



Department of

*Environmental
Safety,
Sustainability and Risk*

DIVISION OF ADMINISTRATIVE AFFAIRS

**LEAD
MANAGEMENT
PLAN**

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UNIVERSITY OF MARYLAND, COLLEGE PARK, MD 20742-3133 * (301) 405-3960 * FAX (301) 314-9294

Emergency and Assistance Telephone Numbers

UM Emergency (Fire - Police - Rescue) - 24 hours #	911
CALL IMMEDIATELY FOR <u>ANY</u> EMERGENCY INCLUDING CHEMICAL SPILL, FIRE, PERSONAL SECURITY, INJURED OR SICK PERSON	
Environmental Safety, Sustainability and Risk (Main Office) (Industrial Hygiene, Occupational Safety, Hazardous Waste Management, Fire Protection, Radiation Safety, Insurance Services, Hazard Communication, Accident Investigation, Air Monitoring and Safety Education)	(301) 405-3960
University Health Center - Occupational Health (Medical Consultation and Evaluation)	(301) 314-8172
Facilities Management Work Control Center (Repair of Facility Equipment Deficiencies, e.g., steam line leaks, electrical failures, ventilation problems, etc.)	(301) 405-2222
Maryland Poison Control Center	1-800-492-2414

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Policy Statement

I. Purpose.

This is a statement of official University policy to establish the process for compliance with Lead Exposure in Construction (29 CFR 1926.62), Lead Exposure in General Industry (29 CFR 1910.1025), and Procedures for Abating Lead Containing Substances from Buildings (COMAR 26.02.07).

II. Policy.

The University is dedicated to providing safe and healthful work facilities for students and employees, and complying with federal and state occupational health and safety standards. Administrators, project managers, faculty, staff and students all share responsibility for minimizing their exposure to lead.

The Lead Management Plan shall be implemented for all facilities at the University of Maryland where potential exposure to lead may occur.

The Lead Management Plan shall be reviewed and evaluated for its effectiveness periodically, and updated as necessary.

III. Responsibilities.

- A. Department of Environmental Safety, Sustainability and Risk (ESSR) shall:
1. Develop and distribute the written Lead Management Plan;
 2. Assist in identifying employees and coordinate their training. (See Training Section for more specific training information). The training content will depend upon the nature of the activity:
 - (a) For employees who have the potential to be exposed to lead at any level, and are not working in construction, they must be informed annually of the contents of 29 CFR 1910.1025, Appendix A (Substance Data Sheet for Occupational Exposure to Lead) and Appendix B (Employee Standard Summary).
 - (b) For employees who have the potential to be exposed to lead at or above the action level of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), and are working in construction, must be provided a training program as outlined in 29 CFR 1926.62(1).
 - (c) For employees who are exposed to lead in any form, for example, painters and carpenters involved in the disturbance of lead-based paint, and are not performing lead-based paint abatement activities or construction, and are exposed to lead in excess of 30 $\mu\text{g}/\text{m}^3$ on any day during a given year, must be provided a training program as outlined in 29 CFR 1910.1025(1)(1)(ii).
 - (d) For employees performing lead-based paint inspections, or performing lead-based paint risk assessments, must attend Maryland Department of the Environment approved training courses.
 - (e) For employees performing lead-based paint abatement, must attend

- Maryland Department of the Environment approved training courses.
- (f) Depending on the job description, such as project supervisor, project designer, etc., there are other accredited MDE training courses. They are listed under the Training section of this Plan.
3. Maintain records of employee participation in training and provide confirmation back to the departments the list of participants;
 4. Perform exposure monitoring as requested by supervisors;
 5. Coordinate assessment of materials to determine lead content as necessary to determine exposure potential;
 6. Maintain lead sampling results information;
 7. Provide technical guidance to personnel at all levels of responsibility concerning lead, hazard evaluation, and hazard control;
 8. Review periodically the lead management plan and revise as necessary;
 9. Maintain XRF equipment and dosimetry as required; and
 10. Dispose of lead waste generated by either contractor or campus employee activities in accordance with local, Maryland, and federal requirements for the disposal of toxic wastes.
- B. The Occupational Health Unit of the University Health Center shall:
1. Coordinate and direct all required or recommended medical surveillance for employees as dictated by regulations;
 2. Provide medical consultations and examinations for workers who have been overexposed or believe they may have been overexposed to lead; and
 3. Maintain medical records relating to consultations, examinations and medical surveillance as required by law.
- C. Facilities Management Capital Projects and Facilities Management Operations and Maintenance (O&M) shall:
1. Oversee contracts requiring disturbance of lead-bearing materials;
 2. Identify requirements for compliance with applicable Federal and State lead regulations in contract specifications;
 3. Coordinate material assessment and provide lead-based paint inventory information to ESSR for projects administered;
 4. Provide ESSR with information such as lead air and dust sampling results as necessary to evaluate potential exposures to UM employees or satisfy information requests from UM employees and regulatory agencies related to construction operations;
 5. Interface with contractors where enforcement of related contract provisions is required;
 6. Maintain submittal documents and related records from abatement contracts in a manner that is readily retrievable in case of a regulatory inspection;
 7. Communicate requirements to contractors;
 8. Ensure lead waste is managed according to all applicable regulations of this Plan; and
 9. Ensure that paint used contains less than 0.06% lead, which is considered lead-free by the Consumers Product Safety Commission (CPSC).
- D. Department Heads shall:
1. Assure that all employees who have potential to contact lead containing

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- materials are aware of the hazards associated with lead;
 2. Assure that all employees who have potential to contact lead containing materials receive Lead-Based Paint Awareness training annually; and
 3. Ensure that paint used contains less than 0.06% lead, which is considered lead-free by the CPSC.

E. Supervisors shall:

1. Assure that all employees who have a potential to be exposed to lead have received the appropriate training;
2. Ensure that all employees who will perform abatement to lead-based paint have completed training through an approved lead abatement worker class;
3. Assure that employees under their control follow the lead-based paint work practices described in this program;
4. Arrange for exposure monitoring through ESSR where needed to document exposure levels or provide negative exposure assessments;
5. Initiate medical surveillance for any employee who has the potential for exposure to lead as outlined in 29 CFR 1910.1025 or 29 CFR 1926.62;
6. Coordinate assessment of materials to determine lead content as necessary to determine exposure potential; and
7. Report any problem associated with implementation of the Lead Management Plan in the work area to ESSR.

