



FORT GEORGE G. MEADE

LEAD HAZARD MANAGEMENT PLAN

January 2006

PROPONENT

DIRECTORATE OF PUBLIC WORKS

ENVIRONMENTAL MANAGEMENT OFFICE

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CHAPTER 1

GENERAL PROVISIONS

1-1. BACKGROUND

For many years, lead, a naturally occurring mineral, was used extensively in paints and coatings for housing units, vessels and steel structures because of its ability to improve strength, appearance, and resistance to atmospheric and marine deterioration.

Lead is a heavy metal, which is toxic to human beings. Unfortunately, lead-based paints and coatings subsequently were found to pose health hazards. Lead can be ingested through paint chips from deteriorated paint, and can be inhaled through dust created when maintenance or removal work is done. Common sources of lead exposure are lead in paint; lead in air (industrial emissions, auto emissions); lead dust on toys, pets, horizontal surfaces; lead in food (solder in cans, lead contaminated food); and lead in water (soldered joints, lead pipes).

Lead is an occupational hazard for employees and also could be a hazard for family members. Children under six and unborn children are especially sensitive to lead exposures. Lead can cause damage to the nervous system and other adverse health effects. Readiness suffers when military personnel become ill, or when they are concerned about their families' health.

Because of these health hazards, in the late 1970's the Consumer Product Safety Commission banned the use of lead-based paints and coatings in residential and public buildings. Housing constructed prior to 1978 is considered to have lead-based paint (LBP). However, if properly managed and maintained, lead-based paint does not pose a health risk.

1-2. PURPOSE

- a. To provide healthy living conditions, and working environment for all service members and their families.
- b. To identify and control lead hazards from lead contaminated paint, dust and soil, and from other sources in target housing and child-occupied facilities constructed prior to 1978.
- c. To establish safe and proper procedures which are in compliance with pertinent regulatory requirements regarding lead-based paint handling activities.
- d. To reduce exposure to and prevent lead contamination in accordance with (IAW) applicable Federal, State and local laws and regulations.

1-3. SCOPE

This plan defines procedures and protocols used in the identification, control and removal of LBP from real property at Fort Meade. This applies to all personnel, commands, directorates, activities, tenants, contractors, and organizations located or conducting operations at Fort Meade, engaged in the removal, handling, or disposal of lead contaminated materials.

1-4. POLICY

- a. Army lead policy is to proactively anticipate hazards such as overexposure to lead and to eliminate them before they occur. An overexposure to lead is a combination of three elements, “people, sources of lead, and a pathway between them such as paint, dust, soil or air”. Army policy is designed to prevent this combination by isolating or removing one of these elements from the others.
- b. The installation policy is to identify and manage all LBP materials within its area of responsibility, and to follow the most stringent applicable regulations and standards in accordance with the Army policy. The goal is to systematically eliminate all lead hazards from the Fort Meade installation.
- c. Prevention of lead poisoning is an integral part of this policy. The proper management of lead hazards requires a major effort by public works/engineering elements, housing, safety, health departments, legal, public affairs and environmental office.

1-5. DEFINITIONS

Abatement: Any measure or sets of measures designed to permanently eliminate lead-based paint hazards or LBP. Abatement includes, but is not limited to:

- The removal of LBP and lead-contaminated dust, permanent enclosure or encapsulation of LBP, the replacement of lead-painted surfaces or fixtures, and the removal or covering of lead contaminated soil; and
- All preparation, cleanup, disposal, and post-abatement clearance testing activities associated with such measures.

Note: Abatement does not include renovation, remodeling, landscaping or other activities, when such activities are not designed to permanently eliminate LBP hazards, but, instead are designed to repair, restore, or remodel a given structure or dwelling, even though these activities may incidentally result in a reduction or elimination of LBP hazards.

Accessible surface: Any protruding interior or exterior surface, such as an interior windowsill, that a young child can mouth or chew.

Accredited laboratory: A laboratory that has been evaluated and approved by the National Lead Laboratory Accreditation Program (NLLAP), to perform environmental lead measurement or analysis for paint chip, dust and soil, usually over a specified period of time.

Accredited training program: A training program that has been accredited by the Environmental Protection Agency (EPA) pursuant to 745.225 of 40 Code of Federal Regulations (CFR) to provide training for individuals engaged in LBP activities.

Bare soil: Soil not covered with grass, sod some other similar vegetation, or paving, including the sand in sandboxes.

Certified abatement worker: An individual who has been trained by an accredited training program, as certified by EPA pursuant to 745.226 of 40 CFR to perform abatements.

Certified inspector: An individual who has been trained by an accredited training program, as certified by EPA pursuant to 745.226 of 40 CFR to conduct inspections. A certified inspector also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

Certified project designer: An individual who has been trained by an accredited training program as certified by EPA pursuant to ↓ 745.226 of 40 CFR to prepare abatement project designs, occupant protection plans, and abatement reports.

Certified supervisor: An individual who has been trained by an accredited training program as certified by EPA pursuant to 745.226 of 40 CFR to supervise/conduct abatements, and prepare occupant protection plans and abatement reports. A certified supervisor is required for each abatement project and shall be onsite during all work site preparation and during the post-abatement cleanup of work areas. At all other times when abatement activities are being conducted, the certified supervisor shall be onsite or available by telephone, pager or answering service and able to be present at the work site in no more than 2 hours.

Chalking: Photo-oxidation of paint-binders---usually due to weathering---that causes a powder to form on the film surface.

Chewable surface: Any protruding interior or exterior surface, such as an interior windowsill, that a young child can mouth or chew.

Child-occupied facilities: Child occupied facilities are buildings, or portions of buildings, constructed prior to 1978, visited regularly by the same child, six years of age or under, on at least two different days within any week, provided that each day's visit lasts at least three hours and the combined weekly visit lasts at least six hours and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to; day-care centers, pre-schools, kindergarten classrooms, and family child care homes.

Cleaning: The process of using a HEPA vacuum and wet cleaning agents to remove leaded dust; the process includes the removal of bulk debris from the work area.

Common area: A room or area that is accessible to all residents in a community (e.g., hallways or lobbies); in general, any area not kept locked.

Composite sample: A single sample made up of individual sub-samples. Analysis of a composite sample produces the arithmetic mean of all sub-samples.

Containment: A process to protect workers and the environment by controlling exposures to the lead-contaminated dust and debris created during abatement.

Deteriorated lead-based paint: Any lead-based paint coating on a damaged or deteriorated surface or fixture, or any interior or exterior lead-based paint that is peeling, chipping, blistering, flaking, worn, chalking, alligating, cracking, or otherwise becoming separated from the substrate.

Disposal (of hazardous waste): The discharge, deposit, injection, dumping, spilling, leaking, or placement of solid or hazardous waste on land or in water so that none of its constituents can pollute the environment by being waste on land or into the air or discharged into a body of water, including groundwater.

Dust removal: A form of interim control that involves initial cleaning followed by periodic monitoring and re-cleaning, as needed. Depending on the severity of lead-based paint hazards, dust removal may be the primary activity or just one element of a broader control effort.

Elevated Blood Lead (EBL), child: Excessive absorption of lead that is a confirmed concentration of lead in whole blood of greater than or equal to 20 ug/dl (micrograms of lead per deciliter of whole blood) for a single venous test or of 15-19 ug/dl in two consecutive tests taken 3-4 months apart.

Emergency Renovation Operation: Renovation activities, such as operations necessitated by non-routine failures of equipment that were not planned but result from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, or threatens equipment and/or property with significant damage.

Encapsulation: Encapsulation is the application of an encapsulant that forms a barrier between lead-based paint and the environment using a liquid-applied coating (with or without reinforcement materials) or an adhesively bonded covering material. The durability relies on adhesion and the integrity of the existing bonds between multiple layers of paint and between the paint and the substrate. This is formulated to be elastic, long-lasting and resilient to cracking, peeling, algae, and fungus so as to prevent chalking, flaking, lead-containing substances from becoming part of house dust or accessible to children.

Enclosure: The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the LBP and the environment.

Family Child Care (FCC) home: An authorized family housing unit, other than the child's home, in which a family member provides childcare to one or more unrelated children on a regular basis.

Friction surface: Any interior or exterior surface, such as a window or stair treads, subject to abrasion or friction.

Hazardous waste: By-product of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. It is a solid waste that possesses at least one of four characteristics (ignitability, corrosivity, reactivity, and toxicity), or appears on special EPA lists. A hazardous waste is regulated under Subtitle C of Resource Conservation and Recovery Act (RCRA). The regulatory definition of hazardous waste is found in 40 CFR 261.3. For LBP abatement waste, hazardous waste is waste that contains more than 5 ppm of leachable lead as determined by the Toxicity Characteristics Leaching Procedure (TCLP) test, or is waste that is corrosive, ignitable, or reactive and not otherwise excluded.

Heat gun: A device capable of heating LBP causing it to separate from the substrate. For lead hazard control work, the heat stream leaving the gun should not exceed 1,100 °F.

High-Efficiency Particulate Air (HEPA) filters: A filter capable of removing particles of 0.3 microns or larger from air at 99.97 percent or greater efficiency.

Impact surface: An interior or exterior surface (such as surfaces on doors) subject to damage by repeated impact or contact.

In-place management: An interim control process that reduces excessive exposures to lead and protect occupants from lead poisoning. See Interim controls.

Inspection: A surface by surface investigation to determine the presence of LBP and the provision of a report explaining the results of the investigation.

Interim controls: A set of measures designed to temporarily reduce human exposure or likely exposure to LBP hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of LBP hazards or potential hazards, and the establishment and operation of management and resident education programs. Monitoring conducted by owners, and reevaluations, conducted by professionals, are integral elements of interim control. Interim controls include dust removal; paint film stabilization; treatment of friction and impact surfaces; installation of soil coverings, such as grass or sod; and land-use controls.

Investigation [pertaining to Elevated Blood lead (EBL) case]: The process of determining the source of lead exposure for a child or other resident with elevated blood lead level. Investigation consists of administration of a questionnaire, comprehensive environmental sampling, case management, and other measures as directed by the installation medical authority. Full public health intervention, environmental investigation and community health nursing case management begins with a venous blood lead level of ≥ 20 ug/dl. All capillary blood lead samples of ≥ 20 ug/dL must be confirmed with a venous draw to establish a lead poisoning case.

Lead: Lead includes metallic lead and inorganic or organic compounds of lead.

Lead-based paint (LBP): Any paint, varnish, shellac, or other surface coating that contains lead equal to or in excess of 1.0 mg/cm² (EPA) / 0.7 mg/cm² (MDE) as measured by an x-ray fluorescence analyzer or laboratory analysis, or greater than 0.5% by weight by laboratory analysis.

Lead-based paint activities: In the case of target housing and child-occupied facilities, inspection, risk assessment, and abatement as defined in EPA regulation.

Lead-based paint hazard: Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present on accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified in TSCA section 403. Housing and Urban Development (HUD) and EPA refer to lead hazards identified through risk assessments as LBP hazards.

Lead-based paint inspection: A surface-by-surface investigation to determine the presence and location of LBP and a report of the results.

Lead hazard screen: A type of risk assessment performed only in buildings in good condition using fewer samples but more stringent evaluation criteria (standards) to determine lead hazards.

Lead-contaminated dust: Surface dust in residential dwellings, or child-occupied facilities that contains an area or mass concentration of lead at or in excess of levels (floors = >100 micrograms (ug) per square feet; windowsills = > 250 ug/ft²; window wells/trough = >400 ug/ft²) identified by EPA.

Lead-contaminated soil: Bare soil on residential real property and on the property of a child-occupied facility that contains lead at or in excess of the levels identified by EPA.

Living area: Any area of a residential dwelling use by one or more children age 6 and under, including, but limited to, living rooms, kitchen areas, dens, play rooms, and children's bedrooms.

Monitoring: Surveillance to determine (1) that known or suspected lead-based paint is not deteriorating, (2) that LBP hazard controls, such as paint stabilization, enclosure, or encapsulation have not failed, (3) that structural problems do not threaten the integrity of hazard controls or of known or suspected LBP, and (4) that dust lead levels have not risen above applicable standards. There are two types of monitoring activities; visual surveys by property owners and reevaluations by certified risk assessors.

Multi-family dwelling: A structure that contains more than one separate residential dwelling unit, which is used or occupied, in whole or in part, as the home or residence of one or more persons.

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National Lead Laboratory Accreditation Program (NLLAP): A laboratory recognized by EPA pursuant to Section 405(b) of TSCA as being capable of performing analyses for lead compounds in paint chip, dust and soil samples.

Ongoing monitoring inspections: In lead hazard control work, the combination of a visual survey performed by property owners and reevaluation (visual assessment & collection of environmental samples) performed by a certified risk assessor to determine if a previously implemented LBP hazard control measure is still effective and if the dwelling remains lead-safe.

Permissible Exposure Limit: The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 ug/m^3) averaged over an 8-hour period. If an employee is exposed to lead for more than 8 hours in any work-day the employees' allowable exposure, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

Allowable employee exposure (in ug/m^3) = 400 divided by hours worked in the day.

Permanently covered soil: Soil, which has been separated from human contact by the placement of a barrier, consisting of solid, relatively impermeable materials, such as pavement or concrete. Grass, mulch, and other landscaping materials are not considered permanent covering.

Reduction: Measures designed to reduce or eliminate human exposure to LBP hazards through methods including interim controls and abatement.

Renovation: Renovation means the modification of any existing structure, or portions thereof that results in the disturbance of painted surfaces, unless that activity is performed as part of abatement. The term renovation includes (but is not limited to): the removal or modification of painted surfaces or painted components (e.g., modification of painted doors, surface preparation activity such as sanding, scraping, or other such activities that may generate paint dust); the removal of large structures (e.g., walls, ceiling, large surface re-plastering, major re-plumbing); and window replacement.

Renovator: Any person who performs a renovation for compensation.

Replacement: A strategy of abatement that entails removing components such as windows, doors, and trim that have lead-painted surfaces and installing new or de-lead components free of lead paint.

Residential dwelling: (1) A detached single family dwelling unit, including attached structures such as porches and stoops; or (2) a single family dwelling unit in a structure that contains more than one separate residential dwelling unit, which is used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons.

Resource Conservation and Recovery Act (RCRA): The Federal statute that regulates the generation, treatment, storage, disposal, recycling, or transportation of solid and hazardous waste.

Risk assessment: (1) An on-site investigation to determine the existence, nature, severity, and location of LBP hazards in residential dwellings, including information gathering regarding the age and history of the housing and occupancy by children under age of 6 years; visual inspection; limited wipe sampling or other environmental sampling techniques; other activity as may be appropriate; and (2) the provision of a report by the individual or the firm conducting the risk assessment, explaining the results of the investigation and options for reducing LBP hazards.

Target facilities: Government owned or leased facilities constructed prior to 1978 which are used regularly by children six years old or younger or by pregnant women as family housing, child development centers, family child care homes, schools, playgrounds, and similar facilities. Facilities constructed or included in whole-house revitalization or similar major rehabilitation projects since 1978 are constructed free of LBP if all paint coatings were removed or replaced.

Target housing: Any housing constructed prior to 1978, except housing for elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.

Toxicity Characteristic Leaching Procedure (TCLP): A laboratory test to determine if excessive levels of lead or other hazardous materials could leach from a sample into groundwater; usually used to determine if waste is hazardous based on its toxicity characteristics. It is a required test under RCRA to determine the toxicity and mobility of a waste's hazardous constituents.

Visual inspection for clearance testing: The visual examination of a residential dwelling or a child-occupied facility following abatement to determine whether or not the abatement has been successfully completed.

