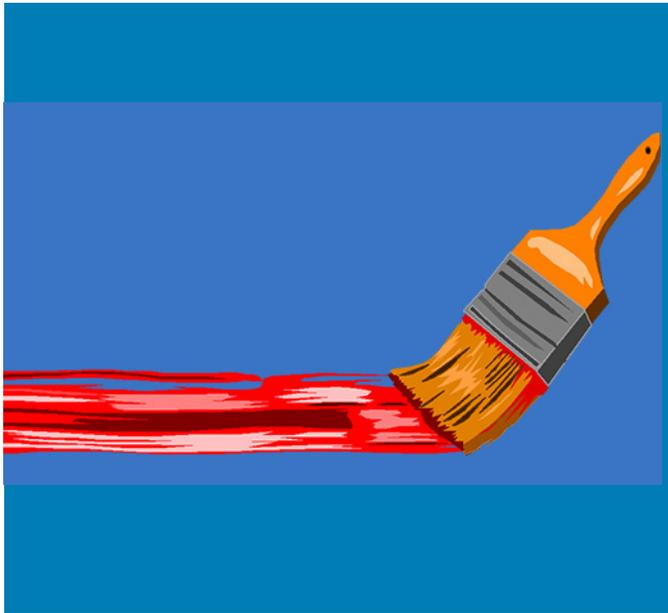


# Lead-Containing Materials Guidelines



**IOWA STATE UNIVERSITY**

Environmental Health and Safety

2408 Wanda Daley Drive  
Ames, Iowa 50011-3602

(515) 294-5359 | [www.ehs.iastate.edu](http://www.ehs.iastate.edu)

Copyright 1995©

Reviewed 2015

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY**Protecting the Safety, Health, and Environment of the Iowa State Community**

Iowa State University strives to be a model for safety, health, and environmental excellence in teaching, research, extension, and the management of its facilities. In pursuit of this goal, appropriate policies and procedures have been developed and must be followed to ensure the Iowa State community operates in an environment free from recognized hazards. Faculty, staff, and students are responsible for following established policies and are encouraged to adopt practices that ensure safety, protect health, and minimize the institution's impact on the environment.

As an institution of higher learning, Iowa State University

- fosters an understanding of and a responsibility for the environment,
- encourages individuals to be knowledgeable about safety, health and environmental issues that affect their discipline, and
- shares examples of superior safety, health and environmental performance with peer institutions, the State of Iowa and the local community.

As a responsible steward of facilities and the environment, Iowa State University

- strives to provide and maintain safe working environments that minimize the risk of injury or illness to faculty, staff, students, and the public,
- continuously improves operations, with the goal of meeting or exceeding safety, health and environmental regulations, rules, policies, or consensus standards, and
- employs innovative strategies of waste minimization and pollution prevention to reduce the use of toxic substances, promote reuse, and encourage the purchase of renewable, recyclable and recycled materials.

The intent of this statement is to promote environmental stewardship, protect health, and encourage safe work practices within the Iowa State University community. The cooperative efforts of the campus community will ensure that Iowa State University continues to be a great place to live, work, and learn.



Wendy Wintersteen  
President

## **Directory of Service and Emergency Providers**

### **Services**

**Environmental Health and Safety**

2408 Wanda Daley Drive | (515) 294-5359

**Iowa State University Occupational Medicine Department**

G11 Technical and Administrative Services Facility (TASF), 2408 Pammel Drive | (515) 294-2056