F. Employees shall:

1. Perform his/her work as safely as possible and follow all safety procedures;
2. Comply with the provisions of the Lead Management Plan and work practices identified for individual tasks; and
3. Report existing health or safety hazards to the supervisor

Glossary of Terms

Abatement: A set of measures designed to eliminate or reduce lead-based paint hazards in residential, public, or commercial buildings, bridges, or other structures or superstructures in accordance with standards established by the Maryland Department of the Environment (MDE), which may include: (a) the removal of lead-based paint and lead-contaminated dust, the containment or encapsulation of lead-based paint, the replacement or demolition of lead-painted surfaces or fixtures, and the removal or covering of lead-contaminated soil; and (b) all preparation, cleanup, disposal, and post-abatement clearance testing activities associated with these measures.

Accreditation: Recognition by MDE that a contractor, supervisor, inspector, risk assessor, or training provider is in compliance with the applicable requirements of working with lead-based paint.

Action level (AL): Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air ($30 \mu\text{g}/\text{m}^3$) calculated as an 8-hour time weighted average (TWA).

Construction Work: Work for construction, alteration and/or repair, including painting and decorating. Construction includes, but is not limited to:

- Demolition or salvage of structures where lead or materials containing lead are present;
- Removal or encapsulation of materials containing lead;
- New construction, alteration, repair, or renovation of structures, substrates, or portions or materials containing lead;
- Installation of products containing lead;
- Lead contamination from emergency cleanup;
- Transportation, disposal, storage, or containment of lead or materials containing lead where construction activities are performed; and
- Maintenance operations associated with these construction activities.

Exposure Assessment: The initial determination to find if any employee may be exposed to lead at or above the action level. Until the assessment is completed, employees shall assume that the exposure is above the PEL, but not more than ten times the PEL. Employee protective measures shall be implemented, including respiratory, other personal protective equipment, change areas, hand washing facilities, biological monitoring, and training.

HEPA: High Efficiency Particulate Air. A filtering system capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micron in diameter or larger.

Large Scale Interior and Exterior Maintenance: The repainting of an interior or exterior area that involves the disturbance of large areas of lead-based paint or multiple surfaces containing lead.

Lead-based paint (LBP): any paint, plaster, or other surface encapsulation material containing more than 0.50 percent lead by weight calculated as lead metal in the dried solid, or more than 0.7 milligram per square centimeter.

Lead-contaminated dust: Dust with a lead content equal to or greater than: (a) 200 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) in dust collected from a floor; (b) $500 \mu\text{g}/\text{ft}^2$ in dust collected from a window sill; or (c) $800 \mu\text{g}/\text{ft}^2$ in dust collected from a window well (trough).

Lead-free: (Applies to building condition assessments only. O&M work may require exposure monitoring even if the lead based paint is below the LBP definition). Means (except for factory-applied coatings on metal components) contains no lead-based paint; or meeting all of the following conditions:

- (a) All interior surfaces of the affected property contain no LBP;
- (b) All exterior surfaces of the affected property coated with LBP that were chipping, peeling, or flaking have been restored without lead-based paint;
- (c) No exterior surfaces of the affected property coated with LBP are chipping, peeling, or flaking; and
- (d) The owner of an affected property submits to MDE, every two years, a certification by an accredited lead paint inspection contractor that no exterior painted surface containing LBP is chipping, peeling, or flaking.

Lead paint maintenance and repainting: In-place management or interim control of a lead containing substance including, but not limited to, the following activities: (a) removal of loose, chipping, or peeling paint; (b) limited replacement or repair of defective components or other substrates; (c) the removal and replacement of windows and related trim; or (d) other measures to prepare lead paint for recoating with a lead-free product, encapsulation, or enclosure.

Lead paint removal and demolition: A service that involves the stripping or other removal of a lead containing substance from a coated surface, or the removal or demolition of components coated with a lead-containing substance, excluding steel structures.

Medical Removal Protection: The removal of an employee from exposure to lead when the employee's blood lead level is at or above 50 micrograms per deciliter of blood ($\mu\text{g}/\text{dl}$).

O & M: Operations and Maintenance

Permissible Exposure Limit (PEL): The OSHA limit for lead exposure. It is $50 \mu\text{g}/\text{m}^3$, averaged over an 8-hour workday, commonly referred to as the Time-Weighted Average, or TWA.

Project Manager: A person in Facilities Management O&M or Facilities Management Capital Projects who manages large scale projects and is responsible for ensuring that the contractor conforms to all applicable codes and regulations including, but not limited to, LBP.

Residential building: A privately or publicly owned structure, including a house, apartment building, rooming house, hotel, motel, or hospital, which may serve as a permanent or temporary domicile.

Shoe Mold: Strips off quarter round wood commonly used where baseboards meet the floor.

$\mu\text{g}/\text{dl}$: Micrograms per deciliter. A deciliter is 10 milliliters or 10 cubic centimeters.

XRF: X-Ray Fluorescence analyzer. A device that measures the lead content in paint and other materials. Readings are expressed in milligrams of lead per square centimeter (mg/cm^2).

Applicable Regulations

In the State of Maryland, lead is regulated under the following statutes:

For University employees exposed to lead during routine O&M, the University is required to follow OSHA 29 CFR 1910.1025, Occupational Exposure to Lead. If the work is characterized as construction, then University employees are required to follow OSHA 29 CFR 1926.62, Occupational Exposure to Lead in Construction Work. Construction work is defined in the Standard as "construction, alteration, or repair, or all of the above, including but not limited to, renovation, demolition, reconstruction, refurbishing, restoration, painting, and decorating".

Both regulations are essentially similar, except for training requirements.

In OSHA 29 CFR 1910.1025, if employees have a potential to be exposed to lead at any level, they must be informed of Appendix A and B of the Standard. In OSHA 29 CFR 1926.62, the training requirements make reference to OSHA's Hazard Communication Standard for the Construction Industry, 29 CFR 1926.59. In addition, OSHA 29 CFR 1926.62 requires a training program for all employees who are subject to exposure to lead at or above the action level on any day or who are subject to exposure to lead compounds which may cause skin or eye irritation (for example, lead arsenate and lead azide).

For lead-based paint abatement, the Maryland Department of the Environment (MDE) has promulgated COMAR 26.02.07, Procedures for Abating Lead Containing Substances from Buildings.

Lead-based paint abatement is a complex, requirements driven operation, and is only performed by trained and qualified personnel.