Work area: An area designated by a supervisor within which lead paint abatement services are performed and within which lead dust and debris are contained IAW applicable regulations.

X-Ray Fluorescence Spectrum Analyzer (XRF): An instrument that measures lead concentration in milligrams per square centimeter (mg/cm²) in paint and other materials by using the principle of x-ray fluorescence.

1-6. APPLICABLE REGULATIONS

a. FEDERAL REGULATIONS & GUIDANCES:

(1) Environmental Protection Agency (EPA) Regulations:

- (a) 40 CFR part 745, Lead; Identification of Dangerous Levels of Lead: Final Rule, 05 Jan 2001.
- (b) 40 CFR part 745, Lead; Requirements for Hazard Education before Renovation of Target Housing, Final Rule, 1 June 98.

- (c) 40 CFR Part 745, Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child Occupied Facilities, Final Rule, 29 Aug 96.
- (d) 40 CFR Part 745, Lead; Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing, Final Rule, 6 Mar 96.
- (e) 40 CFR 260-280, Hazardous Waste Management.
- (f) EPA Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust and Lead-Contaminated Soil, 14 Jul 94
- (g) LBP Debris Disposal: EPA memorandum “Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households”, 31 July 2000.

(2) Occupational Safety and Health Administration (OSHA) Regulations:

- (a) 29 CFR 1910.134, Respiratory Protection, Final Rule, 8 Jan 98.
- (b) 29 CFR 1926.62, Lead Exposure in Construction, Interim Final Rule, 4 May 93.
- (c) OSHA 29 CFR 1910.1025, General Industry Standard for Lead
- (d) 29 CFR 1910.1200, Hazard Communication Standard.

(3) U.S. Department of Housing and Urban Development (HUD):

- (a) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June 95; with revised Chapter 7, 1997 version.
- (b) 24 CFR Part 35, Lead; Requirements for Disclosure of Known Lead-Based Paint Hazards in Housing, 6 Mar 96.
- (c) Guidance on the Lead-Based Paint Disclosure Rule, 21 Aug 96.
- (d) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June 1995

b. STATE REGULATIONS:

(1) The Maryland Department of the Environment:

- (a) COMAR 26.02.07, Procedures for Abating Lead Containing Substances from Buildings, 8 Aug 88.

- (b) COMAR 26.16.01, Accreditation and Training for Lead Paint Abatement Services, 12 Aug 96.
- (c) COMAR 26.16.02, Reduction of Lead Risk in Housing (Code of Maryland, Environment Article, Sections 6-801 et seq, also known as House Bill 760)

c. ARMY REGULATIONS, GUIDANCE & MEMORANDUM:

- (1) AR 200-1, Environmental Protection and Enhancement, 21 February 1997, Chapter 4-6 "Lead Hazard Management".
- (2) AR 420-70, Building and Structures, 11 Nov 1997, Chapter 3 "Hazardous Building Materials".
- (3) AR 40-5, Preventive Medicine, 15 October 1990.
- (4) AR 11-34, Army Respiratory Protection Program.
- (5) AR 210-50 Housing Management, Oct 2005
- (6) U.S. Army Corps of Engineers Guide Specification for Military Construction, April 1994, CEGS Section 13281 "Lead Hazard Control Activities".
- (7) Department of the Army Public Works Technical Bulletin No. 420-70-2 "Installation Lead Hazard Management", 20 Feb 1997.
- (8) USAEHA Sampling Protocol for Building Demolition Debris and Building Painted with Lead-Based Paint, May 1993.
- (9) USAEHA TG No. 198 "A Commander's Guide to Childhood Lead Poisoning Prevention/LBP Management Program on DOD Installations", June 1993.
- (10) USACHPPM TG No. 203 "Lead Facts: An Information Packet", December 1994.
- (11) TB MED 502, Respiratory Protection Program.
- (12) DA PAM 200-1, Environmental Protection and Enhancement, May 98.
- (13) Department of the Army Lead Hazard Management Plan, Jan 98.
- (14) Department of the Army Memorandum, Army Supplement to EPA Pamphlet Entitled "Protect Your Family From Lead in Your Home", 5 August 1997.

- (15) Department of the Army Memorandum, “Disclosure Requirements for Lead-Based Paint Hazards in Army Family Housing”, 24 Jul 96.
 - (16) DA Memorandum, SUBJECT: Army lead-Based Paint Management, 23 Jul 96.
 - (17) DOD Memorandum, Modification of Pediatric Blood Lead Screening Program, 26 Jun 95.
 - (18) DA Memorandum, Medical Policy - Childhood Lead Poisoning Prevention, 26 May 93
 - (19) DOD Memorandum, SUBJECT: LBP – Risk Assessment, Associated Health Risk in Children, and Control of Hazards in DOD Housing and Related Structures, 24 Nov 92.
- a. FORT MEADE REGULATIONS:
 - (1) Ft. Meade Hazardous Waste Management Plan, Dec 2004.
 - (2) FGGM Reg. 210-2, “Installations Housing Management and Handbook for Housing Occupants”, 1 Apr 96.
 - (3) FGGM Reg. 40-5, “Preventive Medicine Program”, 25 Mar 91.
 - (4) SOP for Childhood Lead Poisoning Prevention Program, 13 Oct 98
 - b. American Society for Testing and Materials (ASTM) Standards on Lead Hazards Associated with Buildings, Sep 98.

CHAPTER 2

RESPONSIBILITIES

A coordinated team approach is a prerequisite for program success.

2-1. LEAD HAZARD MANAGEMENT TEAM (LHMT)

In accordance with the Army's guidance, there should be an installation Lead Hazard Management Team (LHMT) to address the multitude of issues that surround the lead hazard management program. The LHMT should include representatives from the following organizations:

- ◆ Directorate of Public Works (DPW)
- ◆ Environmental Management Office (EMO)
- ◆ Medical Department Activity (MEDDAC) - Preventive Medicine Services (PVNTMED)
- ◆ Installation Safety Office (ISO)
- ◆ Staff Judge Advocate (SJA)
- ◆ Public Affairs Office (PAO)
- ◆ Directorate of Community Activity (DCA)
- ◆ Residential Community Initiative (RCI) / Picerne Military Housing (PMH)

The LHMT shall prepare, coordinate and execute an installation lead hazard management plan for reducing lead exposure by managing the source of lead; controlling the pathway; and educating the affected population. All lead hazards related matters would be brought to the attention of one or more members of the LHMT. Responsibilities of each area are summarized below.

2-2. DIRECTORATE OF PUBLIC WORKS (DPW)

a. ENVIRONMENTAL MANAGEMENT OFFICE (EMO):

- (1) Responsible for management of the Lead Hazard Management Program by assessing the extent of the lead problems and developing a coordinated effort to prevent lead hazards.
- (2) Serves as a technical consultant, assisting DPW with the design and execution of contracted LBP abatement and control projects.
- (3) Requests funding through environmental quality program requirements to meet the requirements especially for disposal of lead contaminated hazardous waste,

sampling & analysis, training/certification/accreditation fees and informational pamphlets as needed.

- (4) Ensures the high-risk facilities and facilities used for child related activities be inspected and assessed for lead hazards. Provide the results to appropriate organizations, including Health Authority for risk communication/public relations concerning health related lead issues.
- (5) Performs (or coordinates) sampling including TCLP testing for classification of lead contaminated waste, inspections/ screening for LBP and associated hazards upon request.
- (6) Conducts Lead-Based Paint Management Subcommittee meetings regularly at least semiannually.
- (7) Ensures proper handling, storage, transportation and disposal of lead contaminated waste.
- (8) Reviews and provides input for lead abatement plans/contract specification/ submittals of activities related to lead containing paint to ensure compliance with environmental regulations.

b. DPW OPERATIONS – IAP WORLD SERVICES:

- (1) Requests EMO for LBP identification prior to any activities, which may disturb suspected lead containing paint.
- (2) Ensures adequate identification of LBP prior to the start of any renovation or demolition project. Requests EMO check existing survey and testing records prior to any work that may disturb any LBP. Requests additional testing if area scheduled for work is questionable.
- (3) Provides EMO with the results of any of the LBP testing conducted by contractors so that lead database entries could be updated.
- (4) Provides EMO and other appropriate offices of any contract specifications/submittals related to LBP control/abatement activities for review and input to ensure current regulatory requirements are followed.
- (5) Provides EMO with results and documentation of lead abatement done through contracts in order that lead data may be updated.
- (6) Ensures proper coordination has been made with facility/building occupant prior to start of any lead-based paint related work. Ensures EMO is requested by the project manager or government site inspector for TCLP-lead testing (of lead painted

building components to be removed) for waste classification prior to disposal. EMO personnel or independent environmental sampling contractor will conduct TCLP-lead testing. For contracted lead paint projects, IAP ensures that contractor conducts independent environmental sampling on classifying waste prior to disposal. Ensures that contractors contact EMO in advance for coordination and delivering of regulated lead contaminated/hazardous waste to the government for proper disposal.

- (7) Documents that the employees and sub-contractors involved with lead-based paint activities are properly trained/certified/accredited in accordance with Federal and State regulatory requirements.
- (8) Ensures that contractors follow the contract specifications in compliance with the regulatory requirements. Contractor oversight should include: appropriate signage, notification, access control, proper containment and lead waste disposal.
- (9) Ensures waste generated from lead abatement and control projects is handled and disposed of in accordance with the Fort Meade Hazardous Waste Management procedures. Coordinates with EMO in advance for delivering lead contaminated hazardous waste.

2-3. DIRECTORATE OF COMMUNITY ACTIVITIES (DCA)

a. CHILD DEVELOPMENT SERVICES:

- (1) Provides member to the Lead Management Committee.
- (2) Notifies the RCI, PMH, MEDDAC (PVNTMED) and DPW-EMO upon identification of potential or known LBP hazards in Family Child Care homes and child-occupied post buildings appropriately.

2-4. MEDICAL DEPARTMENT ACTIVITY (MEDDAC)

a. COMMUNITY HEALTH:

- (1) Evaluates elevated blood lead levels in children under the age of six who live in post housing units.
- (2) Provides coordinated health care management of children with elevated blood lead levels.
- (3) Coordinates with the PMH, RCI and DPW-EMO to conduct environmental risk assessment of appropriate on-post housing unit when a child is identified with an elevated blood lead level of $\geq 15 \mu\text{g/dl}$.

- (4) Provide community-level intervention, and multifaceted outreach education as needed.

b. ENVIRONMENTAL HEALTH:

- (1) Coordinates/performs visual inspection of Family Child Care Homes regarding LBP as a part of sanitation inspection and informs appropriate parties for LBP related deficiencies as needed.

c. INDUSTRIAL HYGIENE:

- (1) Provides general oversight and consultation as needed/requested.
- (2) Provides air sampling support when requested.
- (3) Provides recommendations on the proper PPE selection and usage.

d. OCCUPATIONAL HEALTH:

- (1) Performs necessary medical examinations in accordance with the medical surveillance protocol (see Chapter 8) for lead exposed employees as required by 29 CFR 1910.1025.
- (2) Coordinates/provides Pulmonary Function testing to government employees participating in a respiratory protection program.
- (3) Maintains medical records for government employees.

2-5. INSTALLATION SAFETY OFFICE (ISO)

- a. Reviews and provides input to lead control / abatement plans for compliance with OSHA regulations.
- b. Conducts respirator fit testing for individuals participating in the installations respiratory protection program.
- c. Provides guidance on implementing 29 CFR to all appropriate activities.
- d. The ISO is the holder of the Department of the Army Radiation Authorization for the XRF Lead Analyzer (DARA). Radiation concerns related to XRF equipment will be handled by ISO.

2-6. STAFF JUDGE ADVOCATE

- a. Reviews Federal, State and local laws related to lead-based paint management.
- b. Provides assistance in legal matters related to lead issues.
- c. Provides advice on legal questions concerning lead matters.
- d. Reviews past litigation concerning lead matters.
- e. Reviews correspondence related to legal issues between the installation and Federal or State regulators.
- f. Provides legal advice and guidance on the release of survey information to the housing occupants, installation employees, and general public (including potential contractors) in accordance with the Freedom of Information Act and other relevant laws.

2-7. PUBLIC AFFAIRS OFFICE

- a. Acts as a liaison between Fort Meade and the post community news media in lead matters.
- b. Plans and conducts public affairs activities in support of the lead-based paint management program.
- c. Publishes the installation's lead hazard management effort using available media at its disposal.

2-8. RESIDENTIAL COMMUNITY INITIATIVES/ PICERNE MILITARY HOUSING

- a. RCI representative acts as a liaison between contractor (PMH and government organizations & residents in lead-based paint related issues and concerns in housing units.
- b. PMH follows the applicable Federal, State, Department of the Army and local regulatory requirements regarding all lead-based paint activities in housing units.

CHAPTER 3

QUALIFICATIONS AND TRAINING

3-1. GENERAL

The U.S. Environmental Protection Agency (EPA), the Occupational, Safety and Health Administration (OSHA), and Maryland Department of Environment have established qualifications and training requirements for personnel who perform inspections, risk assessments, interim controls, and abatement activities in lead hazard management.

3-2. LEAD HAZARD MANAGEMENT TRAINING REQUIREMENTS

a. EPA TRAINING REQUIREMENTS:

Individuals identified below are required to be trained by an accredited training program, as defined by 40 CFR Part 745, Subpart L, and certified by EPA pursuant to 40 CFR 745.226 (ref. FR 29 Aug 96). This EPA final rule established training and certification for LBP activities in target housing and child-occupied facilities, mandated by the Toxic Substances Control Act (TSCA), Section 402.

- (1) Certified Inspector. A person who conducts a surface by surface investigation to determine the presence of LBP, and the provision of a report explaining the results of the investigation of samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.
- (2) Certified Risk Assessor. A person who conducts an on-site investigation to determine the existence, nature, severity, and location of LBP hazards, and the provision of a report by the individual or the firm conducting the risk assessment, explaining the results of the investigation and options for reducing lead-based paint hazards. A certified risk assessor also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.
- (3) Certified Project Designer. A person who prepares abatement project designs, occupant protection plans and abatement reports. EPA does not require that a Certified Project Designer be used for work covered by 40 CFR Part 745, Subpart L. However, the State of Maryland requires project designer training provided by the State approved training agency for an employee who designs lead paint abatement services in accordance with COMAR 26.16.01.01C & 26.16.01.08.
- (4) Certified Supervisor. A person who supervises and conducts abatements, and who prepares occupant protection plans and abatement reports.
- (5) Certified Abatement Worker. A person who performs abatement work.

b. OSHA TRAINING REQUIREMENTS:

The OSHA has established training requirements for supervisors and workers that apply **regardless of whether the work is considered abatement or interim controls**. For on-site supervisors, designated OSHA competent persons, and workers who perform work activities covered by OSHA standards 29 CFR Part 1926.62 (lead in construction) and 29 CFR 1910.1025 (lead in general industry), training is required which complies with those standards for the specific type of work to be performed.

c. MARYLAND DEPARTMENT OF ENVIRONMENT REQUIREMENTS:

The Maryland Department of Environment has established qualification, training, and other requirements for work associated with lead abatement and lead hazard control activities. In addition, 40 CFR part 745, Subpart L provides a mechanism for states and local agencies to apply, obtain approval, administer, and enforce their own LBP activities programs. Personnel identified in para “a” above shall meet the MDE’s qualification and training requirements as required in COMAR 26.16.01. Types of training are as follow:

Type of Training
Inspection Contractor
Residential & Commercial Building Contractor
Structural Steel Contractor
Training Provider
Lead Paint Inspector Technician (IT)
Lead Paint Visual Inspector (VI)
Lead Paint Risk Assessor (RA)
Structural Steel Supervisor (S1)
Lead Paint Removal & Demolition Supervisor (S2)
Lead Paint Maintenance & Repainting Supervisor (S4)

The MDE requirements and standards for the **accreditation** of contractors, risk assessors, supervisors, and inspectors; **certification** requirements for workers and project designers who provide and perform lead paint abatement services for residential, public, or commercial buildings, bridges, or other structures or superstructures. An individual shall not provide a lead paint abatement service unless an individual has successfully completed the appropriate accredited training course for that particular service. Both EPA and MDE require 3rd party examination for Lead Paint Removal & Demolition Supervisor; Lead Paint Inspector Technician and Lead Paint Risk Assessor.