**McFarland Clinic PC, Occupational Medicine**

1018 Duff Avenue | (515) 239-4496

**Thielen Student Health Center**

2647 Union Drive | (515) 294-5801

### **Emergency**

**Emergency - Ambulance, Fire, Police**

911

**Department of Public Safety/ Iowa State University Police**

Armory, 2519 Osborn Drive | (515) 294-4428

**Mary Greeley Medical Center**

1111 Duff Avenue | (515) 239-2011

**Table of Contents**

**Directory of Service and Emergency Providers**..... **3**

**A. Introduction**..... **5**

    Scope..... 5

    Environmental Health and Safety (EH&S)..... 6

    Lead-Based Paint Defined..... 6

    Health Hazards of Lead..... 6

    Training..... 7

    Medical Surveillance..... 8

**B. Identification of Lead-Containing Materials**..... **9**

    Spot Chemical Testing..... 9

    X-Ray Fluorescence (XRF)..... 9

    Laboratory Analysis..... 9

**C. Project Planning**..... **11**

    Personal Protective Equipment (PPE)..... 11

        Respirator..... 11

    Hygiene Facilities..... 12

    Work Methods..... 13

        Acceptable..... 13

        Prohibited Methods..... 14

    Interior Work..... 14

    Exterior Work..... 15

    Routine Cleaning of Lead Painted Surfaces..... 17

**E. Lead Abatement**..... **18**

**F. Lead Waste Disposal**..... **19**

**G. Other Lead Activities**..... **20**

    Welding and Cutting..... 20

    Lead Cable Splicing..... 20

**Non-discrimination Statement**..... **21**

## A. Introduction

The procedures outlined in this guideline will promote the safe management of lead and lead-containing materials at Iowa State University (ISU). They will also help assure compliance with regulations applicable to lead.

These guidelines apply to any work where ISU and/or contractor personnel may be exposed to lead or lead-containing materials. Activities covered by this guideline include (but are not limited to) demolition, renovation, encapsulation, maintenance operations, and paint-prepping.

All ISU employees involved in the disturbance of lead-containing materials and lead-based paint as part of regular work activities must have a lead awareness training class. ISU employees exposed to lead above the action level (A.L.) of  $30 \mu\text{g}/\text{m}^3$  must have additional training and medical surveillance.

Environmental Health and Safety (EH&S) will conduct necessary sampling, monitoring, and inspections to ensure compliance with regulations as well as to protect employee health and safety. EH&S will provide guidance to departments regarding lead, lead exposure, and if necessary, lead abatement. EH&S will act as a liaison between ISU departments requesting services and lead abatement contractors.

Any questions concerning lead or items specified in the guideline should be directed to EH&S at (515) 294-5359.

### Scope

These guidelines apply to any work where ISU and/or contractor personnel disturb lead or lead-containing materials by scraping, washing, limited wet sanding, grinding, welding, drilling, small surface cutting for installation of equipment, repainting activities, cleaning activities, and minor surface modifications. Occupationally, disturbance activities include

- Demolition or salvage of structures where lead-containing materials may be present
- Removal or encapsulation of materials containing lead (e.g. paint)
- New construction, alteration, repair or renovation of items containing lead
- Installation of materials containing lead
- Lead contamination or emergency cleanup
- Maintenance operations involving the disturbance of lead or lead-containing materials

## Environmental Health and Safety (EH&S)

The Department of Environmental Health and Safety (EH&S) is designated as the university's representative regarding issues involving lead. EH&S will

- Coordinate disposal of lead-containing waste materials
- Conduct sampling, monitoring, and inspections as deemed necessary to protect employee health and safety
- Ensure compliance with regulatory requirements
- Provide guidance to departments regarding lead, lead-exposure, and if necessary, lead abatement
- Act as a liaison between ISU departments requesting services and lead abatement contractors
- Provide training and respirator fit testing for employees who may disturb lead-containing materials

Any questions concerning lead or items specified in this guide should be directed to EH&S at 294-5359.

## Lead-Based Paint Defined

For the purposes of operations at ISU, EH&S will adopt the HUD definition of lead-based paint as follows:

- 0.5% by weight as analyzed by a chemical laboratory, or
- 1.0 milligrams per square centimeter (mg/cm<sup>2</sup>) as measured by an X-ray fluorescence analyzer (XRF)

## Health Hazards of Lead

Health effects from lead exposure are a concern both at the workplace and in the home. Since the ban on lead in gasoline, lead levels detected in areas near roadways have decreased dramatically; however, lead-based paint used in buildings and housing prior to 1980 continues to serve as a significant source of exposure.