Performance of maintenance, repair, or renovation work that results in disturbances of a lead-containing substance is excluded from the MDE regulations above if:

- The disturbance of a lead-containing substance is associated with plumbing or electrical work that involves 3 square feet or less of surface area in a room; or
- Other disturbances of a lead-containing substance involving 3 square feet of surface area in a room, except for window removal or replacement.

Employees must still follow either OSHA 29 CFR 1926.62, Exposure to Lead in Construction or 29 CFR 1910.1025, Occupational Exposure to Lead.

Facilities Management shall assure that contractors engaged in the refinishing of exterior wood surfaces which contain lead-based paint shall follow Section 02091, Surface Preparation for Lead-Based Paint.

Other environmental, health, and safety regulations, and codes and standards that may be applicable include:

- Environmental Protection Agency (EPA) 40 CFR Parts 260-265 and 268, Resource Conservation and Recovery Act (RCRA).

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- Maryland Department of the Environment (MDE) Code of Maryland Regulations (COMAR) Title 26, Subtitle 13, Hazardous Waste Regulations Maryland Department of the Environment (MDE) Code of Maryland Regulations (COMAR) Title 26.16.01, Accreditation and Training for Lead Paint Abatement Services.
 - Federal Department of Transportation (DOT) Hazardous Substances Title 49 CFR Parts 171-177.

Guidance documents on lead include:

- National Institute of Building Sciences, Lead-Based Paint Operations and Maintenance Work Practices Manual.
- Department of Housing and Urban Development (HUD), Guidelines for the Evaluation and Control of Lead-Based Paint Hazards (2012 edition)

Assessment of Conditions

There are certain procedures to be followed when determining the existence of lead and lead-based paint and assessing the risk to employees and /or building occupants. The following situations may initiate the need for assessment:

Lead exposure from normal maintenance work, which might include lead containing materials such as solder or lead-based paint, and which falls under OSHA 29 CFR 1926.62, will be initially monitored to assess employee exposure levels. Depending on the exposure levels, steps as specified in OSHA 29 CFR 1926.62 will be taken. Lead determination in materials such as solder may be based on material safety data sheet (MSDS)/Safety Data Sheet (SDS) information. If MSDS/SDS is not available, lead exposure may be estimated from past assessments. For lead-based paint, use the methods specified under Monitoring and Sampling. In reference to abatement of lead-based paint, assessments may be made:

- At the discretion of the Project Manager, or other designated University representative;
- When proposed maintenance work may expose building occupants and/or residents to lead-containing paint and/or dust;
- When elevated blood lead levels are reported in employees or building occupants/residents;
- When an employee or building occupant experiences symptoms which are indicative of lead poisoning;
- When performing risk assessment activities in University owned buildings;
- When specifically requested by a representative of the Maryland Department of the Environment or other appropriate state agency; and
- When developing the program and/or scope of work for the planned renovation of an existing facility.

Monitoring and Sampling

This section covers lead-based paint abatement. For construction and renovation monitoring and sampling, refer to the previous section, Assessment of Conditions.

Generally, buildings constructed after 1978 can be assumed to be lead-free. For buildings constructed prior to 1978, lead-based paint assessments must be performed for any surface that will be disturbed and is suspected of containing lead-based paint except where it is documented that the building received a complete interior renovation after all interior components were demolished and removed from the structure. Lead-based paint located under newer coatings must also be identified. The assessment may use any of the following methods:

- Referencing existing building surveys, construction notes or as-built drawings may be used where the surfaces involved are referenced. Renovation file notes and updated drawings may be used to identify surface replacements.
- Substrate testing using an XRF in-paint analyzer or by collecting a sample of the intact paint and submitting it to an accredited laboratory for lead analysis.
- Dust wipe tests.
- Lead testing on the windows and floors on surfaces in question.
- Visual inspection of condition of paint.
- Soil tests for lead contamination.

If a lead-based paint inventory exists for the surfaces involved in the work, Project Managers shall refer to the inventory for the location of lead-based paint. If an inventory does not exist, and the building was constructed or renovated prior to 1980, substrate testing will be required to ascertain the existence of lead-based paint. If possible, reference should be made to as-built drawings to ascertain the location of lead-based painted structures.

X-ray Fluorescence (XRF)

XRF is used to identify lead content of flat surfaces. It is the sampling method of choice because it is accurate, results are immediate, and replaces the time-consuming method of obtaining a paint chip sample and analyzing it in a laboratory. Direct reading XRFs provide the operator with a readout of lead concentration in paint in terms of lead per square centimeter (cm^2).

Before an XRF is used, the technician shall have passed an instructional seminar demonstrating the correct use of the instrument. Since the instrument uses a radioactive source, all UM technicians must shall be entered in the UM Radiation Safety Program.

In the State of Maryland, readings greater than 0.7 mg/cm^2 indicate the presence of lead. For example, if a reading is 0.7 mg/cm^2 , it is not over the limit set by Maryland.

Paint Chip Sampling

Paint chip sampling may be used to:

- Clarify an inconclusive XRF result.
- Test a surface that does not lend itself to XRF instrumentation, as defined by the instrument's manufacturer (for example, moldings, windows, playground equipment, and other surfaces that are not flat).

- Determine the percent of lead to identify material that must be disposed as a hazardous waste. (However, the material must be tested according to Toxicity Characteristic Leaching Procedures (TCLP)).

Spot Testing Using Sodium Rhodonzonate (Lead Swabs)

This method is not intended to measure the concentration of lead but to determine if lead is present. A color change as specified in the test kit directions (i.e., pink) indicates the likely presence of lead paint. The test can alert the user to the presence of lead in paint so that proper precautions can be taken while removing it. If when using this type of spot testing no color change occurs, this should not be interpreted as the absence of lead.

Accordingly, before concluding an area or surface does not contain lead-based paint, XRF or paint chip sampling is required.

Any lead swab test kit used must be EPA approved.

Surface Wipe Testing

Surface Wipe Testing may be required under the following conditions:

- To perform a risk assessment of UM buildings, such as residential or day care centers, particularly those buildings which are occupied by young children;
- To determine the effectiveness of work practices and/or decontamination activities.

Wipe samples for clearance will be conducted when required by regulation, where required by the Project Manager in consultation with Environmental Safety, Sustainability and Risk, or by contract specification. Samples will be in accordance with procedures contained in Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1: Wipe Sampling of Settled Lead-Contaminated Dust. Samples may be taken by the Department of Environmental Safety, Sustainability and Risk, by an outside contractor or by representatives of Engineering and Architectural Service's contract Industrial Hygiene Consultant.

