate second HEPA vacuum sequence;
- demonstrate appropriate waste disposal;
- state the clearance levels required.

Directions

1. Have trainees state why the final cleanup is important.
2. Have the trainees design a plan for final cleanup.

   Make sure that they address the problem of tracking lead dust in the plan. Have the trainees discuss the plan which they have designed. Make sure that their plan coincides with Chapters 5 and 8 in the student manual.
3. Provide MSDSs for the cleaning product used and have the students choose the required protective gear for lead and the cleaning agent.
4. Have the trainees break into two groups.

   Each group should pick a foreman. Have one group be responsible for cleaning the tools and station areas while the other group sets up for the final cleanup. Any waste that remains is to be separated and thrown out in sealed poly bags or wrapped in poly.
5. Stage 1 of final cleanup: special cleaning

   Have trainees demonstrate the appropriate sequence of using a HEPA vacuum. They should vacuum all surfaces.

   Have the trainees wash all surfaces with lead cleaner and then rinse them. Have them use the four-step system. Make sure trainees follow the proper sequence of steps. (See Chapter 5 in the student manual on "Special Cleaning.")

Tell the trainees that the washed surfaces would need to dry before the next step of final cleanup. Ask the trainees what the next step would be. (Answer: A second round of HEPA-vacuuming all surfaces.) Have the trainees do the final HEPA vacuuming in the proper sequence of areas.

Have trainees throw away cleaning items in sealed poly bags. This completes stage 1. After the first stage of final cleanup, you may have to perform dust wipe clearance tests.

6. Stage 2 of Final Cleanup: Painting and resealing

   Discuss "visual inspections." Discuss the materials used for resealing abated areas.

7. Stage 3 of Final Cleanup: Repeat special cleaning

   Discuss the need to repeat the "HEPA-vacuum, wet wash with cleaner, HEPA vacuum" process after all abated areas are resealed.

8. Discuss final inspections and clearance dust wipe tests.

   Ask them what are the acceptable dust levels for job clearance after final cleanup is completed. (See student manual, Chapter 8, page 8-13.) Remind students that final cleanup is the most important part of an abatement job. Many abatement jobs fail because final cleanup was done poorly. If lead dust is left behind, the families who return to their homes can be lead poisoned. Doing final cleanup well is crucial to preventing lead poisoning.

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Invisible dust/black light demonstration

There are products on the market that are usually used by police departments to train staff how not to disturb the scene of a crime. It is a dust that can be sprayed or dusted on objects and cannot be seen unless the object is under a black, fluorescent light.

Purpose: These products can be used to demonstrate how lead dust can contaminate our clothes and be brought everywhere without our knowledge. It illustrates how easily lead dust can travel and the importance of protective clothing and proper decontamination procedures.

Materials

"Clue-Spray" (Product # UVA-201) the invisible dust can be ordered from

Sirchie Finger Print Laboratories
100 Hunter Place
Youngsville NC 27596
Phone: (919) 554-2244 or (800) 356-7311
Fax(800) 899-8181
email: Sirchie@mindspring.com
website: www.sirchie.com

MSDS for "Clue-Spray"

Fluorescent black light (available in some hardware stores)

Directions:

1. Spray the product on all hand tools such as scrapers. (Do not apply it to the heat gun.) You can also sprinkle the product on the surfaces that are abated during the hands-on exercises and on the poly laid on the floor during setup. Do not let the class see you do this. If possible, have it on the tools at each work station.
2. Each instructor should be aware of the work practices of the trainees and note if anyone takes off his or her gloves.
3. After a third of the class has gone through the decontamination process, take them into a separate room. With the lights out, turn on the black, fluorescent light. It will show if any "invisible dust" is on a trainee. It shows up as a color—green, blue, or orange. Places to look are on trainees' faces, hands, and hair.
4. Discuss with the trainees how the "invisible dust" could have gotten there and how lead dust can travel in the same manner.
5. If trainees ask what is in the "invisible dust," be prepared to share the information on the MSDS.

For more information

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

*EPA, Lead: *Identification of Dangerous Levels of Lead; Final Rule*, 40 CFR Part 745, (January 2001).

*EPA, *Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households*, Interpretive Memorandum (July 2000).

EPA, *Temporary Suspension of Toxicity Characteristic Rule for Specified Lead-Based Paint Debris*; Proposed Rule; 40 CFR Part 745, Subpart P (December 1998).

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

RCRA Hotline for information on waste disposal: 1-800-424-9346.

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CHAPTER 9

Soil Abatement and Exterior Dust Cleanup

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Learning objectives

In this chapter you will learn

- why lead in soil and exterior dust is a health hazard;
- what levels of lead in residential bare soil are considered hazards;
- how lead exposure from soil and exterior dust can be controlled.

Instructor's notes

This chapter follows the appropriate work rules you went over in Chapter 6—Setup. The challenge of this chapter is to make it as realistic and practical as possible and, at the same time, integrate work controls and safe work practices. It should be emphasized that with exterior lead work, the containment setup may be dramatically different than when doing interior lead work, but the same concerns regarding worker exposure, tracking, and spreading the contamination apply.

This section should be taught by someone who has practical experience—an individual who has done the work and has seen the results of choices made or methods used. If you yourself do not have this experience, you may still be able to teach this section with backup assistance from someone who does.

On the next page is a menu of options for teaching this section. It is suggested that you allow 30 minutes to teach this chapter.

Training methods

A.	Lecture/Slides	15 minutes
B.	Class discussion	15 minutes

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Lecture/Slides (15 minutes)

Purpose: To provide information on the different soil and exterior abatement methods and to identify EPA's definition of soil-lead hazards and the control options to address them.

Materials: Slide projector, slides

Directions: Make sure you involve the class in the slide presentation. Ask questions of the class to keep them involved.

Try not to read from the supplied notes about each slide. Using your own words will make it more interesting for the class. You can add any personal experience that you may have that is relevant. Notes are supplied for slides that are a part of this training kit. The notes include a copy or description of each slide.

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Class discussion (15 minutes)

Purpose: To discuss the different issues related to soil abatement and exterior dust cleanup as compared to lead-based paint abatement.

Materials: Flip chart and markers

Directions: Ask the class the following open-ended questions and write down their answers on the flip chart.

1. **What are some differences between soil abatement and exterior dust cleanup as compared to paint abatement?**

   The source of the lead contamination may not be lead-based paint, so some of the abatement issues addressed in the abatement chapter may not apply. Less containment used (poly or erosion control fences, but no airlocks or critical barriers generally used), so harder to control emissions. Tracking of dirt/dust more of a problem. More visible to public.

2. **What additional environmental or safety and health concerns would you have during a soil abatement/exterior dust cleanup project?**

   Wind; rain; underground cables; power lines (above and below ground); urban wildlife (stray dogs, cats, rats); landscaping (bushes, trees).

3. **How do you determine if the soil abatement/exterior dust cleanup was conducted properly?**

   Sample replacement soil (if applicable) before using; visible examination for paint chips; wipe exterior hard surfaces (e.g., driveway, sidewalk, porch stoop, steps); sampling of pathways used by crews when loading or unloading vehicles or equipment; integrity of permanent covering (e.g., asphalt or concrete); active onsite supervision during project.

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For more information

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*EPA, *Lead: Identification of Dangerous Levels of Lead; Final Rule;* 40 CFR Part 745 (Jan 2001).

*EPA, *Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households*, Interpretive Memorandum (July 2000).

*EPA, *Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities;* 40 CFR Part 745 (August 1996).

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

*OSHA, *Interim Final Lead in Construction Standard*, 29 CFR 1926.62 (May 1993).

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