Lead poisoning can result from a single high-level (acute) exposure or through a number of smaller repetitive (chronic) exposures. Most adults are exposed to lead through occupational sources, while children and infants are exposed primarily through surface dust and soil. Floors, chewable surfaces, and soil contaminated with lead serve as primary exposure sources for children.

Lead has no beneficial effect on humans. Once it has been ingested into the body, lead is distributed in the bloodstream to red blood cells, soft tissues and bone. Lead in the body is eliminated very slowly, mainly by the kidneys and digestive tract. Irreversible kidney damage

may have already developed by the time high blood lead levels are identified and treated, making avoidance to exposure and medical surveillance extremely important.

Acute lead poisoning symptoms may include abdominal pain, irritability, fatigue, weakness and muscle pain. In rare instances, damage to the brain and central nervous system also may occur. Chronic lead poisoning may result after lead has accumulated over time in the body and has been deposited in bone. Stored lead in bone may be released to the blood stream to produce health effects including defective hemoglobin synthesis, nervous system abnormalities, hypertension, effects in the reproductive system and damage to a developing fetus.

The measurement of blood lead level is the most reliable method of evaluating lead exposure. It indicates the amount of lead in the bloodstream, which is often a measure of recent exposure to lead. Per the United States [Centers for Disease Control and Prevention \(CDC\)](#), experts use a reference level of 5 micrograms per deciliter ( $\mu\text{g}/\text{dl}$ ) to identify children with blood lead level of concern. Per the United States Department of Labor [Occupational Health and Safety Administration \(OSHA\)](#), employees whose blood lead level is at or above 40  $\mu\text{g}/\text{dl}$  shall be notified. OSHA also requires temporary medical removal from lead related activities when blood levels exceed 60  $\mu\text{g}/\text{dl}$ .



## Training

All ISU employees involved in the disturbance of lead-containing materials and lead-based paint as part of regular work activities must have a lead awareness training class. ISU employees exposed to lead above the action level (A.L.) of 30  $\mu\text{g}/\text{m}^3$  must have additional training and medical surveillance.

Typical job classifications needing awareness training would include painters, carpenters, welders, electricians, plumbers, and general maintenance personnel. Employees involved in lead abatement activities must receive more extensive EPA approved lead abatement training.

Register online at [Learn@ISU](#) for an upcoming Lead Awareness Training.

## Medical Surveillance

ISU employees who are exposed to lead at or above the action level of 30 ug/m<sup>3</sup> TWA for more than 30 days each year will be enrolled in the Occupational Medicine program. Blood lead levels will be checked initially, then at least annually thereafter. Blood lead levels should also be checked at the termination of employment. The ultimate frequency of blood screening will be dictated by the amount of lead-related work each affected employee performs and on advice from the Occupational Medicine physician.

The Iowa State University Occupational Medicine Program is designed to minimize personnel health risks from working with hazardous materials through monitoring and prevention. The program is also intended to enhance the efficiency of existing safety and health programs and keep the university in compliance with all applicable regulations. EH&S coordinates the participation of Iowa State University personnel in the program.

Participation in the Occupational Medicine Program requires completion of a [Hazard Inventory](#). The form must be completed by new employees who are exposed to hazards as part of their assigned job duties or current employees who have had changes to their hazards or personnel information. EH&S will use this information to determine the need for enrollment in the ISU Occupational Medicine Program.

If it is determined that the individual's workplace hazards require medical monitoring or training, the individual will receive a notice from the ISU Occupational Medicine Program with further instructions. If the individual's workplace hazards do not require any follow-up, they will not receive further communication.

EH&S will fit test employees with proper respirators, provide respirator training, and assist with the required paperwork. Occupational Medicine will perform all necessary medical tests and evaluations.