Soil Sampling

Soil samples may be collected to determine lead concentration of soil surrounding University buildings when determined by regulation, where required by the Project Manager in consultation with Environmental Safety, Sustainability and Risk, or by contract specification. Refer to the methods specified in Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.3: Collecting Samples for Lead Contamination for more information.

Selection of Units and Locations within Units for Lead-Based Paint Testing

Large-scale lead-based paint inspections are usually performed by a contractor to determine whether lead is present in a house, dwelling unit, a residential building, or other building and if present, to identify which building components contain lead. Where O&M work involving a wall, window, or other surface is going to be performed, the assessment can be performed by a qualified University employee. Since exposure is based on the amount of lead present and the specific operation, an assessment should be performed for each operation. See Appendix B for a list of operations that have been assessed, described as de minimus, and do not require controls.

This list will be updated as additional tasks are assessed.

When selecting units for assessment, a systematic approach should be used. Generally, each room's components should be tested. A component is defined as a door, wall, molding, window sash and trim, ceiling, stairs or other component. A standardized inspection record containing the following minimum information is to be completed as components are checked. This information will include: sample identification number, substrate, component, test location, XRF reading, result, classification (positive, negative, or inconclusive), laboratory result, units (mg/cm², %), and final classification. Areas that are not able to be tested with the XRF due to surface configuration may be sampled using the paint chip method.

When testing multiple units, only the project manager or ESSR will determine which components will be tested. Protocols for lead-based paint inspection used at the University can be found in the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Chapter 7.

A record of the results of all lead paint testing shall be maintained by the campus department responsible for the overall maintenance of each facility. In addition, a copy of all test results should be forwarded to the Department of Environmental Safety, Sustainability and Risk.

Exposure Monitoring

Exposure monitoring should be conducted for maintenance activities involving the disturbance of lead-based paint, unless the same type of job has been assessed previously. In this case, a review of the previous assessment can be used to decide if additional monitoring is necessary. The University may use the services of the Department of Environmental Safety.

Exposure Monitoring

If the assessment determines that lead exposure should be monitored, personal exposure monitoring may be conducted. Monitoring and sampling and analysis will be performed in accordance with NIOSH Method 7082, LEAD by Flame AAS. Analysis will be conducted by an American Industrial Hygiene Association accredited laboratory. Results in excess of the Action Level (AL) will require additional employee protection measures in accordance with either OSHA 29 CFR 1926.62 or OSHA 29 CFR 1910.1025, depending how the work is classified, that is, construction or general industry.

Exposure monitoring will be performed by a representative of the Department of Environmental Safety, Sustainability and Risk for maintenance work performed by University employees. Exposure monitoring for private contractors' employees will be performed by an independent industrial hygiene consultant coordinated by the Project Manager.

As required by the Project Manager, area samples may be taken during large scale maintenance work to determine if lead particulates are infiltrating into occupied spaces. Sampling and analysis will be performed as described above. Results in excess of the AL of $30 \mu\text{g}/\text{m}^3$ will require additional employee protection measures as outlined in Personal Hygiene Practices, Respiratory Protection, and Appendix D of this Plan.

Copies of the results of all industrial hygiene monitoring must be forwarded to the Department of Environmental Safety, Sustainability and Risk.

Affected employees must be notified in accordance with applicable regulations.

Training

Lead Awareness

Where there is a potential exposure to airborne lead at any level, and the work is classified as repair or maintenance, and not construction, the employee must be informed of the contents of 29 CFR 1910.1025 Appendix A (Substance Data Sheet for Occupational Exposure to Lead) and Appendix B (Employee Standard Summary) and shall be trained of the following information:

- Health hazards associated with lead exposure;
- Lead routes of entry;
- Locations of lead materials and lead-based paint on campus;
- Approved methods of working with lead-based paint; and
- Lead hazards around the home

This information transmission must be repeated at least annually for each employee. The OSHA Lead in Construction Standard, 29 CFR 1926.62, does not require lead awareness training.

Lead-Worker Training

OSHA 29 CFR 1910.1025 and 1926.62 require that an employee health and safety program be implemented for all employees involved in the disturbance (e.g., sanding, planning, scraping, etc.) of lead-based paint and who are exposed to lead in excess of 30 ug/m³ on any day during a given year. They must attend Lead Worker Training. Departments in consultation with the Department of Environmental Safety, Sustainability and Risk will identify the specific individuals/positions involved so that exposure assessment can be performed.

All costs associated with training, protective equipment, and medical monitoring provided to campus employees will be assumed by the employee's department.

Training must be repeated each year that the employee may have such an exposure. This category would include employees who have the potential to disturb lead-bearing paint in the course of normal activities such as carpenters, painters and plumbers who use lead containing solders. ESSR will provide, as requested, the training. It will consist of:

- The hazards associated with lead;
- Employee information concerning sources of lead, including warning labels, signs and material safety data sheets (MSDS);
- Content of the Lead Standard, either General Industry or Construction, whichever is applicable;
- Specific nature of the operations which could result in exposure to lead above the action level;
- Purpose, proper selection, fitting, use and limitations of respirators;
- Purpose and description of the medical surveillance and medical removal programs, including health effects of lead exposure and potential reproductive consequences.
- Engineering controls and work practices for lead-related work;
- Content of this Plan;
- Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician; and
- Employee's right of access to records under 29 CFR 1910.20.

Lead-Paint Abatement Worker Training (Note: All Abatement training is driven by COMAR 26.16.01, Accreditation and Training for Lead Paint Abatement Services)

All employees involved in the abatement of lead-based paint must attend a **7-hour** Maryland Department of the Environment (MDE) approved hands-on training course and pass the exam.

Abatement means a set of measures designed to eliminate or reduce lead-based paint hazards. The course must be repeated every three years.

Lead-Paint Abatement Project Supervisor

All employees who will supervise employees performing a lead-based paint abatement must attend a **28-hour, 4-day** Maryland Department of the Environment approved initial lead-paint abatement supervisors course and have at least 2 years of experience in related construction trades, including but not limited to lead paint abatement, carpentry, painting, or demolition. A **7-hour** refresher course will be required every 2 years.

Lead-Paint Abatement Project Supervisor - Maintenance and Repainting (Involving Abatement/Removal Only)

All employees who will only supervise maintenance and repainting projects must complete a **14-hour, 2-day** Maryland Department of the Environment approved initial lead-based paint supervisors course and at least 6 months of professional experience as a carpenter, painter or other skilled construction trade. A **7-hour** refresher course will be required every 2 years for both certifications.