3-2. LEAD-BASED PAINT MAINTENANCE TRAINING

On September 26, 1996, the EPA and the Department of Housing and Urban Development (HUD) issued a new training program entitled, “Lead-Safe Practices for Building Maintenance Staff”. This program is designed for maintenance supervisors and maintenance workers who deal with multifamily housing built before 1978. The maintenance personnel are encouraged to take the EPA & HUD LBP maintenance training.

CHAPTER 4

LEAD-BASED PAINT MANAGEMENT

4-1. GENERAL

Lead Hazard Management Strategy: Lead hazard management program will be based on criteria mentioned below that measure the condition of facilities and not on criteria that measure the health of occupants.

- ◆ Provide occupants of target housing and child-occupied facilities with a safe and healthful environment free of lead hazards.
- ◆ Identify and manage in-place lead hazards associated with lead-contaminated paint.
- ◆ Identify and abate lead-contaminated dust.
- ◆ Identify and manage in place or abate lead-contaminated soil.
- ◆ Identify and dispose of all lead-contaminated solid waste per applicable federal, state and local regulations.
- ◆ Dispose of facilities painted with lead-contaminated paint in a cost-effective manner as required by applicable regulations. (Bldg. Demolition project)

4-2. INSPECTION AND SAMPLING

a. RESPONSIBILITIES:

The Picerne Military Housing coordinates/conducts lead inspections of post housing units and the DPW-EMO conducts lead testing of commercial buildings prior to renovation for the presence of LBP. For post housing units, representative quarters from housing areas based on the year built and paint history, are inspected for the presence of LBP and assessed for the lead hazards as a part of initial survey. Ongoing management of LBP in target housing units is essential to avoid potential exposure since interim measure is a preferred method to control the LBP hazards. (See Section 4-5 for more detail regarding ongoing monitoring process)

For commercial/public buildings, LBP testing is conducted upon request prior to renovation/construction and any repair/maintenance activities by the DPW-EMO. All inspections, sampling and analysis are performed IAW established federal guidelines and protocols including American Society for Testing and Materials (ASTM) guidelines for lead hazards.

b. XRF ANALYSIS:

All suspect painted surfaces are analyzed using a mobile X-Ray Fluorescence (XRF) Analyzer. This instrument illuminates all layers of paint on a surface with X-rays causing

the lead in the paint, if present, to emit a characteristic frequency of radiation, the intensity of which is measured by the detector and related to the amount of lead in the paint.

The primary unit utilized to determine lead content in painted surfaces is a NITON XRF 309 Spectrum Analyzer. This analyzer has a permit from the Department of the Army Radiation Authorization to be stored, used, and handled at Fort Meade. The NITON XL utilizes a 40 milliCurie Cadmium 109 radioactive source. Prior to the start of the inspection, each machine is self-calibrated according to the manufacturer specifications and also checked against the lead standards provided with the instrument. All calibration procedures are recorded. The NITON XL is a multi-channel analyzer of x-ray fluorescence, controlled by a microprocessor which displays both K-shell and L-shell spectra readings, indicates the precision of the instrument, provides depth index for each sample, and shows the time in source seconds. All readings are calculated and displayed in milligrams per square centimeter (mg/cm^2).

Since Maryland regulations contain more stringent XRF levels than EPA, the following decision rules for XRF interpretation are utilized to confirm lead content. Interpretation of XRF results and subsequent confirmatory paint chip sampling was performed as follows:

- XRF results greater than $0.7 \text{ mg}/\text{cm}^2$ are classified as positive.
- XRF results equal to or less than $0.7 \text{ mg}/\text{cm}^2$ are classified as negative.
- XRF results, which are determined by the instrument to be inconclusive in accordance with the manufactures Performance Characteristic Sheet (PSC), are classified as such and confirmatory paint chip samples are collected.

c. ANALYTICAL METHODS:

Samples will be analyzed following ASTM standard E 1613, Standard Test Method for analysis of Digested Samples for Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption (FAAS) or Graphite Furnace Atomic Absorption (GFAAS) techniques. Because of their superior accuracy and precision compared to portable XRF instruments, the laboratory methods are valuable for confirmation of XRF results.

(1) Paint chip sample collection: Each paint chip sample collected contains approximately two grams or about the size of a quarter. The following procedures are adhered to for collection of paint chip samples:

- The surface is scored with a knife or paint scraper. (Note: Heat Gun operating below 1100°F could be used to soften the paint before removal)
- Sliding a thin blade underneath the paint along the scored lines lifts the scored area.
- The paint chip sample is inserted into the petri dish or sample container for analysis.
- Each sample must contain all layers of paint.

- The inspector fills in the requested information on the Field Sample sheet.
- Label the sample container.

Results for paint chip samples could be reported in parts per million (ppm) following analysis by AAS and converted to a percent of the sample by weight. Any result greater than 5000 ppm and / or 0.5% lead by dry weight constitutes a dangerous level of lead, which is regulated by the EPA and Maryland Department of Environment.

- (2) Analytical laboratory: The EPA has established the national Lead Laboratory Accreditation Program (NLLAP). **Only NLLAP accredited laboratories will be used for the matrices of interest (paint chip, dust wipes & soil)** in providing data for lead hazard management activities.

4-3. RISK ASSESSMENT

a. BACKGROUND:

In housing and other facilities used by young children, the goal is to identify and control lead hazards, not just LBP. The old approach was to perform paint inspections to identify LBP, and then to remove it or isolate it by abatement. Now, the emphasis has shifted to a broader and more effective strategy. Lead hazards in deteriorating paint and in dust and soil are identified by risk assessments. The risk assessment is designed to determine whether LBP hazards are present and to assess whether existing management and maintenance programs are adequate to handle lead-based paint hazards during routine maintenance prior to abatement. The risk assessments are performed in accordance with HUD protocol. HUD Risk Assessment Form 5.0, "Resident Questionnaire" will be completed by risk assessor via interview with resident.

b. VISUAL ASSESSMENT:

A visual assessment of painted surfaces and substrates is conducted to identify potential LBP hazards and evaluate the extent of the hazard. The assessment includes identifying areas of deteriorated paint or substrate due to moisture, friction, impact on the surface, weathering, or any other condition that could damage painted substrates. The assessment was performed by judging the paint condition and substrate condition using the following codes:

Categories of Paint Film Quality

Type of Bldg. Component	Total Area of Deteriorated Paint on Each Component	
	Intact	Deteriorated
Exterior components With large surface areas.	Entire surface is intact.	More than 20 ft ² .
Interior components with large surface area (walls, ceilings, floors, doors).	Entire surface is intact.	More than 2 ft ² .
Interior and exterior components with small surface areas (windowsills, baseboards, soffits, trim).	Entire surface is intact.	More than 10% of the total surface area of the component.

Building component in the table above refers to each individual component or side of building, not the combined surface area of all similar components in a room.

Surfaces in deteriorated condition are considered to be “lead-based paint hazards” as defined in Title X and should be addressed through abatement or interim controls.

c. DUST WIPE SAMPLING:

Wipe sampling is conducted to evaluate lead in dust levels ($\mu\text{g}/\text{ft}^2$). Dust wipe samples were collected from random locations on floors, windowsills and exterior window well areas in accordance with the HUD protocol. A total of nine dust wipes are collected from each housing unit as follows:

- (1) Each sample is collected with a separate wipe towelette and individually sealed in one conical tube or plastic bag. Room number, surface tested, and location of the sample labels each sample.
- (2) A field blank is also provided for each sample lot. The field blank is opened and handled in the same manner as the towelettes used for the actual sample collection.
- (3) Results for lead dust wipe samples following analysis by AAS are converted to micrograms of lead per square foot of sampling area. The levels mentioned below are used when evaluating exposure risks. Additionally, these limits are used as lead abatement clearance levels in accordance with the regulatory guidelines.

FLOORS	INTERIOR WINDOW SILLS (Stools)	WINDOW WELLS (Troughs)
Floor lead dust levels Less than 40 ug/ft ²	Window sill lead dust levels Less than 250 ug/ft ²	Window wells lead dust levels less than 400 ug/ft ²

d. SOIL SAMPLING:

The EPA and HUD have developed guidelines for the collection of soil samples. Typically, soil samples are collected at different depths and distances from a structure. The greatest concentrations are usually found close to buildings where LBP has deteriorated and leached into the soil. Soil samples are collected from the perimeter of each building. A total of two soil samples (one composite soil sample from the child’s principle play area; and one composite soil sample from the front or back yard and/or foundation drip line) are collected from each dwelling unit. Soils samples are typically collected with a coring device, which works well for most soils. Some sandy or friable soils may require the use of a scooping device, such as a stainless steel spoon or disposable plastic scoop. The Risk Assessor should collect soil no deeper than ½ inch and also utilize disposal gloves during all sampling. All samples are placed in eight-ounce laboratory pre-cleaned, glass sample containers or other containers specified by the laboratory. Results of soil samples are reported in parts per million (ppm) following analysis by AAS. EPA’s guidance states the following levels of concern for base soil lead concentrations: 400 µg/g for high contact play areas and 1200 µg/g for other residential yard areas.

RECOMMENDED RESPONSE ACTIONS FOR RESIDENTIAL LEAD-CONTAMINATED BARE SOIL

Area of Concern	Bare Soil Lead Concentration (ppm)	Recommended Response Activities
Bare residential soil where there is child contact such as play area, residential backyards, daycare and schoolyards, playgrounds, public parks, and other areas where children gather.	400	<ul style="list-style-type: none"> • Take measures to eliminate contact. • Interim controls to change use patterns and establish barriers between children and contaminated soil including: <ol style="list-style-type: none"> 1. Planting ground cover or shrubbery to reduce exposure to bare soil. 2. Moving play equipment away from contaminated bare soil. 3. Restricting access through posting, fencing, or other actions, and 4. Controlling further contamination of area. • Monitor condition of interim controls.
Bare residential soil with minimal or no child contact such as drip line.	1,200	<ul style="list-style-type: none"> • Interim control measures to cover soil or eliminate contact. • Interim controls to change use patterns and establish barriers between children and contaminated soil, including: <ol style="list-style-type: none"> 1. Planting ground cover or shrubbery to reduce exposure to bare soil, 2. Moving play equipment away from contaminated bare soil. 3. Restricting access through posting, fencing, or other actions, and 4. Controlling further contamination of area. • Monitor condition of interim controls.

4-4. COMPARISON OF PAINT INSPECTION AND RISK ASSESSMENT

OBJECTIVE	INSPECTION	RISK ASSESSMENT
	To determine the <i>presence of LBP</i> on similar building components.	To determine whether any <i>lead-based paint hazards</i> are present by assessing the data gathered from the questionnaires and interviews, the visual inspection, and the environmental sampling.
BY WHOM	Conducted by <i>a certified lead inspector or a certified lead risk assessor.</i>	Conducted <i>only by certified lead risk assessors.</i>
TESTING & SAMPLING	<ul style="list-style-type: none"> ◆ Test <u>painted surface</u> by surface for lead concentrations. 	<ul style="list-style-type: none"> ◆ Assess <u>condition</u> of paint. ◆ Test only <u>deteriorated paint</u> for lead concentrations. ◆ Lead level in household <u>dust</u>. ◆ Lead level in bare <u>soil</u>.
APPLICATION	<p>Prior to</p> <ul style="list-style-type: none"> ◆ Abatement. ◆ Renovation work. ◆ Remodeling / Repainting. ◆ Sale of property/turnover. 	<ul style="list-style-type: none"> ◆ Interim controls. ◆ Sale of property / turnover. ◆ As a part of environmental assessment for elevated blood lead (EBL) case investigation.
ADVANTAGES	<ul style="list-style-type: none"> ◆ Enable to properly manage LBP since the exact locations & lead concentrations for each surface tested area have been identified. 	<ul style="list-style-type: none"> ◆ Enable to identify acceptable options for controlling the hazards. ◆ Enable to allow the owner to make an informed decision about what actions should be taken to protect the health of current and future occupants. ◆ Enable to plan appropriate hazard control measures to correct current LBP hazards. ◆ Enable to modify property management and maintenance practices / policies designed to prevent hazards from occurring or recurring.

4-5. HAZARD POTENTIALS AND RESPONSE PRIORITIES

a. HAZARD POTENTIALS:

The potential for exposure to lead hazards involves the use of the following parameters:

- Lead in paint
- Paint condition
- Location of lead-contaminated paint (interior/exterior)
- Lead in household dust
- Lead in bare soil
- Lead in water
- Presence or absence of children

The hazard potentials are:

- High – A lead hazard has been identified. Lead exposure is likely and occupants are at risk.
- Medium – A potential lead hazard has been identified. Lead exposure is possible and occupants could be at risk.
- Low – No lead hazard has been identified. Lead exposure is unlikely and occupants are not at risk.

4-6. MANAGEMENT PROCEDURES

Management of LBP can consist of interim controls (also known as in-place management) to actual abatement procedures.

a. ARMY'S POLICY FOR MANAGING LEAD-BASED PAINT:

Army lead policy is to follow the most stringent applicable regulatory requirements and proactively anticipate hazards such as overexposures to lead and to eliminate them before they occur, in order to prevent illness. Whenever possible, lead hazards are managed using **interim** measures supported by periodic evaluations to make sure that they are still effective. Abatement is performed only when interim measures do not work, or when it is cost effective as a part of major renovations. The Army has been a leading player in the nationwide move towards this realistic and cost-conscious approach.

b. INTERIM CONTROL:

Interim control strategies are normally instituted subsequent to risk assessments, and should continue until the removal of lead hazards and the sources of lead hazards. Interim

controls are intended to keep facilities lead-safe and include any measure designed to control exposure to lead hazards and their sources.

Currently, greater emphasis is placed on interim controls, rather than abatement. Properly managing LBP controls likely exposure to LBP hazards. In units where LBP remains, lead paint should be maintained in an intact condition to avoid lead hazards. Any peeling, flaking or chipping paint should be repaired as soon as possible. In-place management requires periodic monitoring of surfaces known or suspected to be painted with LBP. If it is suspected that lead levels in dust may be increasing, periodic clean-ups should be done to keep lead from accumulating to dangerous levels on accessible surfaces such as windowsills, window wells and floors.

Interim controls include—

- ❑ Repairing painted surfaces (keeping the paint intact)
- ❑ Repairing rotted or defective plaster and wood that will cause the paint to blister, chip and peel
- ❑ Removing and controlling dust
- ❑ Covering bare soil with sod, grass, or other temporary ground cover or limiting access in such ways as planting bushes.
- ❑ Treating friction and impact surfaces
- ❑ Treating protruding, chewable surfaces
- ❑ Educating residents and training workers
- ❑ Conducting ongoing monitoring

In-place management also requires that precautions be taken to avoid inadvertently disturbing LBP or otherwise creating lead-contaminated dust hazards in the course of other maintenance, repair, or revitalization work. Any work disturbing LBP has the potential for generating lead dust. The level of risk is a function of the scale of work and the amount of dust generated. At a minimum, in-placement management requires a rigorous clean up at the conclusion of any repair project which disturbs LBP.