## B. Identification of Lead-Containing Materials

Any painted surfaces (including stained and varnished) in buildings constructed prior to 1980 must be sampled before any significant disturbance takes place. Any other materials (i.e. glazed ceramics, high voltage connectors or plumbing) that are suspected to contain lead must also be sampled before significant disturbance takes place.

To conduct a thorough investigation, each surface should be sampled separately. In a typical campus building, doors, windows, moldings, walls, and ceilings would be sampled separately. The primary lead paint sampling methods include spot chemical testing, x-ray fluorescence, and laboratory analysis.

### Spot Chemical Testing

Spot chemical testing involves a process where a small amount of solution is placed on a sampling surface, and if lead is present, a colorimetric change will take place. This method involves a small amount of paint disturbance in order to test a complete cross section of paints and has proven to be the least reliable of the three listed methods.

### X-Ray Fluorescence (XRF)

XRF analysis is completed using a direct field reading instrument that provides immediate results. EH&S currently maintains an XRF spectrum analyzer. The XRF uses a non-destructive analysis method that automatically adjusts for the substrate. As with the other analyses, each surface should be sampled separately. Because the XRF uses a radioactive source to measure lead content, only equipment operators who have received special training can operate this equipment.

### Laboratory Analysis

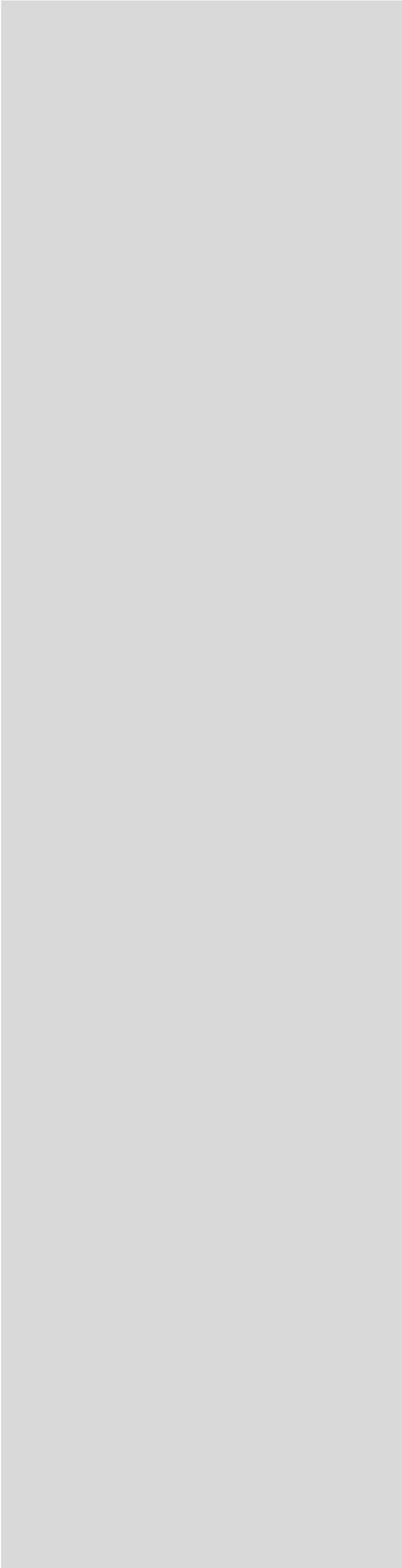
Laboratory analysis provides the most definitive results, but it can take one or two weeks to complete the analysis. The following steps are necessary to collect an acceptable sample:

All paint samples should be collected in a new plastic sample bag. Samples should be labeled with a sample number, the surface sampled, and the sample location.

Approximately 5 grams of paint chips must be collected. (For reference, a nickel weighs approximately 5 grams.)