Lead-Paint Abatement Project Designer

All employees who will design a lead-based paint removal or remediation project must attend a **35-hour** Maryland Department of the Environment approved initial Project Designer course. A **7-hour** refresher course will be required every 2 years.

Lead Paint Inspector/Risk Assessor

All employees who will identify and measure the lead content in paint must complete a **21-hour** Maryland Department of the Environment approved initial lead paint inspector technician course. An additional **14-hours** of instruction are required for individuals who want to qualify as Risk Assessors. A **7-hour** refresher course will be required every 2 years for both certifications.

Medical Surveillance

In accordance with OSHA 29 CFR 1910.25 and 1926.62, employees who are performing construction work and are occupationally exposed on any day to lead at or above the AL, shall have initial medical surveillance consisting of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin (ZPP) levels. This will be provided through the University Health Center Occupational Health Unit. Additionally, employees who are or may be exposed at or above the AL for more than 30 days in any consecutive 12 months will be offered the following medical surveillance:

- Blood sampling and analysis at least every 2 months for the first 6 months and every 6 months thereafter;
- Workers with blood lead levels at or above 40 µg/dl will have a blood test at least every two (2) months until two (2) consecutive tests (a week apart) show levels less than 40 µg/dl;
- If an employee is medically removed due to elevated blood lead levels, a second (followup) blood sampling must be performed within two weeks after the employer receives the results of the first test; and,
- Blood tested upon termination of employment.

A ZPP is required on each occasion that a blood lead level measurement is made.

Employees will receive the confidential results of blood tests through the Occupational Health Unit.

All medical records remain confidential unless the employee grants permission for his/her records to be released. However, the employee's supervisor and the Department of Environmental Safety, Sustainability and Risk will both be notified of an employee's fitness to continue performing lead work and in the event of an employee's blood lead level exceeds 40 µg/dl so that the employee may be moved or transferred to another area until blood lead levels decrease as verified through subsequent blood testing. Environmental Safety, Sustainability and Risk will investigate the work practices used to determine why the employee's blood tested high for lead.

In accordance with OSHA 29 CFR 1910.1025, employees not working in construction shall have medical surveillance if they are exposed above the AL for more than 30 days per year.

Employees will be offered the following medical surveillance:

- Blood lead and ZPP analysis shall be performed at least every 6 months.
- At least every 2 months for each employee whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl of whole blood.
- The frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/dl of whole blood.
- At least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.
- Whenever the results of a blood lead test indicate that an employee's blood lead level is at or above 60 µg/dl and the employee is exposed to lead at or above the action level, the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the results of the first blood sampling test.

Medical Consultation

A medical examination shall be provided to each person enrolled in the lead medical surveillance program if at any time the individual experiences symptoms consistent with lead intoxication, needs consultation concerning the potential effects of past lead exposure or on the ability to procreate or carry a healthy child, or has difficulty breathing during fit-testing or the use of a respirator. The examination shall be conducted annually for any individual who has had a blood-lead level of 40 µg/dl or greater or has been medically removed in the past 12 months. The content of the physical exam shall be at the discretion of the attending physician but shall include at a minimum the elements listed in OSHA 29 CFR 1926.62 (j) (3) for construction workers or OSHA 29 CFR 1910.1025 (j)(3) for workers not involved in construction.

Enrollment Information

The supervisor must provide the Occupational Health Unit with the following information with each new employee enrolled:

- A description of the affected employees duties as related to potential lead exposure;
- The employees anticipated exposure level to lead and other toxic substances (if applicable); and
- A description of personal protective equipment to be used.

The employee must provide the attending physician with prior blood lead determinations and written medical opinions related to lead exposure.

If a second opinion is sought from a physician outside of the University Health Center, a copy of Appendix I, 1926.62 must be provided to the physician along with a copy of the patients lead related history by the Occupational Health Unit.

Chelation

OSHA prohibits prophylactic chelation except by a licensed physician and conducted in a clinical setting with thorough and appropriate medical monitoring. The employee must be notified by the Occupational Health Unit in writing prior to its occurrence. (External physicians must notify the employee and the Occupational Health Unit).

Medical Removal Protection

Any employee who has a blood lead level of 50 µg/dl or more shall be excluded from work with potential for lead exposure until the employee has had two (2) consecutive blood samples at or below 40µg/dl.

An employee may also be excluded from lead-related work when written results of a medical consultation determine that the employee may be at increased risk of impairment to the employees' health from exposure to lead. The employee may return to former duties upon receipt of a written opinion from the consulting physician that the conditions placing the employee at increased risk are no longer present or of material concern.

Where the employee is unable to return to normal duties within 18 months, the Occupational Health Unit shall make a final determination based upon the employees medical evaluation identifying conditions that could allow an employee to safely return to work or a final medical determination that the employee is incapable of ever safely returning to work. In the event that the employee is found incapable of performing lead-related work, the employee's department shall attempt to find an alternate job assignment in the employee's job classification that does not have lead exposure. In the event that no acceptable alternate assignment can be found, the employee's options shall be reviewed. These may include disability retirement, termination, or other options as determined by Personnel Services.

Personal Hygiene Practices

UM recognizes that even when airborne lead exposure levels are low, the potential exists for significant lead ingestion due to poor personal hygiene practices. No eating, drinking, application of cosmetics (including lip balm) or smoking is permitted at work sites where lead and lead-based paints are being disturbed. Workers shall wash their hands, arms and faces prior to eating, drinking, applying cosmetics or smoking.

When chemical strippers are used to remove lead-based paint, appropriate impermeable gloves and chemical resistant clothing shall be worn for worker protection as well as safety goggles or face shields to protect the eyes from chemical splashes. Portable eye wash equipment must be available on site, if applicable. The area where the chemical stripper is being used must be well ventilated to avoid exposure to potentially toxic vapors.

Respiratory Protection

Workers engaged in lead work will require respiratory protective equipment when industrial hygiene air monitoring indicates anticipated exposures in excess of the PEL.

The use of respiratory protection shall be in accordance with OSHA 29 CFR 1910.134, Respiratory Protection, and UM's Respiratory Protection Program. All workers must be medically evaluated by the Occupational Health Unit to determine the ability of the worker to perform the work while wearing a respirator. Training in the care, use and fitting of the respirator in addition to fit-testing is conducted by ESSR for those employees who are authorized by Occupational Health Unit to wear a respirator. Any worker who is not authorized by the Occupational Health Unit to wear a respirator will be prohibited from engaging in activities which may expose the worker to airborne lead if exposures are anticipated to exceed the OSHA permissible exposure level.