(1) In-Place Management of Building Exterior:

- (a) Deteriorated exterior surfaces are to be repaired to obtain a smooth surface, which can be repainted. This may require the removal of loose paint and dust, cleaning the surface, and resealing the surface by painting.
- (b) For the removal of loose paint or painted material, “wet scraping” is to be employed. Both the painted surface and the scraping tool are to be kept wet with water during the scraping process to minimize the release of lead dust and the dispersal of lead paint chips.
- (c) Residents shall not be permitted in the vicinity of the work during repair activities. Access shall be restricted until thorough cleanup activities have been completed following the work. It may be necessary to isolate the

immediate work area to prevent unauthorized access, or if possible, identify an alternate building entrance for residents' use during the work.

- (d) Protect all areas immediately adjacent to and below the work with a double layer of 6-mil polyethylene sheeting to protect the ground and shrubbery and to retain wet debris and dust that will be created during the surface treatment. This covering must extend out horizontally from the base of the wall for a distance that is equal to half the height of the wall surface being treated. Joints or tears in the polyethylene sheeting should be sealed with duct tape. Any tears that occur in coverings during the work shall be repaired immediately.
- (e) The building surfaces to be corrected shall be moistened with a fine spray of water from a garden sprayer or atomizing bottle. Ensure all electricity is shut off to exterior outlets and switches in the immediate vicinity of anticipated work before any water is applied to surfaces.
- (f) Loose, peeling or flaking material shall be removed from the surfaces by wet scraping to obtain a smooth cleanable surface that can be repainted. The scraping tool shall have a soft pliable blade of plastic or rubber that will not damage or gouge the material. The blade shall be rigid enough; however, to remove rough jagged edges of the broken paint surface. The resulting surface shall be free of jagged, rough edges or snags that would interfere with the paint or coating's ability to bridge any remaining gaps.
- (g) During the course of wet scraping, the debris shall be gathered with a wet/dry vacuum as often as necessary to minimize it from being carried away by the wind. It may be necessary to spray or re-wet fallen debris to prevent it from being scattered or blown off the protective covering. Note: In-place management of building exterior, especially, the course of surface preparation, should not be performed when wind is over 15 mph.
- (h) Workers shall take care in preventing debris from being tracked off of the protective covering. Workers shall clean or remove shoe covering before leaving the work area.
- (i) Following wet scraping, the surfaces shall be cleaned with a damp sponge to remove small particles and dust. Cleaning with detergent agent followed by a clean water wash will generally clean the surface. The surface shall be permitted to dry thoroughly in preparation for repainting or resealing.
- (j) Seal clean, dry surfaces with an exterior grade enamel paint or coating material that results in a smooth, cleanable surface.
- (k) Upon completion of the corrective work, or at the end of the work-day on multi-day activities, the protective polyethylene sheeting shall be carefully removed, retaining any dust or debris, bagged in plastic and stored in a secure

place outside of the dwelling or facility until disposal. Polyethylene sheeting shall not be reused.

- (l) Cleaning of equipment, including ladders and scaffolding shall be conducted while on the polyethylene sheeting to simplify the collection of debris and liquid waste.
- (m) All retained liquid waste shall be poured through a filter cloth to remove paint chips and other debris prior to disposal. Filtered materials will be double bagged.
- (n) All waste materials generated by this activity including paint debris, HEPA vacuum contents, rags, mops, sponges, water, work clothes, polyethylene sheeting must be characterized and disposed of IAW the Fort Meade Hazardous Waste Management Plan. Generally, the HEPA vacuum contents will be a hazardous waste. Wastewater (from the TSP wipe down and personnel hygiene) should be filtered through a 5-micron filter. This filter should be disposed of as hazardous waste.

(2) In-Place Management of Building Interior:

The procedures for treating deteriorated interior paint are similar to those for in-place management of building exteriors. However, greater attention must be given to controlling, testing, and cleaning up lead dust as well as protecting residents' belongings. If the area of deteriorated interior paint to be treated exceeds one square foot, or it is likely that dust will be created during the work, procedures below shall be followed:

- (a) Residents are required to be removed from the room or space in which actual corrective work is being conducted. Furnishings and personal belongings that must remain in the room or space are to be protected with duct-taped sealed polyethylene sheeting.
- (b) All floors in the work areas must be covered with polyethylene sheeting.
- (c) All ductwork and registers and all cabinets, drawers must be sealed with polyethylene sheeting.
- (d) The work area shall be sealed by means of containment from the rest of the residence or facility.
- (e) Residents shall not be permitted to enter the room/space/work area until cleanup has been completed at the conclusion of the work and acceptable clearance results obtained.

- (f) Cover all areas immediately adjacent to the work with 6-mil polyethylene sheeting to contain the wet debris and dust that may be dislodged during the corrective work. All joints and edges of the polyethylene sheeting shall be sealed with duct tape.
- (g) The surface to be corrected should be moistened (but not flushed) with water from a sprayer or atomizing spray bottle.
- (h) Ensure electricity to outlets, switches, and appliances in the immediate vicinity of the work are turned off before any water is introduced to surfaces.
- (i) Loose, peeling or flaking paint shall be removed from the surface(s) with the objective of obtaining a smooth cleanable surface. The scraping tool should have a soft, pliable blade of plastic or rubber that will not gouge the surface. It should be rigid enough, however, to remove the rough, jagged edges or paint.
- (j) During wet scraping, the debris shall be collected frequently with a wet/dry vacuum to minimize tracking or spreading the removed material throughout the room or space.
- (k) The wet-scraped surface(s) should be cleaned with a damp sponge and permitted to dry in preparing for repainting or resealing, which shall be done in accordance with the coating/paint manufacturer's instructions. Cleaning with a tri-sodium phosphate detergent followed by a clean water wash will degloss as well as clean the surface.
- (l) The wet-scraped, dry surfaces are to be sealed with paint or coating that yields a smooth surface.
- (m) At conclusion of the corrective work, or at the end of the workday on multi-day activities, debris should be misted with water and swept up and placed in double 6-mil plastic bags. The protective polyethylene sheeting shall be carefully removed, retaining any remaining dust or debris, and bagged in plastic. Polyethylene sheeting shall not be reused.
- (n) A final clean up of the corrected surfaces and surrounding work area, room or space is to be conducted at the end of each work day with a HEPA vacuum, a wet washing using a 5% - 10% solution of tri-sodium phosphate (TSP) detergent or regular cleaning agent or dishwashing detergent. Care should be taken each time the cleaning mixture is exchanged to ensure that dirty water does not contaminate surfaces. The use of a two-bucket system works well: one bucket contains the detergent/water waste and the second contains clear water to rinse the surface. A second round of HEPA vacuuming of all surfaces follows the TSP washing.

- (o) All retained liquid waste shall be poured through a filter cloth to remove paint chips and other debris prior to disposal. Filtered materials will be double bagged.
- (p) All waste materials generated by this activity including paint debris, HEPA vacuum contents, rags, mops, sponges, water, work clothes, polyethylene sheeting and any objects in the room such as carpets or drapes that became contaminated must be characterized and disposed of IAW the Fort Meade Hazardous Waste Management Plan. Generally, the HEPA vacuum contents will be a hazardous waste. Wastewater (from the TSP wipe down and personnel hygiene) should be filtered through a 5-micron filter. This filter should be disposed of as hazardous waste.

(3) Clearance Sampling:

- (a) After the cleanup is completed for all corrective actions, the work area should be tested to assure that hazardous amounts of lead dust are not left behind.
- (b) The collection and analysis of dust samples shall be IAW protocols established in the HUD Guidelines for the Evaluation and Control of LBP Hazards in Housing, June 1995 and 1998 version of American Society for Testing and Materials (ASTM) standards on Lead Hazards Associated with Buildings.
- (c) Dust results in excess of 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) floors, 250 $\mu\text{g}/\text{ft}^2$ on window sills/stools, or 400 $\mu\text{g}/\text{ft}^2$ on window wells are considered positive readings. NOTE: In any grouping of housing units, if a component has one or more positive readings, the installation has the option of either testing all occurrences of the component in question, or implementing in-place management actions for all of the components in question.
- (d) Final clean up procedures shall be repeated following any failure to pass the first clearance test. Repeat wipe testing after second cleaning.
- (e) Clearance testing is typically not indicated for preventive maintenance and repair projects unless a substantial amount of dust is generated. However, it is necessary to conduct clearance inspections, which involve the collection and laboratory analysis of samples to quantitatively determine the amount of lead in dust and soil upon completion of abatement work, or interim control activities that disturb lead-contaminated paint.

(4) Worker Protection and Training:

All procedures that require the disturbance or removal of LBP, to include the removal of components painted with LBP, should be performed by certified personnel or by a certified deleading contractor. It is essential that personnel directly involved with

reducing LBP hazards be provided appropriate training to make them aware of the hazards of lead, proper procedures and work practices, and the need for protective equipment and proper hygiene.

- (a) De-leading workers, supervisors, contractors, inspectors, project designers and risk assessors must receive and successfully complete an EPA approved LBP abatement services course. All contracted LBP services must be performed by the MDE accredited/licensed contractors and personnel.
 - (b) All workers must be provided appropriate personal protective equipment. This includes disposable coveralls, shoe coverings, hair coverings, gloves, safety goggles, and a properly fitted, negative-pressure half-mask respirator with a HEPA filter.
 - (c) Personnel working on projects where lead dust may be encountered shall not eat, drink, or smoke on the job site.
 - (d) Hands and face should be washed before breaks and at the end of workday.
 - (e) Breaks should be taken away from the work area.
 - (f) Work clothes should not be worn home. Workers should wear protective work clothes instead of street clothes or they should wear protective garments over their street clothes. Work clothes should be disposed of IAW the Fort Meade Hazardous Waste Management plan.
 - (g) If shower facilities are not available on-site or at the maintenance shops, workers should shower and wash their hair immediately upon returning to their homes.
- (5) Preventive Maintenance and Repairs:
- (a) Activities related to preventive maintenance, such as repainting and routine cleaning, may be carried out by maintenance personnel or occupants, as long as existing paint is not disturbed in any fashion. Individuals performing such work are not required to wear personal protective equipment or have any formal lead training, however, good personal hygiene practices are recommended when working with painted surfaces which may contain lead. Maintenance supervisors and maintenance workers who deal with multifamily housing built before 1978, are encouraged to take the EPA & HUD Lead-Based Paint Maintenance training.
 - (b) Workers engaged in other renovation or repair projects which may encounter LBP must be protected from exposure and must take the necessary precautions to control, contain, and clean up lead dust. The level of protection and controls should be keyed to the scale of the project and its potential for

dust generation. Individuals performing such activities must meet the training requirements discussed in Section 4-4. b. (4).

- (c) Workers performing in-place management activities shall be subject to medical monitoring as discussed in Chapter 7.

(6) Protection of Residents:

- (a) Housing residents or facility occupants shall not be permitted in the unit or in the vicinity of the job while abatement/interim control procedures are being carried out. Residents' belongings shall be protected from possible exposure to lead dust released during the project. Cleanup of all dust and debris will be required at the end of each workday. Complete cleanup and final inspections shall be required prior to re-occupancy.
- (b) In some cases, it may be possible to conduct preventive maintenance and repair projects while occupants remain in their homes or work areas. Care should be exercised to keep occupants and all children away from the work area and to protect their belongings from possible lead dust contamination.

(7) Periodic Monitoring:

- (a) During cyclic inspections or when a dwelling unit is prepared to be re-occupied, facilities shall be re-inspected to verify that previously treated/repaired LBP surfaces remain in good condition.
- (b) Residents shall be provided with available LBP information for their facility and should be encouraged to report cracked, peeling LBP as it occurs.

(8) Occupant Education:

- (a) Occupants of the target housing will be provided with the EPA lead hazard pamphlet and written notice letter describing the nature, location, and timing of the work prior to renovation of the quarters.

(9) The following are suggestions from the HUD Guidelines:

- (a) Repainting: Properties should be repainted a minimum of every 5 years. More frequent repainting should be performed if the paint appears in poor condition. The following precautions should be taken when repainting lead-based paint:
 - Use a lead-specific cleaner or de-glossing agent to prepare the surface.
 - Alternately, surface preparation can be performed by wet sanding/wet scraping.
 - HEPA vacuuming with TSP wash or equivalent should be performed following any repainting.

- (b) Maintenance Operations: Properly trained personnel should only perform maintenance operations, including repainting. Proper cleaning practices involving special cleaning with HEPA vacuums and TSP wash or an equivalent cleaning solution should be performed. Paint condition should be evaluated as a part of maintenance operations.
- (c) Remodeling and Modernization: Remodeling and modernization of older housing is an excellent time to either abate the lead hazards on a property or to perform risk reductions of LBP hazards. Replacing old windows may not only increase the efficiency of the unit but it will also decrease the lead hazard that was present in the old windows. Financially these remodeling and modernization projects may be the most economical and efficient times to remedy the lead problem in older housing.

c. HAZARD REDUCTION TECHNIQUES:

A LBP hazard is a condition in which exposure to lead from the following sources could have an adverse affect on human health:

- Lead-contaminated dust
- Deteriorated (chipping and peeling) paint that children can eat.
- Friction surfaces like windows where the movement wears away the paint and grinds it to dust on sills
- Impact surfaces like doors, walls that get hit and banged, and corners that stick out.
- Surfaces accessible for children to chew, like window sills and railings
- Lead-contaminated bare soil from automobile exhaust and deteriorated exterior paint where children play.

Lead paint becomes a health hazard when it chips or peels or when it turns into dust or contaminates soil through inadequate maintenance work practices. If LBP is maintained and monitored, and not disturbed, it is not a hazard. LBP hazards are most likely to be found on trim, doors, windows, windowsills, bathrooms, kitchens, and bare soil.

(1) Lead Risk Reduction – Work Practices: The applicable regulations and guidelines shall be followed.

(2) HUD Guidelines for Lead Hazard Reduction Treatments:

- Repair all rotted or defective substrates.
- Treat floors and window sills and window troughs/wells so that they are smooth and cleanable.
- Treat protruding accessible (chewable) surfaces.
- Remove and control dust.
- Stabilize painted surfaces.

- Treat friction and impact surfaces.
- Treat bare soil that has high lead concentrations.

(3) State of Maryland Hazard Reduction Techniques

- Remove all deteriorating paint.
- Repair all structural defects.
- Strip, repaint, replace, or encapsulate all interior window sills to a smooth and cleanable state.
- Install caps on window wells to make them smooth and cleanable.
- Fix the top window in place if a friction hazard on LBP exists.
- Re-hang all doors where a friction hazard exists.
- Make floors smooth and cleanable.
- Bathroom and kitchen floors should be water-resistant.
- HEPA vacuum and TSP wash the interior of the property.

d. ABATEMENT:

Abatement is performed only when interim measures do not work, or when it is cost effective as a part of major renovations. There are two different strategies for the abatement of LBP.

(1) The Removal of LBP from the Substrate:

- (a) Replacement: It is defined as the removal of components that have lead-painted surfaces and installing new components free of lead-containing paint. Replacement should be considered as for components that can be easily removed such as wood trim, windows, and doors.
- (b) Removal: The removal is done by separating the paint from the substrate and disposing of the removed paint. The removal methods include:
 - Scraping.
 - Scraping with a heat gun operated less than 1100°F.
 - Abrasive removal.
 - Removal with a needle gun.
 - On-site chemical stripping.
 - Off-site chemical stripping.