Samples must represent a cross section of materials down to the

## Lead-Containing Materials



substrate. Care should be taken to collect as little substrate as possible. (For example, a paint sample on a wood door should contain paint down to the bare wood surface, but should not contain a significant amount of the wood itself.)

## C. Project Planning

Contact EH&S at  
(515) 294-5359

As part of any renovation project, paint, and other lead suspect materials must be analyzed in all sites to be disturbed. Spot and/or full abatement of leaded surfaces may be required before renovation or demolition can take place.

EH&S must be contacted to conduct sampling prior to any activity that involves significant disturbance of materials potentially containing lead. For jobs involving the welding or cutting of painted surfaces or extensive removal of lead-containing plumbing, more specific personal protective equipment as well as ventilation may be required.

### Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is required when disturbing lead-containing materials. This equipment includes but is not limited to

- disposable work gloves,
- coveralls (Tyvek or similar) with foot covering,
- safety glasses, goggles, or face shields, and
- properly fitted half-face respirators with HEPA filters.

Once removed, any disposable materials must be gathered and disposed of as lead waste. Specific waste requirements are outlined in section "Waste Disposal."

Work procedures not previously monitored will require personal air sampling to determine airborne lead levels and the adequacy of respiratory protection. Air samples will be collected by EH&S, then forwarded to an accredited laboratory for analysis. Employees must be trained in the use, fitting and limitations of their PPE as per [OSHA's Personal Protective Equipment Standard \(29CFR 1910.132-138\)](#).

#### Respirator

The [OSHA Respiratory Protection Standard \(29 CFR 1910.134\)](#) requires medical evaluation, fit testing, and training for individuals who intend to wear respiratory protection. Iowa State University employees who are required to wear respiratory protection according to their job description or research protocol must participate in the ISU [Respiratory Protection Program](#).

Respirator certification consists of three steps:

##### 1. Medical Evaluation

- Review workplace hazards with your supervisor and complete

the [Hazard Inventory](#).

- Call Occupational Medicine at (515) 294-2056 to schedule a medical evaluation.
- Complete the [Medical Questionnaire for Respiratory Protective Equipment](#). Take the questionnaire with you to your Occupational Medicine evaluation.
- Approval to wear a respirator is granted by the Occupational Medicine physician and you will be given a Medical Approval for Respirator Use form.

## 2. Training and Fit Testing

- Sign up for a Respirator - Initial Certification class by calling EH&S at (515) 294-5359. Bring the Medical Approval for Respirator Use form obtained at Occupational Medicine to class.
- Respirator – Initial Certification class will include training and individual fit testing. All respirator models available at Central Stores are available for fitting at EH&S. At the successful completion of the class, EH&S will issue a Respirator Prescription, listing respirator type, size, and cartridge type.

## 3. Purchase Your Respirator

- Present the Respirator Prescription and a Central Stores requisition at Central Stores (192 General Services Bldg) to purchase a respirator.
- Continued required use of a respirator will require you to attend Respirator Recertification class annually. EH&S will notify program participants of their recertification due date.

## Hygiene Facilities

Personal hygiene is critical in the control of lead exposure for employees working with lead-containing materials. Hygiene facilities with soap, water, and disposable towels must be provided for employees. If jobs are extensive or large in scope, or if the paint being disturbed has a high lead content, job containment barriers and portable showers may be needed. The shower waste water may have to be gathered and placed in drums for further analysis. Collection will take place until the lead content of waste water is determined via laboratory analysis. Smoking, chewing tobacco, gum, or food will not be allowed in the work area. Employees must wash hands and face thoroughly before all breaks and at the end of each work shift.

## D. Operations and Maintenance (O&M) Activities for Lead Painted Surfaces

In many instances, routine painting and repair jobs will disturb materials that contain lead. Lead-containing paint and window glazing are just two types of materials that may be encountered. Based on historical personal air monitoring results, significant lead exposures may occur when preparing lead-containing surfaces for repaint or repairing lead-painted window glazing.