All employee respirators worn at the work site must be placed in a plastic bag prior to leaving the site and thoroughly cleaned before being worn again. Cleaning should include inspection of the respirator and replacement of worn parts. Fit-checks should be done each time the respirator is worn. The medical exam, fit-test and training must be repeated annually.

Respirators shall be selected as follows:

Airborne concentration of lead	Required respirator ¹
Not in excess of 50 µg/m ³	Half-mask air-purifying respirator equipped with high efficiency filter ^{2,3} .
Not in excess of 250 µg/m ³	Full facepiece, air-purifying respirator with high efficiency filters ³ .
Not in excess of 500 µg/m ³	(1) Any powered, air-purifying respirator with high efficiency filters ³ ; or (2) Half-mask supplied-air respirator operated in positive-pressure mode ² .
Not in excess of 1000 µg/m ³	Supplied-air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.
Greater than 1000 µg/m ³ , unknown concentration or fire fighting	Full facepiece, self-contained breathing apparatus operated in positive-pressure mode.

1. Respirators specified for higher concentrations can be used at lower concentrations of lead.
2. Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.
3. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.

Occupant Health and Safety

Disturbance of lead paint surfaces within a building's interior should only occur under proper work controls. Methods of controlling lead exposure to other occupants may include isolating the area by use of plastic sheeting and sealing all ventilation ducts in the area of the work and/or turning off and securing the ventilation system (lockout-tagout). Other methods to minimize distribution of lead dust may include wet sanding and the use of HEPA vacuum cleaners. (See Work Practices Section).

Notification to Building Occupants

Prior to the initiation of any large scale interior or exterior work involving lead-based paint, the Project Manager will forward lead-based paint information to the appropriate department chair or director. This bulletin will contain the general scope of work to be done, dates for the start and proposed completion of the work, and the precautions which will be employed to protect building occupants. This bulletin will also alert staff to the increased hazard that lead contamination may present for pregnant or nursing women. Based on a determination by the Project Manager in consultation with Environmental Safety, Sustainability and Risk, further measures to reduce potential lead exposure, will be taken if necessary.

Signage

Warning signs shall be posted at each job site where the employees exposure to lead is above the PEL. Where an exposure assessment has not been completed, signs shall be posted until the results are known. The signs shall consist of the following wording:

**WARNING
HAZARD
LEAD WORK AREA
NO SMOKING, EATING OR DRINKING**

for further information contact (Supervisor's name, location, phone) or the Environmental Safety, Sustainability and Risk x53960

Work Practices

Work practices have been divided into 3 categories:

1. Operations and Maintenance (O&M) tasks that have been assessed and do not require any precautions and/or protective measures. (See Appendix B)
2. Operations and Maintenance (O&M) tasks that have not been assessed and may require precautions and/or protective measures. (See Appendix C)
3. Operations and Maintenance (O&M) tasks that may require other precautions and/or protective measures. (NIBS Work Practices) (See Appendix D).

Acceptable Practices (Do's)

- If the condition of an interior or exterior surface (e.g. walls, trim, ceiling, doors, etc.) does not require sanding or scraping prior to repainting, and the surface is in good condition, the surface may be painted even if the paint has not been tested to determine its lead content.
- Doors or other building components which can be removed without disturbing the painted surface can be removed without the use of any special protection or requirements. The disposal of these items if found to contain lead must be disposed of according to the requirements specified in the Waste Disposal Section.
- If air monitoring has not been performed to characterize the job, it should be performed at the start of the job.
- If a lead-based painted surface is flaking or peeling, the loose paint may be removed using wet scraping. This involves wetting the surface to be scraped (in addition to the scraping tool) with water during the entire process.
- If an interior surface must be scraped, the area will be vacated of all occupants prior to the initiation of any work and all furnishings shall be removed from the area or covered with 6 mil plastic, the floor covered with 6 mil plastic and the area secured to limit access. For exterior scraping, windows and doors in the immediate area should remain closed and secured until the preparation and required cleanup is complete.
- Window sills and the floor beneath it in residential buildings should be HEPA vacuumed, washed with trisodium phosphate (TSP) and re-vacuumed following any LBP work
- When dust or debris from a window or other opening may contaminate an exterior area, 6 mil plastic sheeting must be securely fastened to the ground next to the work area. The ground should be covered and weighted with sheeting at least five (5) feet from the side of the building and extend three (3) feet per story being abated.
- Employees involved shall wear protective clothing as described in Personal Hygiene Practices, Page 18.
- Return air vents in the room or immediate area shall be covered.
- Debris and contaminated clothing shall be collected, placed in 4-mil plastic bags and disposed according to Waste Management practices. Debris should be sprayed with water prior to sweeping and placed in 4-mil plastic bags. A HEPA vacuum should be used to remove any visible dust from interior/exterior surfaces.

Unacceptable Practices (Don'ts)

- Dry sanding.
- Allowing dust to become airborne.
- Circulating dust through the ventilation system.
- Lead contamination of the floor/ground surrounding the work.

Large Scale Interior and Exterior Maintenance

Where the repainting of an interior or exterior area of damaged and/or deteriorated LBP would involve the disturbance of large areas or multiple surfaces, and would be performed by UM employees, departments must contact ESSR to review the scope of work and develop specific protective measures. LBP work cannot be initiated until an agreed upon plan of action specifying work methods, required employee training and occupant protection, and testing requirements are defined and implemented. Where LBP work is contracted out, see Contract Work below.

Contract Work

All specifications for work associated with LBP to be performed by contractors will be reviewed by Facilities Management Capital Projects, or Facilities Management (O&M) and ESSR. Departments responsible for proposing LBP associated work must forward the draft specifications to Capital Projects/Facilities Management (O&M) in advance of requesting proposals from contractors to ensure LBP requirements are included in the requests.

OSHA Recordkeeping

In accordance with OSHA 29 CFR 1910.20, 1910.1025, and 1926.62, the following records must be kept by ESSR for at least 30 years:

- exposure assessments and monitoring;
- a description of the sampling and analytical methods used;
- the type of respiratory protective devices worn; and,
- name, University id number, and job classification of the employee monitored.