(2) Covering of LBP:

This is a process which makes lead paint inaccessible by covering or sealing painted surfaces. Covering should be considered for large surface areas such as floors, walls, and ceilings, as well as selected building components such as windows, door jambs, and stair treads. Careful attention should be given to the selection of enclosures. Some are not suitable under specific conditions. For example, surfaces subject to

friction such as windows and doors are not suited to paint-on typed encapsulants. Covering includes enclosure or encapsulation.

- (a) Enclosure (sometimes referred to as rigid encapsulants) – It is accomplished by enclosing the painted surface with a durable substance such as drywall, paneling, metal siding or some other construction material. Enclosures include but are not limited to paneling, gypsum board, plywood, tile board, and aluminum and vinyl siding. All enclosure materials should be applied with fasteners and adhesives, and installed following the manufacturer directions.
- Paneling – To prevent a bellows effect when installing paneling, proper application includes the use of panel adhesive and threaded nails. All seams and edges must be sealed or caulked to prevent the escape of dust. Pertinent building code regulations should be checked before paneling.
 - Gypsum Board – When encapsulating old plaster walls, gypsum board should be glued as well as screwed to the surface. Using screws rather than nails will result in less damage to the underlying plaster and provide a more stable permanent improvement.
- (b) Encapsulation – It is accomplished by coating or sealing the LBP with some durable coating which is applied as a liquid to the painted surface. Lead-free paint is not to be considered as an encapsulant. Well-prepared surfaces are important for effective encapsulation systems. If surface preparation is necessary (e.g., scraping of peeling paint) the affected area should be misted or wet-sprayed first to control dust generation. Encapsulation should be considered for surfaces difficult to remove (e.g., baseboards behind pipes). Encapsulants are not at all appropriate for surfaces, which are routinely rubbed or abraded such as stair treads, window glides, jambs or sashes, door jambs or edges, and floors. Because of the brittle nature of many encapsulants, they may tend to chip and flake with substrate deterioration. Suitable surfaces, depending upon toxicity, are interior walls and ceilings, woodwork and wood trim, exterior masonry and wooden surfaces, and metal pipes.

Documentation of encapsulation is important because of the potential for exposures to underlying lead paint during future maintenance, renovation or demolition. Problems may also arise during analysis for lead paint because x-ray fluorescence can detect encapsulated lead.

NOTE: If encapsulant coating appears to be an appropriate lead paint abatement option for a housing project, a prior approval from MDE needs to be requested.

(3) Prohibited Methods:

- Open flame burning or torching.

- Dry sanding or scraping.
- **Open** abrasive blasting, sandblasting, machine sanding, or grinding.
- Uncontained hydro-blasting.
- Methylene chloride for interior use.
- Heat gun operating at temperatures greater than 1100 degrees Fahrenheit.

Note: Dry scraping of LBP is permitted only in conjunction with heat guns or around electrical outlets or when treating defective paint spots totaling no more than 2 ft² in any one room, hallway or stairwell or totaling no more than 20 ft² on exterior surfaces.

(4) Various Methods of Abatement:

(a) Residential Lead Abatement:

- Replacement.
- Off-site chemical stripping.
- Heat gun.
- On-site chemical stripping.
- Sander with HEPA vacuum.
- Wet scraping.
- Encapsulation with approved materials.
- Reversal.
- Vacuum-blasting (exterior only).
- Contained hydro-blasting (exterior only).

(b) Commercial Lead Abatement: Public and commercial lead abatement projects (including structural steel projects) may utilize a broader range of removal options including:

- Abrasive blasting with dust recovery and filtration system.
- Mechanical chipping with dust collection system.
- Needlegun with HEPA vacuum.
- Demolition methods.

(5) Notification:

Notification of **lead abatement in target housing and child-occupied facilities** must be done in accordance with COMAR 26.02.07.

- Resident Notification: All residents of the affected dwelling units shall be notified in writing, describing the nature, location, timing of the abatement work and placing all personal removable items out of the work areas prior to (at least 7 days prior) the beginning of on-site work IAW COMAR 26.02.07.06.

- State Notification: Additionally, contractor needs to notify the MDE of readiness for final inspection upon completion of lead abatement project (after final clean up of work area and removal of lead waste from the site) IAW COMAR 26.02.07.12.

(6) Signage:

- At least 3 days before removing or encapsulating lead paint, the contractor shall post lead caution signs and a notice appropriately except in emergency situations.
- The contractor shall keep the caution signs posted until the Maryland Department of Environment issues the written notice of completion and compliance under lead regulations (for lead **abatement** project in target housing).
- In addition to the lead caution signs, OSHA lead warning signs shall be posted in each work area **where an employee's exposure to lead is above the permissible exposure limit (PEL)** in accordance with 29 CFR 1926.62.

SIGNAGE FOR LEAD ABATEMENT PROJECTS

	MDE Lead Caution Sign in each separate work area	In addition to Caution Sign, a Notice shall be posted in multiple family dwellings	OSHA Warning Sign in each work area where an employees exposure >PEL
Size	At least 20” X 14”		
Location	Immediately outside all entrances and exits to the work area	On the door of each apartment in the building.	Work area where employee exposure >PEL
Required Wording	Date & place of lead abatement project; Statement of “CAUTION LEAD HAZARD, KEEP OUT” in bold lettering at least 2”high.	Date & place of lead abatement; Statement of “PLEASE OBSERVE CAUTION SIGNS, INSTRUCT CHILDREN NOT TO REMAIN IN WORK AREA” .	Statement of “WARNING LEAD WORK AREA POISON NO SMOKING OR EATING”
	For lead abatement in common area – “CAUTION LEAD HAZARD, DO NOT REMAIN IN WORK AREA UNLESS AUTHORIZED” in bold lettering at least 2” high.		The legend has to be readily visible.
Duration	A caution sign shall be posted at least 3 days before removing or encapsulating lead paint. The sign shall be kept posted until the MDE issues the written notice of completion and compliance.	A notice shall be posted at least 3 days before a lead abatement project commences.	

(7) Abatement Procedures:

(a) Hygiene and Work Practices to Reduce Dust Exposure

- Use required safety equipment.
- Do not smoke or eat in the work area.
- Change protective booties every time you leave the work area; change the protective suit as required.
- Wash your hands and face every time you leave the work area.

(b) Work Practices to Minimize Lead Dust Concentration

- Wet down lead containing dust and debris.
- Contain lead dust and debris within the work area with 6 mil plastic barriers.
- Routine housekeeping should be performed with a HEPA vacuum.
- Dispose of wetted debris and material wrapped in 6-mil plastic.

(c) Containment

- Make sure all furniture is removed from the work area.
- Place critical barriers over non-moveable objects and openings into the work area including doors, windows and air ducts for heating and cleaning systems.
- Remove all carpeting as lead contaminated waste as necessary.
- Cover floors with 2 layers of 6-mil poly.
- On the exterior areas, cover from the drip line to a minimum of 5 feet away from the foundation in the State of Maryland. HUD recommends 10 feet minimum from the foundation.
- On exterior areas, create a lip to capture any liquid waste that could run off.
- Erect vertical shrouds when wind is over 15 mph for exterior lead work.

(d) Exposure Assessment & Monitoring

According to OSHA, the following 6 components of interim protection are required for the employer to implement while an employee exposure assessment is performed.

- Appropriate respiratory protection.
- Appropriate personal protective clothing and equipment.
- Change areas.
- Hand washing facilities.
- Biological monitoring to consist of blood sampling and analysis for lead and zinc protoporphyrin levels.

- Training (Hazard Communication; respirator training; safety training and education).

Both personal air and area (ambient) air sampling will be collected periodically throughout the project in accordance with applicable regulations. This sampling will include personal air monitoring of abatement employees and ambient air sampling within the work area. Air samples may also be collected outside critical barriers of the work area in the clean room, and in areas adjacent to the clean room. **Monitoring frequency** is as follow:

IF:	THEN:
Initial monitoring reveals employee exposure to be below the action level (30 ug/m ³)	No further monitoring is required.
Initial determination reveals employee exposure to be at or above action level but at or below the PEL	Monitoring is required every six months.
Initial determination reveals employee exposure to be above the PEL	Monitoring is required every three months.
Two consecutive measurements Taken at least seven days apart are below the action level	The employer can discontinue monitoring.
Monitoring has stopped and there is a change in equipment, process, control, personnel, or a new task has been initiated	Additional monitoring is required.

The employer shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead at or below the permissible exposure limit to the extent that such controls are feasible. Written plans for these compliance programs shall be established IAW with OSHA [29 CFR 1926.62 (e)(2)].

(e) Employee Notification

- Within 5 working days after completion of the exposure assessment the employer shall notify each employee in writing of the results which represent that employee’s exposure.
- Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL, the employer shall include in the written notice a statement that the employees exposure was at or above that level and a description of the corrective action taken or to be taken to reduce exposure to below that level.

(f) Cleanup and Waste Disposal

- Dispose of all lead contaminated waste in plastic bags a minimum of 6 mil thick.
- HEPA vacuum all surfaces.
- TSP wash or equivalent on all surfaces.
- HEPA vacuum all surfaces (second time).
- Waste disposal shall take place no later than 72 hours after final cleanup.
- All waste should be treated in compliance with EPA RCRA requirements and Fort Meade Hazardous Waste Management Plan.

(g) Clearance Sampling

See section 4-4.b (3).

(h) Associated Abatement Activities

- Welding, torching, cutting, burning activities must follow applicable laws and regulations.
- Lead contaminated soil abatement.

(8) Post Abatement Inspection/Clearance: Post-abatement clearance procedures (visual inspection & clearance dust wipe sampling) in target housing and child-occupied facilities shall be performed only by a certified inspector or risk assessor.

- (a) Following abatement, a visual inspection shall be performed to determine if deteriorated painted surfaces or visible amounts of dust, debris or residue are still present. For exterior abatement, all horizontal surfaces in the outdoor living area closest to the abated surface must be cleaned of visible dust and debris; the drip-line or next to the foundation below any exterior surface abated must be free of paint chips.
- (b) Following the visual inspection, clearance sampling for lead contaminated dust shall be taken a minimum of one hour after completion of final post-abatement cleanup activities. Clearance dust wipe sampling may be conducted by employing single-surface or composite sampling techniques in accordance with the protocols.
- (c) Exterior paint abatement clearance dust wipe sampling results (as determined by the accredited laboratory analysis) shall be compared with applicable clearance levels for lead in dust on floors and windows.
- (d) If the residual lead levels in a dust sample exceed the clearance levels, all the components represented by the failed sample shall be re-cleaned and re-tested until clearance levels are met.

(9) The Target Housing/Child Occupied Facility Lead Abatement Report. The abatement report shall include the following information:

- Start and completion dates of abatement.
- The name and address of each certified firm conducting the abatement and the name of each supervisor assigned to the abatement project.
- An occupant protection plan written by a certified supervisor or project designer.
- The name, address, and signature of each certified risk assessor or inspector conducting clearance sampling and the date of clearance testing.
- The results of clearance testing and all soil analyses (if applicable) and the name of each recognized laboratory that conducted the analyses.
- A detailed written description of the abatement, including abatement methods used, locations of rooms, components where abatement occurred, reason for selecting particular abatement methods for each component, and any suggested monitoring of encapsulants or enclosures.

(10) Record keeping

All lead abatement reports or plans for target housing and child occupied facility shall be maintained by the certified firm or individual who prepared the report for no fewer than 3 years. The certified firm or individual also shall provide copies of these reports to the building owner who contracted for its services.

OSHA requires the following records to be maintained accordingly.

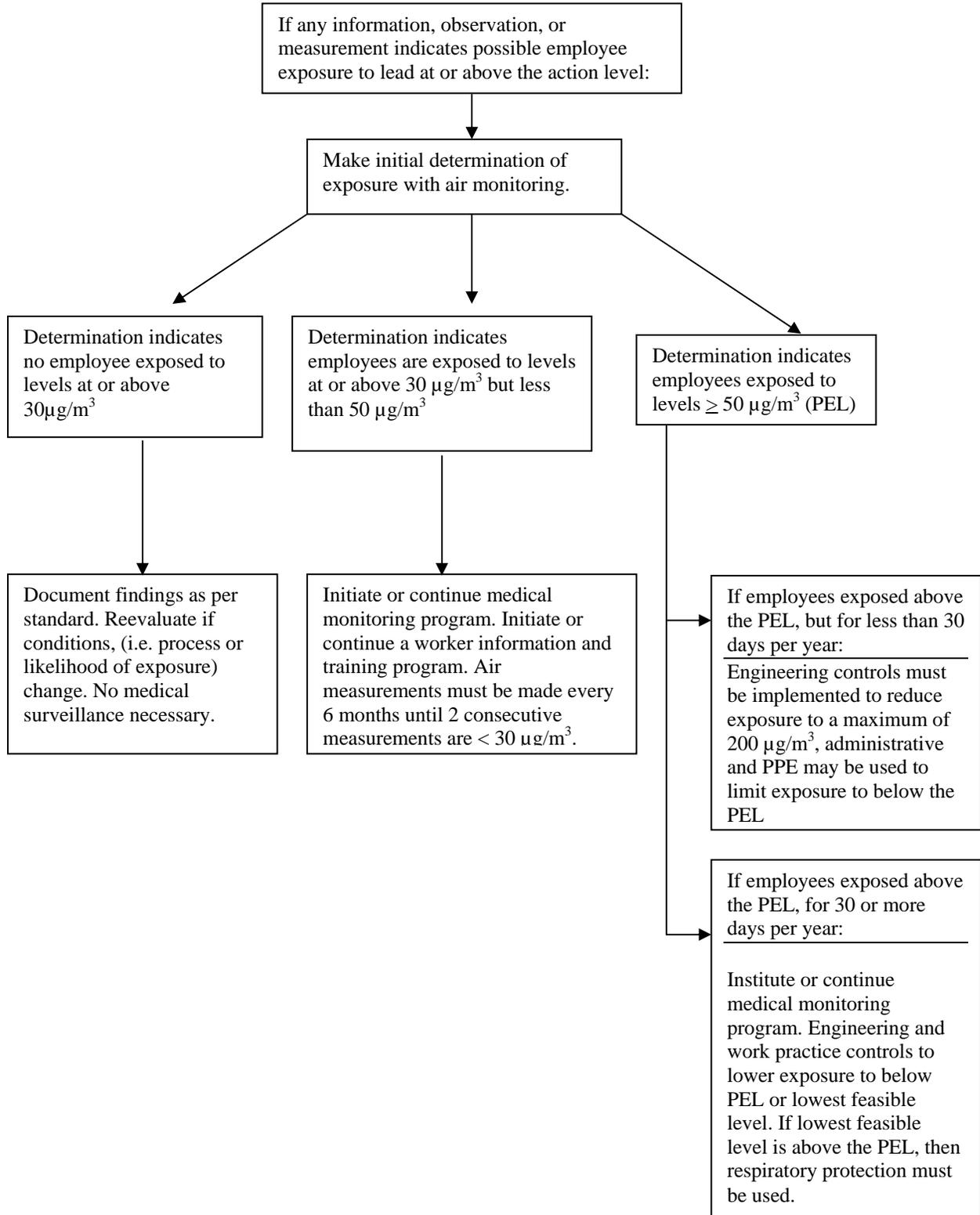
- Medical records for duration of employment plus 30 years.
- Training records for duration of employment plus 1 year.
- Air monitoring and employee exposure for duration of employment plus 30 years.