The procedures in this section should be used to conduct a repair or maintenance activity, not to remove lead-containing materials, but to conduct a repair or maintenance activity. As an example, these guidelines would be used when scraping loose paint in preparation for a repainting job, but would not be appropriate where all paint from a surface (loose and intact) would be removed.

Employees conducting O&M activities must have completed Lead Awareness Training, and be enrolled in the ISU [Respiratory Protection Program](#).

A small amount of care can significantly decrease the potential for exposure to lead during maintenance activities.

### Work Methods

#### Acceptable

The work methods listed below are acceptable for O&M or limited abatement activities by personnel that have had proper training, medical surveillance, and have completed the appropriate work area set-up.

- Operations and Maintenance Work Methods
  - Manual scrapers and wire brushes
  - Limited manual sanding (preferably wet sanding) with accompanied ventilation (e.g. HEPA vacuum)
- Abatement Removal Methods
  - Chemical formulations that are approved by EH&S (e.g. methylene chloride-free solutions)
  - Heat guns not exceeding 700 degrees Fahrenheit
  - Manual scraping with the aid of approved chemical solvents (e.g. methylene chloride-free solutions).
  - Paste formulations containing potassium or sodium hydroxide

## Lead-Containing Materials

- Mechanized sanding equipment with dedicated HEPA filtered exhaust systems

### Prohibited Methods

The following work methods are prohibited and will not be allowed:

- Use of a heat gun generating temperatures exceeding 700 degrees Fahrenheit
- open flame torching
- dry abrasive blasting using sand, grit or any other particulate
- use of chemical strippers not approved by EH&S
- mechanized sanding without HEPA filtered collection systems

### Interior Work

When performing interior work follow these guidelines.

- Notify the building supervisor and occupants where work involving lead will take place.
- Conduct work involving lead-containing materials at times when the area is unoccupied.
- Place 6-mil polyethylene sheeting a minimum of 6 feet horizontally out in all directions from the work area to cover any immovable objects.
- Personal protective equipment (PPE) must be used, and at a minimum should include half face respirator with HEPA filters, disposable clothing and gloves. Shoe covers are necessary to avoid tracking lead dust and waste outside the immediate work area.
- HEPA vacuums, disposable towels and wash-up facilities must be available to employees at the work site. Clean-up materials should be kept away from the immediate work area, but must be close enough to allow quick cleanup of employees and equipment. All reusable equipment (HEPA vacuums, scrapers, screw drivers, etc.) must be properly cleaned at the end of each day.
- The work area itself must be demarcated and barricaded using disposable danger tape and “Lead Danger” warning signs bearing the following legend:
- Use a HEPA vacuum to clean any accumulated dust from the work area prior to beginning the maintenance activity. Do not sweep or brush potential lead-containing dust.
- Use care to minimize the production of dust from scraping or sanding. Use either wet sanding/scraping or HEPA-filtered



equipment.

- At break periods or when finished, workers must immediately proceed to assigned cleanup areas to decontaminate. The decontamination areas must be within the barricaded areas and must have polyethylene drop cloths or plastic tarpaulins as a floor. Upon completion of cleanup, discarded PPE will be gathered into 4-6 mil plastic bags or into drums for proper disposal. Waste PPE should be kept separate from paint chips, dusts and debris to allow appropriate disposal. Specific waste characterization and disposal information is outlined in Section VI - Waste Disposal.
- When activities are complete, clean up any debris using HEPA vacuums. Working surfaces and the immediate work area should then be wet wiped using disposable towels and a detergent solution. Gather and containerize paint chips, dust, and debris as lead-containing waste. Remove surface polyethylene and final clean the area again using wet methods and HEPA vacuuming. All used towels must be gathered and disposed of as contaminated waste. Surface polyethylene can then be wet wiped, rolled inwards and disposed of as general (non-hazardous) waste.
- Waste generated in preparation activities (paint chips, glazing, etc.) should be collected and deposited in an appropriate specific waste container. Characterization and disposal information is outlined in section "Waste Disposal."
- Air monitoring (both area and personal) by EH&S will be necessary until exposure levels can be determined.