For respiratory protection fit testing tests, refer to the university's Respiratory Protection Program. In addition, the following medical records must be kept by the Occupational Health Unit for employees subject to medical surveillance for at least 30 years:

- name, University id number, and description of the duties of the employee;
- a copy of the physician's written opinions;
- results of any airborne exposure monitoring done on or for that employee and provided to the physician; and,
- any employee medical complaints related to exposure to lead.

In addition, Occupational Health Unit must keep the following medical records for at least 30 years:

- a copy of the medical examination results including medical and work history required under OSHA 1926.62 (j);
- a description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information;
- a copy of the results of biological monitoring.

If the employee was removed from lead work under the medical removal provisions, the following records must be maintained by the Occupational Health Unit for at least the duration of the employee's employment:

- the name and University ID number of the employee;
- the date of each occasion that the employee was removed from current exposure to lead as well as the corresponding date on which the employee was returned to his or her former job status;
- a brief explanation of how each removal was or is being accomplished;
- a statement with respect to each removal indicating whether or not the reason for the removal was an elevated lead level.

Other information, such as ongoing maintenance and renovation activities, wipe tests, air sampling and lead paint surveys, conducted on campus by other groups, shall be kept by Capital Projects/Facilities Management.

Waste Disposal Requirements

All disposal of lead-contaminated waste is handled by ESSR. This section describes the segregation, packing, labeling, and management of these waste materials generated by work on University property.

Identification of Hazardous Materials

The following materials shall be managed as lead-contaminated hazardous waste for disposal:

- Lead paint chips, flakes and dusts removed by the contractor;
- Large-scale polyethylene material and masking tape;
- Lead-contaminated miscellaneous disposable tools, brushes, wipes, etc.;
- Lead-contaminated miscellaneous disposable personal protective equipment;
- Lead-contaminated paint remover compound (with material safety data sheet for identification);
- Lead-contaminated paint remover neutralizer (with material safety data sheet for identification);
- Lead contaminated paint rinse water;
- Lead-contaminated paint drop cloths to collect lead contaminated material;
- Lead contaminated caulking or glazing compounds.

Packaging

The University shall provide approved drums, drum liners, containers, and labels required for the proper disposal of hazardous materials. Contractors shall provide the plastic bags to contain the hazardous material.

The Contractor shall be responsible for the pickup and delivery of DOT approved containers for each job site.

Packaging material will be available for pickup at the University of Maryland Environmental Services Facility (Building 344) between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday (except on University holidays). The Contractor shall inform Environmental Services Facility personnel what type of waste the Contractor will be generating to obtain the proper containers and labels.

The Contractor shall insure that all hazardous material is packaged and segregated according to the following parameters:

- Removed abatement compounds, including cloth and paint, shall be placed in a plastic bag(s) meeting the following requirements:

Hazardous material, e.g., lead paint chips, will be placed in an approved DOT drum and drum liner provided by the University.

Each drum shall be filled to capacity with two (2) inches of head space and sealed by installing a gasket and locking ring.

Drums containing hazardous waste may be moved from job site to job site on campus until filled. The Contractor is prohibited from transporting the drum off University roads to public roads without the approval of the supervisor of the Project Manager for the project(s).

- Liquid material (neutralizer and contaminated rinse water) shall be placed in a DOT approved container provided by the University, filled to capacity and sealed with drum bung.
- Contaminated personal protective equipment, polyethylene material, and miscellaneous tools shall be bagged and placed in a container provided by the University. Placing these items in a container with removed abatement compounds is prohibited.

The Contractor shall properly seal and keep the hazardous material container sealed during storage, except when it is necessary to add or remove hazardous material.

The mixture of municipal waste, i.e., food packaging and beverage containers, and hazardous materials is prohibited.

Labeling

The University will provide appropriate label(s) for hazardous material containers. The label(s) will be affixed to the side of the container when the hazardous material is first placed in the container and the label(s) will be affixed so that they are within three inches of each other.

Marking

The Contractor shall be responsible for the proper marking of each hazardous material container according to the following:

- 1) Hazardous Waste Markings
 - a) The Contractor will place the date in the designated area on the hazardous waste label when the hazardous material was placed in the container.
 - b) The Contractor will place the Proper Shipping Name, listed below, in the designated area on the label according to the following:
 - 1) Lead Paint Solids - Hazardous Waste Solid, N.O.S. / 9 /NA 3077/ PG III (D008)
 - 2) Peel-Away Solids - Hazardous Waste Solid, N.O.S. / 9 /NA 3077/ PG III (D008)
 - 3) Liquid Paints - Waste Paint Related Material / 3 / UN 1263 /PG II
 - 4) Paint Rinsate - Waste Caustic Alkali Liquids, N.O.S. / 8 /UN 1719/ PG II / (D002, D008)
 - 5) Lead Paint Chips & Soil - Hazardous Waste Solid, N.O.S. /9 / NA 3077/ PG III (D008)
 - 6) Miscellaneous Equipment Contaminated with Lead - Hazardous Waste Solid, N.O.S. / 9 / NA 3077/ PG III (D008)
- 2) University of Maryland Project Information
 - a) The University's Project Number will be placed on the hazardous waste label in the upper of right hand corner with a permanent marker.
 - b) The University's Contract Number will be placed on the hazardous waste label in the upper of right hand corner with a permanent marker.
 - c) The University's Contract User/Agency (e.g., "Residential Facilities") will be placed on the hazardous waste label in the upper of right hand corner with a permanent marker.

Security and Temporary Storage

The Contractor may temporary store the hazardous material container at the job site, provided that the Contractor complies with the following:

- Fulfills the requirements in Section A through Section E of this subsection;
- Ensures that all required labels and markings can be visually seen from a distance or without moving the container;
- Provides security of the hazardous material container to prevent the disturbance and physical contact of the waste by unknowing or unauthorized persons or livestock; and
- Removes and delivers the hazardous material container to the Environmental Services Facility within three (3) days of the container reaching its capacity or the completion of the project.

Transportation of Waste Material

Hazardous material generated from a University of Maryland project shall be transported to the Environmental Services Facility, via the roads on the University campus. The transportation of hazardous material on a non-university owned road or thoroughfare is prohibited.

Back charges

The University reserves the right to back charge the Contractor time and materials should the hazardous materials are not handled in a manner consistent with this specification. The segregation, packaging, labeling, and marking of hazardous materials shall comply with appropriate Federal and State regulations.