Fit testing records for duration until another fit testing is conducted.

(11) The following are a summary table of specific air lead levels and the actions to be taken IAW 29 CFR 1926.62; and a schematic of requirements of the OSHA lead standard.

For Specific Air Lead Levels				During Assessment of Trigger Tasks
Regardless of Level	≥ Action Level		> PEL	
	1–30 days	> 30 days	> 4xPEL	
-Exposure assessment & interim protection. -Housekeeping -Handwashing facilities -Hazcom training and/or safety training and education.	-Monitoring representative of exposure for each exposed employee. -Initial medical surveillance. -Follow-up blood sampling. -Temporary removal due to elevated blood lead. -Information and training.	-Medical surveillance program. -medical exams and consultation (if required)	- engineering & work practice controls - Respiratory protection. -Protective clothing & equipment. -hygiene facilities and practices -Post OSHA warning signs.	-Clean & replace protective clothing daily. -Appropriate respiratory protection. -Protective clothing and equipment. -Change areas. -Hand washing facilities. -Biological monitoring. -Hazcom training -respirator training -safety training & education.

Schematic of Requirements of the OSHA Lead Standard



e. WINDOW COMPONENTS REMOVAL:

(1) Containment: Establish a critical barrier for window removal.

- Use a HEPA vacuum with metal attachment to remove loose paint chips and flakes from window surfaces.
- Seal dust tape to innermost sill, casing and header surfaces of the window.
- Seal two layers of six-mil poly from the duct tape lip on the inside sill of the dwelling unit window and extend up to the inside surface of the top interior casing. The first layer of sheeting shall be sealed to the inside faces of the casing. The poly shall be sealed to a piece of three-inch wide duct tape forming a lip attached to the interior window perimeter of the window casing. Plastic shall be sealed tightly to eliminate potential dust collection areas.
- A second layer of poly should be attached over the first layer and sealed directly to the inner face of the cut tape lip and windowsill and casing.
- The sealing of the windows shall be done from the interior prior to the beginning of any exterior work.

(2) Removal procedures

- Remove existing exterior storm windows and screens and dispose of as construction debris.
- Repair damage to adjacent surfaces.
- HUD Guidelines Specification for window components removal (other approved methods can also be utilized):
 - Remove exterior stops
 - Remove top sash
 - Remove parting bead
 - Remove bottom sash
 - Remove window trough casing
 - Pry off head stop
 - Remove exterior header
 - HEPA vacuum surrounding surfaces
- Follow standard lead cleaning procedures HEPA vacuum/TSP wash/HEPA vacuum.
- Visual inspection.
- Encapsulation with white latex paint.
- Clearance procedures.

4-7. ONGOING MONITORING

a. GENERAL:

Ongoing monitoring is a systemic approach for ensuring that dwelling units free of LBP hazards continue to be hazard-free. This is required in all target housing and child-occupied facilities where lead contaminated paint is known or suspected to be present, regardless of the paint's present condition. Ongoing monitoring is performed for previously identified and managed or abated lead hazards and determines if interim control measures have been effective or if new hazards have developed. Ongoing monitoring is not required in dwellings that are known to be free of LBP. On-going monitoring shall be conducted until all sources of lead hazards are abated. Between occupancy, target housing should be re-inspected.

- To verify that previously controlled or abated lead hazards have not recurred.
- To identify the occurrence and extent of new lead hazards.
- To notify occupants that there is damage to painted surfaces.

b. ELEMENTS:

Ongoing monitoring consists of reevaluations performed by certified risk assessors and visual surveys conducted by owners.

(1) Reevaluation: When performing a reevaluation, risk assessors should do the following:

- Review any previous risk assessment, paint inspection, clearance examination, or reevaluation report.
- Conduct a visual examination of all existing LBP hazard controls on all surfaces that are known or suspected to be coated with LBP, and any soil. Any necessary repairs should be completed before dust sampling.
- Collect at least two composite dust-wipe samples, one from the floors and the other from either the window troughs or the interior windowsills. Each composite sample should contain no more than four sub-samples.
- Document the presence or absence of LBP hazards in the reevaluation report.

(2) Visual Survey: Visual survey should be conducted by owners (Housing Office) at the following times:

- Whenever the owner receives a resident complaint.
- Whenever the dwelling turns over or becomes vacant.
- Whenever significant damage occurs (i.e., flooding, vandalism, fire).
- At least once every year.

When conducting a visual survey, the owner should examine all painted surfaces, all LBP hazard controls, and all ground cover.

c. REEVALUATION SCHEDULE:

Reevaluation should be performed IAW the following HUD’s Standard Reevaluation Schedules.

RECOMMENDED STANDARD REEVALUATION SCHEDULE

Schedule	Evaluation Results	Action taken	Reevaluation Frequency	Visual Survey
1	No LBP/leaded dust or soil.	None	None	None
2	No LBP hazards found during risk assessment.	None	3 years	Annually & whenever information indicates a possible problem.
3	Average leaded dust levels exceed the limits, but by less than a factor of 10.	Interim control and/or hazard abatement	1 year, 2 years	Same as Sche. 2, except for encapsulants (visual survey by 1 month, 6 months later and annually thereafter).
		Interim control and/or hazard abatement plus replacement of windows with lead hazards.	1 year	
		Abatement of all LBP using encapsulation or enclosure	None	Same as sche. 3 above.
		Removal of all LBP	None	None
4	Average leaded dust levels exceed the limits by a factor of 10 or more.	Interim control and/or hazard abatement	6 months, 1 year, 2 years	Same as Schedule 3
		Interim control and/or hazard abatement plus replacement of windows with lead hazards	6 months, 2 years	Same as Schedule 3
		Abatement of all LBP using encapsulation or enclosure	None	Same as Schedule 3
		Removal of all LBP	None	None

5	No leaded dust or leaded soil hazards identified, but LBP or LBP hazards are found	Interim control and/or hazard abatement	2 years	Same as schedule 3
		Interim control and/or hazard abatement plus replacement of windows with lead hazards	3 years	Same as Schedule 3
		Abatement of all LBP hazards, but not all LBP	4 years	Same as Schedule 3
		Abatement of all LBP using encapsulation or enclosure	None	Same as Schedule 3
		Removal of all LBP	None	None
6	Bare leaded soil exceeds standard, but less than 1,200 µg/g	Interim controls	None	Three months to check new ground cover, then annually to identify new bare spots.
7	Bare leaded soil greater than or equal to 1,200 µg/g	Abatement (paving or removal)	None	None for removal; Annually to identify new bare spots or deterioration of paving.

CHAPTER 5

LEAD-BASED PAINT EXPOSURE

5-1. GENERAL

There is no safe level of lead inside the body. Lead is commonly found in the environment so that everyone has some “body burden” of lead. Through the use of safe work practices and personal protective equipment the body burden of affected persons can remain at a low level.

5-2. FOCUS

Lead exposure could be reduced by

- ❑ Managing the source of lead
- ❑ Controlling the pathway (i.e., household dust and soil)
- ❑ Educating the affected population (i.e. children, parents, and workers)

5-3. ENVIRONMENTAL EXPOSURE

a. Lead-based paint that deteriorates and becomes detached from its supported structure creates an environmental hazard, which can affect the human health. Fort Meade has many buildings and housing units that contain LBP. Environmental exposure from LBP could occur as a result of any of the following circumstances:

- (1) Deterioration of LBP on abandoned, condemned, and operational buildings (both interior and exterior) - LBP eventually begins to deteriorate. This is enhanced by weathering, humidity. LBP chinks creating chips and fine particles.
- (2) Renovation of existing buildings that contain LBP. Dust hazards and soil contamination occur from scraping, sanding, grinding and other means of removing LBP.
- (3) Demolition of buildings containing LBP. This creates lead containing dust and contamination of the surrounding soil.
- (4) Improper LBP abatement. Fort Meade personnel or contractors performing LBP control or abatement activities can create hazards by not using proper procedures.
- (5) Improper disposal of LBP waste. Contaminated lead waste must be tested using the TCLP method before disposal. In some cases, lead contaminated waste could be disposed of as hazardous waste rather than testing TCLP to be cost effective. Disposal must be IAW the RCRA.

- (6) Exposure can also occur by accidental ingestion of dust/soil particles via hand to mouth activity. Occupational exposures can cause environmental exposure when employees bring home lead-contaminated dust or soil on their shoes or clothing.

b. PREVENTION:

Possible lead exposure from the above circumstances can be controlled through:

- (1) LBP identification and proper project design and execution in accordance with applicable regulatory requirements.
- (2) Characterization and proper disposal of solid waste resulting from demolition and renovation projects in accordance with applicable regulations.

5-4. OCCUPATIONAL EXPOSURE

a. The lead standard was developed through animal toxicity studies to protect the health of individuals in the workplace. These individuals may on occasion work in the presence of lead compounds, usually in the inorganic form. The permissible exposure of $50 \mu\text{g}/\text{m}^3$ averaged over an 8-hour period at which nearly all workers may be exposed without any adverse health effects. The standard is intended to protect individuals from immediate and long-term toxic effects of lead. In the workplace, lead is mainly absorbed into the body through inhalation, although ingestion can be another route of exposure. Lead gets airborne through various means. In the form of dusts, fumes or mist, the lead can be inhaled, enter the respiratory tract and into the lungs. Once the inhaled particles enter the bloodstream in the gas exchange region of the lungs (alveoli), they are circulated throughout the body and stored in various target organs. Lead entering the body through swallowing will have the same effect on the body. Some lead may be excreted, but not all will. This stored lead has the potential for irreversible damage.

b. PREVENTION:

- (1) Maintain worker blood lead levels below $40 \mu\text{g}/100\text{g}$ of whole blood.
- (2) Workers with potential for exposure should be included in the post medical surveillance program (i.e., lead abatement workers, and welders).
- (3) Utilize proper personal protective equipment (PPE) in the workplace, and maintain proper personal hygiene practices.
- (4) Provide appropriate training to the workers.

CHAPTER 6

LEAD-CONTAMINATED WASTE DISPOSAL

6-1. GENERAL

Lead-based paint has been a growing concern both within DOD and in the private sectors. Most of the focus has been on the prevention of childhood lead poisoning. The increasing alarm over lead hazards has, however, resulted in a host of related quandaries. One of these problems involves the disposal of waste and debris such as paint chips and painted building components that contain LBP.

6-2. TCLP TESTING FOR WASTE CLASSIFICATION

To determine if a solid waste is hazardous, it is required to collect a representative portion of the waste and perform Toxicity Characteristics Leaching Procedure (TCLP) for lead. During this process, the solid fly ash will be extracted or mixed in an acid solution for 18 hours. The extraction liquid will then be subjected to test for specific metals.

6-3. DISPOSAL PROCEDURE

- a. Whole-Building Demolition Debris: According to U.S. Army CHPPM's waste characterization study, the findings showed that (statistically) whole-building demolition debris can be characterized as non-hazardous waste so long as certain assumptions and assertions are made:
 - Other hazardous components such as asbestos or PCBs (from light ballast and roofing tars) are not present or are removed and disposed separately.
 - Metals components such as ductwork, furnaces and boilers, piping, or siding are removed to the extent feasible as scrap materials for reuse and recycling.
 - All remaining material (i.e., all those materials that were included in the sampling process such as both painted and unpainted wood components, brick, concrete and foundation material) must comprise a single wastestream at the point of generation (when the building is demolished). This wastestream must be handled as a single, discrete wastestream and disposed of together.
- b. The following lead contaminated waste items from lead control or abatement projects will be considered as RCRA hazardous waste (HW) without testing of TCLP-lead for classification of waste.
 - Paint chips and scrapings.
 - Blast grit.

-
- Chemical strippers (these may be hazardous for constituents other than lead).
 - Caustic pastes.
 - Filters (air filters, water filters used in recycling or solvent reclamation operations).
 - Plastics, tarps, PPE.
 - Components from **small scale lead project** (this waste stream includes lead painted or varnished components removed for remodeling, abatement or maintenance purposes). Such components include baseboards, window frames, doors, and trim. Usually, the proportion of LBP to the overall mass of the waste is sufficient to result in a relatively “high” TCLP lead concentration therefore resulting in a HW.
- c. Large Scale Debris: Larger scale renovation may involve a significant amount of waste, to the extent that it may be beneficial, obtain samples and analyze them for TCLP-lead. The LBP debris or structural components that fail the TCLP-lead testing will be classified as HW.
- d. The items that pass TCLP (less than 5ppm) are considered as non-HW, and the contractor is responsible for proper disposal of non-HW. The items that fail TCLP-lead (≥ 5 ppm) are considered as HW and shall be turned over to the government (DPW Environmental Office) for proper disposal.
- e. Waste shall be placed in the DOT approved containers (e.g. 55-gallon drums). The contractor will provide the proper containers for the waste. The contractor will label, pack, and safeguard containers during the accumulation period. Once the drum is full the contractor will transport the container to the installation waste storage area located at Building 2250 within three days. Advanced coordination with the DPW Environmental Office is required for hazardous waste dropped off.
- f. The government will provide roll off containers if needed for large-scale projects. Contractors will coordinate with the DPW Contract Management Office and the Environmental Office 15 days prior to the start of any project that requires a roll off container. All contractors shall comply with Federal, State, local statutes and regulations; and, the Fort Meade Hazardous Waste Management Plan.

CHAPTER 7

CHILDHOOD LEAD POISONING PREVENTION

7-1. GENERAL

The Medical Department Activity, Kimbrough Ambulatory Care Center (KACC) will implement a Childhood Lead Poisoning Prevention Program (CLPP).

7-2. PROGRAM RESPONSIBILITIES

- a. Screen children under the age of six during routine medical evaluations of lead exposure risk.
- b. Conduct clinically indicated lead screening.
- c. Provide coordinated health care management of children with elevated blood lead levels.
- d. Provide parents/guardians and children with education regarding childhood lead poisoning and environmental hazard reduction.
- e. Report to Maryland State Health Department all cases of elevated blood levels (≥ 15 $\mu\text{g}/\text{dl}$)
- f. Report to Army Medical Surveillance System cases of lead poisoning.
- g. Refer children identified as having an elevated blood level to appropriate health care authorities.
- h. Ensure appropriate screening of household members of children identified with elevated blood lead levels.
- i. Conduct laboratory testing and surveillance to ensure that trends are identified and appropriately managed.
- j. Serve as health advisors to the installation DPW Lead Hazard Management Committee.
- k. Coordinates with the PMH, RCI and DPW to conduct environmental risk assessment of appropriate on-post housing unit when a child is identified with an elevated blood lead level of ≥ 15 microgram per deciliter ($\mu\text{g}/\text{dl}$).
- l. Work collaboratively with PMH/RC I to provide community level education and intervention, as required.

7-3. EBL CASE MANAGEMENT PROTOCOLS

Blood Lead Levels (BLL)	CHN case coordination	Case Management
BLL <10 µg/dl (capillary or venous)	No	<ul style="list-style-type: none"> • Continue assessment for high dose lead exposure at all routine child health visits. • Repeat blood lead testing as needed in accordance with protocol.
BLL 10-14 µg/dl (capillary or venous)	No	<ul style="list-style-type: none"> • Provide additional education/awareness information about lead exposure. • Continue assessment for high dose lead exposure at all routine child health visits. • Repeat blood lead testing as needed in accordance with protocol.
BLL 15-19 µg/dl (capillary or venous)	Yes	<ul style="list-style-type: none"> • Follow-up telephone contact/home visit. • Provide educational material.
BLL 20-44 µg/dl (capillary)	Yes	<ul style="list-style-type: none"> • Contact provider to request confirmation with venous sample within one week. • Assist with family as needed.
BLL 20-44 µg/dl (venous)	Yes	<ul style="list-style-type: none"> • Contact provider regarding plans. • Contact environmental health personnel. Initiate family telephone contact to set up joint visit to home with environmental health personnel; explain need for Public Health Intervention (nursing & environmental); and provide brief assessment of immediate risks and counsel family as needed. • Conduct home visit to assess general environmental lead exposure hazards for the child; provide health education about lead, nutrition, and environmental management of identified risks; identified other children and adults at risk in the environment and obtain blood lead testing; review plans for health care and coordinate as needed; identify and coordinate resources as needed for nutrition counseling.