## Exterior Work

When performing exterior work follow these guidelines.

- Notify the building supervisor and occupants where work involving lead will take place.
- Building occupants should be notified to close windows and doors within 25 feet of the work area.
- Pre-clean paint chips, dust, and debris from existing surfaces (using HEPA vacuums and wet cleaning methods) **before** the job begins. Place plastic catch sheeting or tarpaulins to collect debris on the ground, floor or platform directly below the work area, and at least 6 feet out in all directions from the working surfaces. When working on elevated surfaces, an additional 6 feet of catch sheeting is required per floor above the first to a maximum of 25 feet. Individual catch sheets or tarpaulins should be overlapped a minimum of 18 inches and secured to each other. Prepping should not take place on windy days. Catch

## Lead-Containing Materials



sheets or tarps should be weighted or secured to the ground.

- All windows, doors and other openings in the work area shall be sealed using polyethylene on the *inside*. Care should be taken not to disturb interior surfaces, which may also contain lead. Barrier tape will be used to isolate the work area in such a way that no member of the public can get within 10 ft. of the work area. (This requirement may need to be adjusted for work on elevated surfaces.) The work area itself must be demarcated and barricaded using disposable danger tape and “Lead Danger” warning signs bearing the following legend:
- Personal protective equipment (PPE) must be used, and at a minimum should include a half-face respirator with HEPA cartridges, disposable clothing and gloves. Shoe covers are necessary to avoid tracking lead dust and waste outside the immediate work area.
- HEPA vacuums, disposable towels, and wash-up facilities must be available to employees at the work site. Clean-up materials should be kept away from the immediate work area, but must be close enough to allow quick clean-up of employees and equipment. All reusable equipment (HEPA vacuums, scrapers, screw drivers, etc.) must be properly cleaned at the end of each day’s work and before leaving the job site.
- When preparation activities are completed, working surfaces and the immediate work area should be wet wiped using disposable towels and a detergent solution. All used towels must be gathered and disposed of as contaminated waste. Surface polyethylene will then be wet wiped, rolled inwards, and disposed of as general waste.
- At break periods or when finished, workers must immediately proceed to assigned cleanup areas to decontaminate. The decontamination areas must be within the barricaded areas and must have polyethylene drop cloths or plastic tarpaulins as a floor. Upon completion of cleanup, discarded PPE will be gathered into 4-6 mil plastic bags or into drums for proper disposal. Waste PPE should be kept separate from paint chips, dust and debris to allow appropriate disposal (see section Lead Waste Disposal).
- Waste generated in preparation activities (paint chips, glazing, etc.) should be collected and deposited in an appropriate container. Specific waste characterization and disposal information is outlined in section Lead Waste Disposal.
- Monitoring (both area and personal) by EH&S will be necessary until exposure levels can be determined.

### Routine Cleaning of Lead Painted Surfaces

The following items apply to personnel involved in sweeping or cleaning in areas where paint chips or dusts are present.



HEPA vacuum

- Employees should attend a lead awareness training class or be trained on the hazards of lead as part of their Worker Right to Know training.
- Report peeling paint or paint in poor condition to area coordinators or building contacts. Coordinators or contacts should then contact the appropriate personnel (Facilities Planning and Management (FP&M) paint shop, Department of Residence (DOR) maintenance, FP&M maintenance, etc.).
- Assume paint is lead-containing unless testing shows otherwise.
- Cleaning of lead-painted surfaces should be performed using HEPA vacuums dedicated for lead, followed by wet methods (i.e. wet towels, sponges or cloths). To specifically clean lead dusts from surfaces, a detergent such as *Spic and Span* is recommended.
- Disposable gloves must be worn during cleaning. Respirators are not considered necessary for small cleaning jobs. Larger cleaning jobs may require respirators. HEPA vacuums should be used whenever possible to minimize exposure.
- Gloves, sponges, disposable towels, and other non-cleanable materials used in the cleaning of lead-painted or contaminated surfaces must be placed in plastic bags, labeled as "Lead-Based Paint Cleanup Materials" and dated. The waste will be collected by EH&S. See section "Waste Disposal" for proper handling of waste materials.