Environmental Protection

The Contractor agrees to indemnify, hold harmless and defend the University of Maryland System and University of Maryland (the “Indemnities”) from and against any and all liabilities, claims, penalties, forfeitures, suits, and the costs and expenses incident thereto (including cost of defense, settlement and attorneys’ fees), which the Indemnities, or any on of them, may hereinafter incur, become responsible for or pay as a result of death or bodily injury to any person, destruction or damage to any property, contamination of or adverse effects on the environment, or any violation of governmental laws, regulations or orders to the extent that such damage was caused by: (i) the Contractor’s breach of any term or provision of this contract; (ii) the failure of any warranty of the Contractor to be true, accurate and complete; and (iii) any negligent, intentional or willful act or omission of the Contractor, the Contractor’s subcontractors or the employees or agents of any of them.

In addition, with respect to any liabilities, claims, penalties, forfeitures, suits or threatened suits, and the cost and expenses incident thereto relating to services under this contract and arising without regard to the fault of the Contractor, its subcontractors, their employees or agents, or one or more of the Indemnities, the Contractor will indemnify the University of Maryland System and the Indemnities for their costs, including cost of defense, settlement and reasonable attorney’s fees. Without limitation, the foregoing sentence will apply to any governmentally imposed or privately negotiated Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response costs and related expenses.

MDE Notification

For residential buildings, prior to the initiation of any abatement work which will disturb leadbased paint, the Maryland Department of the Environment must be notified. For abatement work performed by campus personnel, it will be the responsibility of the Project Manager to coordinate notification to MDE through the Department of Environmental Safety, Sustainability and Risk. For all contract work, the specifications require the contractor to notify MDE.

Program Evaluation

The Lead Management Plan is designed to minimize exposure to lead. This information will be reviewed periodically and updated as necessary.

Appendix A

29 CFR 1010.1025, Appendix A&B

Appendix B

Operations and Maintenance (O&M) Tasks That Have Been Assessed and Do Not Require Any Precautions and/or Protective Measures

Lead-Based Paint (LBP) De minimus Activities

1. Removal of nails, screws, picture hangers, or other fasteners, etc. from a painted wall surface.
2. Removal of cover plates, switch covers, etc. from a painted surface.
3. Removal of hinge pins or painted door hinges.
4. Removal of lock hardware, closers, or other hardware accessories from a painted door.
5. Wet sanding drywall compound or spackle using a sponge.
6. Separating and removing shoe mold (base shoe) from a painted baseboard.
7. Planing painted wood with manual tools.
8. Drilling or preparing a painted door from installation of new door hardware (lock set, closers, kick plates, etc.)
9. Renailing or refastening loose building trim, moldings or panels.
10. Reglazing of window glass.
11. Removal of painted phone line or electrical wire.
12. Freeing an inoperable window.
13. Housekeeping including emptying trash, vacuuming carpets, dust mopping hallways, cleaning water fountains, buffing floors, disinfecting bathrooms.
14. Maintenance including replacing air filters, replacing toilet flush valve, replacing light bulbs, checking and repairing shower valves, unclogging a shower drain using a “snake”, mechanical repair of an air-conditioning unit, and repairing a shower leak.
15. Carpentry activities including removing wooden windows to measure to make screens, sweeping out the carpentry shop, planing the edge of a door and re-install the hinges, re-hang the door, removing outside entrance door, removing the kickplate, and removing the screws.
16. Carpentry activities including removing door hinges and lockset and replacing.
17. Carpentry activities including sanding floor with “stand-behind” power disc sander, scraping floor near corner, clean-up of debris and placing debris in container.
18. Carpentry activities including wet hand scraping and wet sanding a column
19. Carpentry activities including removing wooden baseboards, cut and pull up wall-to-wall carpeting, scrape walls near baseboard, scrape carpet adhesive residue from floor, sweep floor.
20. Carpentry activities including removing window casing and wooden molding, removing the window sash, heating the glazing, scraping and removing the softened glazing, reinstalling the sash, rehanging the window, and installing the wooden molding.
21. Removing old plaster and re-plastering, manually sanding new plaster.
22. Maintenance activities including wet scraping of window and door.
23. Plumber activities including manually removing old lead and oakum from around shower drains, heating lead in an open ladle using a propane torch, pouring the molten lead from the ladle into the cavity surrounding the drain, rapidly cooling the unused hot lead using cooling water from a sink faucet
24. Chipping and sanding plaster.

-
25. Painter activities including spreading plastic material around the hot-water radiator and wet scraping old paint from hot-water radiator, folding up the plastic on the floor, broom sweeping the floor.

Appendix C

Operations and Maintenance (O&M) Tasks That Have Not Been Assessed and May Require Precautions and/or Protective Measures

Non-Assessed Tasks

Operations in Appendix B where the activity has not been assessed, for example, where an operation is performed many times during a shift, such as drilling multiple holes to install screening on multiple windows.

Appendix D

Operations and Maintenance (O&M) Tasks on LBP That May Require Precautions and/or Protective Measures.

(National Institute of Building Sciences (NIBS) Work Practices)

Cleaning Damaged or Deteriorated LBP Surfaces

Removing LBP Chips and Debris

Removing Small Areas of LBP

Wet Sanding of LBP

Penetrating LBP

Removing Components from LBP Surfaces

Attaching to a LBP Surface

Applying Coatings to LBP Surfaces

Installing Materials Over LBP Surfaces

Enclosing a LBP Surface

Patching a LBP Surface

Exposing LBP Contaminated Cavities

LBP Door and Window Maintenance

Changing Filters and Waste Bags in LBP Contaminated HEPA Vacuums

Cleaning Lead Dust Contaminated Carpet

Landscaping in Soil Containing Elevated Levels of LBP

Each Work Practice comes with three levels of protection, depending on the scope of the task, how long the work will continue, and especially the condition of the LBP and substrate which will be disturbed.

The higher the Level of activity, the higher the level of preparation and worker protection required.

Level 1 is described as those activities requiring a minimal amount of preparation and worker protection because a negligible amount of lead dust may be generated or disturbed.

Level 2 consists of activities producing moderate amounts of dust and debris.

Level 3 are activities which could generate substantial quantities of dust and debris.

Complex activities not specifically described in the work practices can usually be performed by modifying and combining various parts of several different work practices. For example, to replace a metal fireplace unit might require the following combination of work practices:

- Removing LBP Chips and Debris

- Removing Components from LBP Surfaces

- Attaching to a LBP Surface

- Patching a LBP Surface

- Exposing LBP Contaminated Cavities

Note. The above recommendations are based on *Lead-Based Paint: Operations and Maintenance Work Practices Manual for Homes and Buildings (May 1995)*. National Institute of Building Science (NIBS).