CHAPTER 8

MEDICAL SURVEILLANCE

8-1. GENERAL

The Occupation Health Section from Preventive Medicine Services of MEDDAC provides medical surveillance to all workers (military personnel and civil service employees) potentially exposed to health hazards in the work environment. All medical examinations and laboratory evaluations are performed without cost to the employees. Content and extent of examination/evaluation is based on current standards and recommendations. If needed, results will be reported to an individual, supervisors and appropriate offices to ensure proper work procedures are followed and personal protective equipment is used in order to protect the health of the employee.

8-2. MEDICAL MONITORING – LEAD

a. Government employees determined to be at risk of exposure or considered to be exposed to lead at or above permissible exposure levels.

- (1) Employees with potential for LBP exposure shall be included in the post medical surveillance program.
- (2) Placement examinations are conducted at the time of assignment.
- (3) Periodic examinations are conducted based on air monitoring that documents exposure to action levels ($30 \text{ micrograms/m}^3$) for more than 30 days per year.
- (4) Termination examinations are performed at the end of employment based on documented exposures and work history.
- (5) Examinations are triggered by results of air monitoring.
- (6) Examinations and evaluations will be tailored to the specific incident or situation and will meet all applicable standards.
- (7) General results of examinations/evaluations will be reported to the appropriate offices.

b. Medical Surveillance Protocol for Lead Exposed Employees (Action level - $30 \text{ }\mu\text{g/m}^3$ 30 days per year).

- (1) Pre-placement Examinations

(a) Occupational & Medical History (attention to)

- Previous lead exposure (both occupational & non-occupational)
- Personal habits (smoking, hygiene)
- Past gastrointestinal, hematological, renal, cardiovascular, reproductive and neurological problems

(b) Physical Examination (emphasis)

- Teeth, gums
- Hematological system
- Gastrointestinal system
- Renal system
- Cardiovascular system
- Neurological system
- Pulmonary system if respirator is to be used
- Blood pressure measurement
- Blood samples for blood lead level, hemoglobin & hematocrit, RBC indices & smear morphology and BUN & Cr
- Routine urinalysis with microscopic examination
- Pregnancy test if requested by female/lab test for fertility if requested by male
- Any other testing deemed necessary by Medical Doctor

(2) Periodic Examinations (at least annually)

(a) Occupational & Medical History (attention to)

- Previous lead exposure (both occupational & non-occupational)
- Personal habits (smoking, hygiene)
- Past gastrointestinal, hematological, renal, cardiovascular, reproductive and neurological programs

(b) Physical Examination (emphasis)

- Teeth, gums
- Hematological system
- Gastrointestinal system
- Renal system
- Cardiovascular system
- Neurological system
- Pulmonary system if respirator is to be used
- Blood pressure measurement
- Blood samples for blood lead level, hemoglobin & hematocrit, RBC indices & smear morphology and BUN & Cr

- Routine urinalysis with microscopic examination
- Pregnancy test if requested by female/lab test for fertility if requested by male
- Any other testing deemed necessary by Medical Doctor

(3) Biological Testing

(a) Blood Lead

- At least every 6 months
- At least every 2 months for each employee whose last blood lead was at or above 40 $\mu\text{g}/\text{dl}$. This frequency shall continue until 2 consecutive samples are below 40 $\mu\text{g}/\text{dl}$.
- At least monthly during removal period of each employee removed from exposure to lead due to an elevated blood lead level.

(4) Complete Examination

(a) As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employees desires medical advise concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or use.

(b) As medically appropriate for employee removed from exposure due to risk of sustaining material impairment to health.

c. Blood testing required by 29 CFR 1926.62, OSHA Lead Exposure in Construction, will be conducted accordingly.

MEDICAL SURVEILLANCE

29 CFR 1926.62(j)

IF	THEN
Employees are occupationally exposed to lead on any day at or above the action level (30 μ g/m ³)	Biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels shall be made available to them.
Employees are exposed to lead at or above the action level for >30 days in any consecutive 12 month period	Biological monitoring shall occur every two months for the first six months and every six months thereafter. Medical exams shall occur annually.
Blood levels are at or above 40 μ g/dl	Biological monitoring shall occur at least every two months until two consecutive blood samples and analyses indicate a blood level below 40 μ g/dl.
Employees are removed due to elevated blood levels	Biological monitoring shall occur at least monthly during the removal period.

CHAPTER 9

PERSONAL PROTECTIVE EQUIPMENT

9-1. GENERAL

Exposure to lead from LBP can occur in the occupational setting as well as in the “human environment”. It is particularly important that employees utilize the proper personal protective equipment (PPE) when performing tasks that may involve lead exposure. This includes any LBP activities such as removing LBP from buildings and other structures, LBP abatement work, LBP inspection, general construction, renovation and demolition operations. To avoid exposure, employees must comply with appropriate laws, regulations, and policies.

9-2. RESPIRATORY PROGRAM REQUIREMENTS - LEAD (29 CFR 1910.134)

a. Dust generated from deterioration, destruction or removal of LBP represents an important health hazard. Employees may become exposed to lead dust by inhalation. Subsequently, the use of approved respirators is required.

b. PROGRAM ELEMENTS:

Respiratory Program Elements are as follow:

- (1) Procedures for selecting respirators for use in the workplace.
- (2) Medical evaluations of employees required using respirators.
- (3) Fit testing procedures for tight-fitting respirators.
- (4) Procedures for proper use in routine and reasonably foreseeable emergency situations.
- (5) Procedures for the cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators.
- (6) Procedures to ensure air quality, quantity, and flow of breathing air for atmosphere-supplying respirators.
- (7) Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.
- (8) Training of employees in the proper use of respirators, including putting on and removing them, any limitations on use, and their maintenance.

(9) Procedures for regularly evaluating the effectiveness of the program.

d. POLICY:

- (1) Appropriate respirators are used when lead dust is present at the work site. Generally, an air-purifying respirator with appropriate filter cartridges is used. However, supervisors must consider all factors associated with the work site to preclude other hazards. Other chemical hazards or oxygen-deficient environments may exist that require airline or self-contained breathing apparatus (SCBA) respirators.

Lead Abatement Respirator Requirements (29 CFR 1926.62)

Task	Presumed Exposure	Mask
Manual demolition, manual sanding, manual scraping, heat gun, power tool cleaning with dust collection systems, spray painting LBP	50 – 500 μ/m^3	Half-mask Respirator
Lead containing mortar, lead burning, rivet busting LBP material, power tool cleaning without dust collection systems, abrasive blast enclosure movement and cleanup	500 – 2500 μ/m^3	Full-face Respirator or PAPR
Abrasive blasting, torching, cutting, welding	>2500 μ/m^3	Supplied Air Respirator

- (2) Only National Institute for Occupational Safety and Health (NIOSH)-approved respirators are used.
- (3) Personnel will not perform tasks that require use of a respirator unless such personnel have had medical clearance, respirator training, fit testing and proper respirators have been provided.
- (4) The employer shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least **annually** thereafter.

9-3. PERSONAL PROTECTIVE CLOTHING AND OTHER EQUIPMENT

- a. The type of work environment that may contain LBP hazards is variable. Proper safe work attire must be worn based on the work site conditions. Regardless of the work site conditions, employees should take all precautions against contaminating street clothes and foot wear with dust and debris suspected or known to contain lead. If such

contamination occurs, it is likely that lead will be carried to other work sites or home where other people can be exposed.

- b. In addition to wearing approved respirators, employees with potential for exposure to LBP hazards should also wear protective clothing, such as disposable protective outer garments. Additionally, other work site factors should be considered. Eye protection such as goggles is necessary to avoid dust contact with the eyes. Proper foot wear and disposable gloves are also required. Other items such as hard hats are recommended.
- c. The following actions are required under the OSHA Lead in Construction Standard by Exposure Level.

30 µg/m³ and below	30 – 50 µg/m³	Over 50 µg/m³
<ul style="list-style-type: none"> • Train employees • Conduct exposure monitoring • Maintain records 	<ul style="list-style-type: none"> • Provide respirator at employee request • Conduct exposure monitoring every 6 months • Conduct blood lead monitoring • Provide protective clothing in a clean and dry condition at least weekly. 	<ul style="list-style-type: none"> • Enforce respirator use • Provide protective clothing in a clean and dry condition daily and enforce for usage. • Conduct exposure monitoring every 3 months • Enforce housekeeping • Provide hygiene facilities (change areas, showers, eating facilities & hand washing facilities); and enforce washing

- d. Supervisors must still consider all characteristics of the work site to ensure that employees are protected against other hazards besides lead.

CHAPTER 10

LEAD INFORMATION REQUIREMENTS

10-1. DISCLOSURE REQUIREMENT – TARGET HOUSING

- a. **GENERAL:** On 6 Mar 96, HUD and EPA jointly issued regulations requiring disclosure of known LBP and/or LBP hazards, codified as 24 CFR Part 35, Subpart H, and 40 CFR Part 745, Subpart F. Both rules are titled: Disclosure of Known LBP and/or LBP Hazards in Housing. These final rules were issued under authority of Section 1018 of Title X, the Residential Lead-Based Paint Hazard Reduction Act of 1992. Effective dates for this rule were Sep 6, 1996 (owners of >4 dwelling units) and December 6, 1996 (owners of 4 or fewer units). These disclosure requirements apply to most private housing, public housing, federally owned housing, and housing receiving Federal assistance.
- b. **REQUIREMENTS:** The disclosure requirements applicable to affective dwelling units, to be issued when units are assigned, are to provide residents with the following:
 - (1) A copy of the EPA pamphlet entitled “Protect Your Family from Lead in Your Home”.
 - (2) A notice of the presence of known lead-based paint and/or LBP hazards.
 - (3) A copy of available records or reports pertaining to the presence of LBP and/or LBP hazards known or suspected in the assigned dwelling unit and associated common areas, based upon actual or statistical sampling of similar units.
- c. **EXEMPTION:**
 - (1) Pre-1978 housing, free of LBP as determined by a certified inspector, is exempt from the disclosure requirements.

10-2. PRE-RENOVATION LEAD INFORMATION RULE – TARGET HOUSING

- a. **GENERAL:** On 1 June 98, the Environmental Protection Agency (EPA) issued regulations requiring lead hazard education before renovation of target housing. These regulations, contained in 40 CFR Part 745, were issued under the authority of Section 406 (b) of the Toxic Substances Control Act (TSCA). Effective date for this rule was June 1, 1999.

- b. REQUIREMENTS: The required information is to be issued to an adult occupant within 60 days before the renovation work starts. Residents will be provided with the following:
 - (1) A copy of the EPA pamphlet entitled “Protect Your Family from Lead in Your Home”.
 - (2) Delivery must be documented via written acknowledgment of receipt from the occupant, or a certificate of mailing at least 7 days before the renovation.
 - (3) If renovation includes common areas of a multiple-unit building, the owner must be given the pamphlet. Written notice must be given to occupants in all affected units describing the nature, location, timing of the work, and advising of the availability of the pamphlet. The procedure for providing the pamphlet and written notice must be documented.

c. EXEMPTIONS:

The following renovation activities are exempt from this requirement.

- (1) Work disturbing less than 2 ft² of painted surface.
- (2) Work disturbing paint found by a lead-based paint inspector of no LBP per a written report held by the renovator.
- (3) Emergency renovations.

d. RECORD KEEPING:

Renovators shall retain and, if requested, make available to the regulatory agency all records necessary to demonstrate compliance with this regulatory requirement for a period of 3 years following completion of the renovation activities in target housing.

CHAPTER 11

LEAD-BASED PAINT IN HISTORIC HOUSINGS/BUILDINGS

11-1. GENERAL

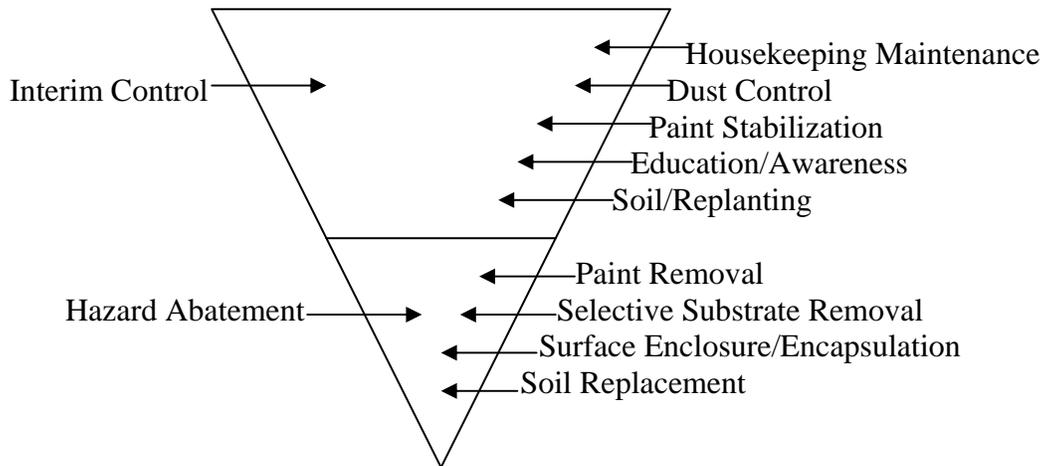
- a. Lead in Historic Paints - Lead compounds were an important component of many historic paints. Lead in the forms of lead carbonate and lead oxides had excellent adhesion, drying, and covering abilities. White lead, linseed oil, and inorganic pigments were the basic components for paint in the 18th, 19th, and early 20th centuries. The premise of this chapter is that historic housing can be made lead-safe for children without removing significant decorative features and finishes, or architectural trim work that may contribute to the building's historic character.
- b. Some housing units/buildings on Fort Meade are more than 50 years of age, and are eligible for listing in the National Register of Historic Places. The Fort Meade Cultural Resource Management Plan provides direction for preservation planning activities within the practical context of the installation's operation and mission. The DPW Environmental Management Office will be consulted for any plans of historic building's renovation project to ensure compliance with Federal and State historic preservation laws and regulations.

11-2. MANAGEMENT PROCEDURES

- a. It is important that owners of historic properties be aware that layers of older paint can reveal a great deal about the history of a building and that paint chronology is often used to date alterations or to document decorative period colors. Highly significant decorative finishes, such as graining, marbling, stenciling, polychrome decoration, and murals should be evaluated by a painting conservator to develop the appropriate preservation treatment that will stabilize the paint and eliminate the need to remove it. If such finishes must be removed in the process of controlling lead hazards, then research, paint analysis, and documentation are advisable as a record for future research and treatment.
- b. Planning for Lead Hazard Reduction in Historic Buildings: Removing LBP could result in extensive loss or modification of architectural features and finishes and is not appropriate for most historic properties. A preferred approach, consistent with "The Secretary of the Interior's Standards for the Treatment of Historic Properties", calls for removing, controlling, or managing the hazards rather than wholesale or even partial removal of the historic features and finishes. This is generally achieved through careful cleaning and treatment of deteriorating paint, friction surfaces, surfaces accessible to young children, and lead in soil. LBP that does not cause a hazard is thus permitted to remain, and, in consequence, the amount of historic finishes, features, and trim work removed from a property is minimized.