## E. Lead Abatement

Activities resulting in the disturbance of lead paint for the purpose of removing lead-based paint or “de-leading” surfaces will require special conditions and considerations not outlined in this document. At minimum, abatement of lead paint will be performed by personnel who:

- Are participating in a medical surveillance program.
- Have successfully completed a lead abatement training course that includes the hazards of lead, proper abatement procedures, personal protective equipment, and cleanup and clearance procedures.
- Are under the direct supervision of a supervisor who has successfully completed a lead abatement supervisor training course.

Lead abatement in general will be conducted by private sector contractors. Iowa State University employees who have completed proper training may be involved on small jobs.

Work area set-ups will be unique to each project and will be handled on a job-specific basis. Departments who have projects that disturb lead-based paint must contact EH&S (515) 294-5359 before beginning the job to ensure all surfaces have been tested and to schedule personal monitoring. Any significant disturbance or abatement of lead-containing materials must be accompanied by air sampling. EH&S will determine both the types and numbers of samples necessary on a job-specific basis.

Final wipe sampling may be required to allow for re-occupation at the completion of a project. EH&S will evaluate the need to conduct clearance sampling and the scope of the required sampling. The analysis of these samples could be a lengthy process, sometimes taking one to two weeks. The appropriate time should be scheduled for this type of delay.

## F. Lead Waste Disposal

EH&S is responsible for coordinating the proper disposal of hazardous waste at Iowa State University (ISU). Lead paint chips, dust, and debris will generally be classified as hazardous waste. Because of hazardous waste costs, efforts should be made to minimize the generation of lead-contaminated waste.

Paint chips, dusts, and contents from HEPA vacuums (including HEPA filters) should be collected and containerized to allow for testing and handling as a possible hazardous waste. Demolition materials painted with lead-based paint will be disposed of as regular construction/demolition waste.

Some items contaminated as part of the abatement process may be cleaned and classified as non-hazardous waste. Polyethylene used to protect items may be cleaned using HEPA vacuuming and/or wet wiping, then disposed of as non-hazardous waste. All non-hazardous waste can be put in unlabeled bags and/or placed in dumpsters. For lead waste questions and/or assistance in obtaining, labeling, and disposing of waste containers, call EH&S at (515) 294-5359.

## G. Other Lead Activities

### Welding and Cutting

All painted metal surfaces (I-beams, pipes, light poles etc.) shall be assumed to be lead-containing unless sampling or a manufacturer's specifications show otherwise. Industrial coatings often contain other hazardous additives in addition to or in place of lead. These may include chromium, cadmium and mercury. When welding and/or cutting lead painted surfaces, powered air purifying respirators (PAPR's) with HEPA filters are required. PAPR's are recommended for all welding and cutting operations unless ventilation is in place to control contaminants. If welding or cutting is done in an occupied building, proper exhaust ventilation must be supplied. Similar guidelines apply to soldering of sheet metal, tubing, piping, plumbing or sewer piping involving lead solder or other lead-containing materials.

### Lead Cable Splicing

Sampling during the splicing of lead jacketed electrical lines has shown the potential for exposures to lead at or above the action level. Any soldering or heating of lead jacketed materials should be conducted using proper engineering controls (i.e. ventilation), personal hygiene, PPE, and personal monitoring. EH&S can assist in identifying the specific controls that are needed to safely complete this task.

## Non-discrimination Statement

“Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3350 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515 294-7612, email [eooffice@iastate.edu](mailto:eooffice@iastate.edu)”