- c. Process: The following is three-step planning process which provides owners and managers of historic housing with responsible methods for protecting historic paint layers and architectural elements, such as windows, trim work, and decorative finishes. Exposed decorative finishes, such as painted murals or grained doors can be stabilized by a paint conservator without destroying their significance.
- Identify the historical significance of the building and architectural character of its features and finishes.
 - Undertake a risk assessment of interior and exterior surfaces to determine the hazards from lead and LBP.
 - Evaluate the options for lead hazard control in the context of historic preservation standards.
- d. Appropriate Methods for Reducing Lead-Paint Hazards in Historic Buildings: Reducing and controlling lead hazards can be successfully accomplished without destroying the character-defining features and finishes of historic buildings. Federal and state laws generally support the reasonable control of LBP hazards through a variety of treatments, ranging from modified maintenance to selective substrate removal. The key to protecting children, workers, and the environment is to be informed about the hazards of lead, to control exposure to lead dust and lead in soil, and to follow existing regulations. In all cases, methods that control lead hazards should be selected that minimize the impact to historic resources while ensuring that housing is lead-safe for children.

Managing Lead in Historic Housing



(1) Interim solutions, the preferred approach, include a combination of the following:

General Maintenance	Dust Control	Paint Stabilization	Soil Treatment	Occupant Education
<p>Repair deteriorated materials;</p> <p>Control leaks;</p> <p>Maintain exterior roofs, siding, etc. to keep moisture out of building;</p> <p>Perform emergency repairs quickly if LBP is exposed;</p> <p>Maintain building file with lead test data and reports on completed lead mitigation work.</p>	<p>Damp mop floor; wet broom sweep porches and steps;</p> <p>Damp dust window sill and window wells;</p> <p>Wash down painted surfaces periodically (use tri-sodium phosphate or equivalent, if necessary);</p> <p>Clean or vacuum carpets regularly (use HEPA vacuum if lead dust returns);</p> <p>Undertake periodic inspection with dust wipe tests if necessary.</p>	<p>Wet-sand loose paint and repaint;</p> <p>Keep topcoats of paint in good condition;</p> <p>Selectively remove paint from friction & chewable surfaces (sills) and repaint;</p> <p>Use good quality latex, latex acrylic or oil/alkyd paints compatible with existing paint;</p> <p>Consider more durable encapsulating paints and wall lining systems if necessary.</p>	<p>Add bark mulch, sod or topsoil to bare dirt areas with high lead levels;</p> <p>Discourage children from playing in these areas by providing sand box or other safe areas;</p> <p>Do not plant vegetable garden in areas with lead in soil;</p> <p>Be careful that pets do not track contaminated soil inside house.</p>	<p>Notify occupants and workers as to the location of LBP;</p> <p>Instruct tenants to keep property clean;</p> <p>Occupants shall be provided with available lead data for their facility and shall be encouraged to report cracked, peeling LBP as it occurs/ when repairs are necessary;</p> <p>Provide occupants with the EPA pamphlets on the hazards of LBP.</p>

(2) Hazard abatement removes the hazard – not necessarily all the paint or the feature, and may include:

Paint Removal	Paint Encapsulation Enclosure	Replace Deteriorated Elements	Soil Treatment	Compliance
<p>Remove deteriorated paint or paint on friction, chewable, or impact surfaces to sound layer, repaint;</p> <p>Consider using the gentlest means possible to remove paint to avoid damage to substrate: wet sanding, low level heat guns, chemical strippers, or HEPA sanding;</p> <p>Send easily removable items (shutters, doors) off-site for paint stripping, then reinstall and paint.</p>	<p>Consider encapsulating liquid (encapsulant) with 20 years warranty to seal-in older paint; or use in combination with wall liners to stabilize plaster wall surfaces prior to repainting;</p> <p>Seal LBP surfaces behind rigid enclosures, such as drywall, or use plywood with new coverings over previously painted floors;</p> <p>Use rubber stair treads on painted steps.</p>	<p>Remove, only when necessary, seriously deteriorated painted elements such as windows, doors, and trimwork.</p> <p>Replace with new elements that match the historic in appearance, detailing, and materials, when possible;</p> <p>Replace component element of a friction surface (parting bead or stops of windows) or of impact surfaces (shoe moldings) with new elements.</p>	<p>Remove (if necessary) contaminated soil around foundation to a depth of 3” and replace with new soil and appropriate planting material or paving;</p> <p>Do not alter a significant historic landscape.</p>	<p>Be aware of all federal, state and local laws regarding LBP abatement, environmental controls and worker safety;</p> <p>Dispose of all hazardous waste according to applicable laws;</p> <p>Be aware that methods to remove LBP can cause deferring amounts of lead dust that can be dangerous to workers and residents.</p>

The above mentioned chart indicates the wide variety of treatments that can be used to control or eliminate LBP hazards. For historic buildings, the least invasive method should be used to control the hazards identified during a risk assessment. The more invasive hazard control methods that must be carefully implemented to ensure that whenever possible, historic materials are protected.

11-3. IMPACT ON HISTORIC MATERIALS

The following chart shows how the lead hazard control works can impact on historic materials in a property.

IMPACT OF VARIOUS PAINT REMOVAL/ABATEMENT TECHNIQUES

Removal Method	Impact on Materials	Lead Dust Generated	Impact on Environment
Wet scraping; wet sanding; repainting	Low: Gentle to substrate; feather edges to obtain smooth paint surface	Low: Misting surfaces reduces lead dust	Low-medium: LBP debris is hazardous waste (HW); disposed properly.
Heat gun; paint removal with scrapers	Low: Gentle to substrate	Medium: Flicking softened paint does create airborne lead dust.	Medium: Lead-paint sludge is hazardous waste.
Chemical stripping on-site; use liquid or poultice; avoid methylene chloride	Low to Medium: Avoid damage to wood texture/grain with long dwell time	Low: Chemicals are moist and reduce lead dust.	Medium: Lead residue hazardous; off/rinse must be filtered or contained.
Controlled HEPA sanding; primarily for wooden surfaces; sander uses HEPA vacuum shroud	Low to Medium: Avoid gouging wooden surfaces; good for feathering edges	Medium to High: Worker must know how to use equipment.	Medium to High: Paint debris is hazardous and must be contained in drums and disposed properly.
Dry abrasives on cast iron; CO ₂ , walnut shells, needle gun removal; can use vacuum shrouds	Low to Medium: Substrate must be durable and in good condition; not for soft or porous materials.	Generally High: Large volume of paint chips fall freely unless there is a vacuum shroud.	Medium to High: Increased volume of hazardous waste if abrasive is added to lead debris.
Chemical stripping off-site; cold tank reduces ungluing caused by hot tank	Medium to High: Elements can be damaged during removal or in tank.	Usually low: Take care when removing elements to minimize lead-laden dust.	Low to Medium: Stripping contractor responsible for disposal.
Feature or substrate removal and replacement	High: Loss of feature is irretrievable; avoid wholesale removal of significant elements.	Usually low: Worker exposure can be high if element hazardous due to high amounts of LBP.	Varies: Must do a TCLP leach test to determine the classification of waste whether non-HW or HW

**APPENDIX A
STANDARD LIMITS OF LEAD CONCENTRATION IN MATRICES**

Matrix		Concentration	Agency	Application	Basis
<i>Paint</i>	paint XRF	>0.7 mg/cm ²	MDE	Dried Film - LBP (Abatement)	Technology
	paint chip (lab analysis)	>5000 ppm (µg/g) (>0.5% by weight)	HUD/ EPA/ MDE	Dried Film – LBP (Abatement)	Technology
	<i>Non- LBP</i>	<600 ppm (µg/g) (0.6% by weight)	CPSC	Liquid Form – Lead Free (For residential application)	Impurity Level
<i>Dust</i>		<40 µg/ft ²	MDE	Uncarpeted floor - Risk assessment and Clearance	Health
		<250 µg/ft ²	MDE	Window Stool (Sill) – Risk assessment and Clearance	Health
		<400 µg/ft ²	MDE	Window Trough (well) Risk assessment and Clearance	Health
<i>Bare Residential Soil</i>		400 ppm (where there is child contact such as play area)	EPA/ HUD/ MDE	Public Notice. Interim controls Action: Take measures to eliminate contact - change use patterns and provide barriers for children	Health
		1,200 ppm (with minimal or no child contact such as drip line)	EPA/ HUD/ MDE	Action: Interim control measures to cover soil or eliminate contact	Health
<i>RCRA waste</i>		≥5 ppm Leachable lead (TCLP)	EPA/ HUD/ MDE	Hazardous Waste characterization	Environment
<i>Blood</i>		10 ug/dl	CDC	Level of concern for children	Health
		40 ug/dl	OSHA	Worker return to work level	Health
		50 ug/dl	OSHA	Worker medical removal level	Health
<i>Water</i>		0 ppb (ug/l)	EPA	Maximum Contaminant Level Goal (MCLG)	Health
		15 ppb (ug/l)	EPA/MDE	Public Notice	Health
<i>Potable Water</i>		0.2%	EPA	Solder	Health
		8.0%	EPA	Pipes and Fixtures	Technology
<i>Air</i>		1.5 ug/m ³	EPA	Quarterly TWA	Air Quality
		30 ug/m ³	OSHA	Action Level (8 hr TWA)	Health
		50 ug/m ³	OSHA	PEL (8 hr TWA)	Health
<i>Ceramic or Pottery Glasses</i>		3ppm	FDA	Flatware	Health
		2ppm	FDA	Small Hollow-ware	Health
		1ppm	FDA	Large Hollow-ware	Health
		0ppm	FDA	Cups, Mugs, and Pitchers	Health

APPENDIX B

CONTROLLING LEAD PAINT ON PUBLIC PLAYGROUND EQUIPMENT

B-1. GENERAL

The U.S. Consumer Product Safety Commission (CPSC) findings indicate a potential lead paint poisoning hazard for young children (6 years and younger) from some public playground equipment. The equipment was painted with lead paint, and over time, the paint has deteriorated into chips and dust containing lead, due to exposure to sunlight, heat, moisture, and normal wear and tear. The lead paint chips and lead dust can be ingested by young children who put their hands on the equipment while playing, and then put their hands in their mouths.

B-2. LEAD HAZARD ASSESSMENT

A lead hazard assessment for playground equipment includes a visual inspection, examination of records, paint testing, characterization of the hazard, identification of potential control measures, and a plan for establishing the priority for the implementation of control measures.

- a. Visual Inspection: This inspection will be coordinated with regular safety inspection. Playground equipment will be inspected and regularly maintained to ensure that it meets safety guidelines and provides a safe environment for children, regardless of whether it contains lead paint.
- b. Lead testing: If at any time, the painted surface begins to deteriorate, paint will be tested for lead. Priority will be given to testing deteriorating paint from playground equipment that has been painted or repainted before 1978. The amount of lead in the paint is one important factor in deciding whether control measures are needed. If the visual inspection indicates the need for significant structural repairs or changes to the equipment that are likely to affect the integrity and condition of the painted surfaces (i.e., will result in peeling, cracking, chipping, chalking), the paint will be tested to determine if it contains lead before any repair work begins.
- c. Evaluation: If lead testing shows above the EPA's limit and the paint are deteriorated, the extent of the hazard will be characterized and control measures undertaken. Control measures for lead paint below the EPA's limit is to be considered, however, priority will be given to implementing control measures for deteriorating paint above the limit.

B-3. HAZARD CONTROL MEASURES

- a. Lead hazard controls:

- (1) Just knowing that a playground has paint containing lead may not indicate if there is a hazard. CPSC does not consider playground equipment with LBP that is intact and in good condition to be a hazard. Therefore, continued monitoring (visual inspection) is essential, and may be an appropriate control measure for intact paint containing lead.
- (2) Over time, paint will deteriorate due to exposure to changing weather conditions and normal wear and tear. If that paint contains lead, it does present a hazard once it deteriorates, and requires attention.
- (3) Priority will be given to controlling deteriorating LBP on public playground equipment containing lead in amounts above the MDE's limit. Because playground equipment is intended for use by children, consideration of measures that permanently eliminate the potential hazard posed by lead paint are recommended. In general, interim control measures for playground equipment may be considered appropriate if the playground is slated for repair or the equipment is expected to be replaced within a few years. In some cases, permanent control measures may be more cost-effective over the long-term than interim control measures when the cost of monitoring is considered.

b. Interim Control Measures

- (1) Stabilize and cover the lead paint surface with nonleaded paint or an encapsulant. This will only temporarily reduce lead exposure because outdoor metal and wood playground equipment is continually subject to deterioration due to exposure to sunlight, heat, moisture, and wear and tear through normal play activities.
- (2) Playground equipment that has been covered with an encapsulant or nonleaded paint requires regular monitoring (visual inspection) throughout the life of the equipment. Such monitoring would allow detection if the surface does not remain in good condition throughout changing weather conditions and wears due to normal play activities.

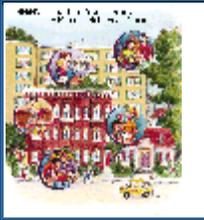
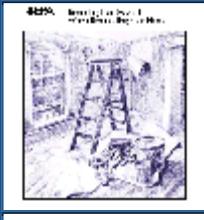
c. Permanent Control Measures

- (1) Replace the playground equipment: Replacing playground equipment or component parts that contain lead paint is the most definitive way to eliminate the risk of lead poisoning from exposure to lead paint on playground equipment.
- (2) Remove lead paint: Removal of LBP will be performed by a lead paint removal professional who is trained, certified, or licensed to remove lead hazards. Removing lead paint improperly can increase the hazard by spreading lead chips and dust around the play area. Surfaces should be repainted with paint containing no more than 0.06% lead, according to CPSC regulations.

APPENDIX C

USEFUL INTERNET ADDRESS LIST OF LEAD INFORMATION DOCUMENTS

- [Lead in Your Home: A Parent's Reference Guide <http://www.epa.gov/lead/leadrev.pdf>](http://www.epa.gov/lead/leadrev.pdf)
- [Testing Your Home for Lead in Paint, Dust, and Soil <http://www.epa.gov/lead/leadtest.pdf>](http://www.epa.gov/lead/leadtest.pdf)
- [Finding a Qualified Lead Professional for Your Home <http://www.epa.gov/lead/broch32e.pdf>](http://www.epa.gov/lead/broch32e.pdf)
- [Lead Poisoning and Your Children \(English\) <http://www.epa.gov/lead/lpandyce.pdf>](http://www.epa.gov/lead/lpandyce.pdf)
- [Lead Poisoning and Your Children \(En Español\) <http://www.epa.gov/lead/lpandycs.pdf>](http://www.epa.gov/lead/lpandycs.pdf)
- [Protect Your Family From Lead in Your Home \(English\) <http://www.epa.gov/lead/leadpdfc.pdf>](http://www.epa.gov/lead/leadpdfc.pdf)
- [Protect Your Family From Lead in Your Home \(En Español\) <http://www.epa.gov/lead/pyfcameraspan.pdf>](http://www.epa.gov/lead/pyfcameraspan.pdf)
- [Reducing Lead Hazards When Remodeling Your Home \(English\) <http://www.epa.gov/lead/rrpamph.pdf>](http://www.epa.gov/lead/rrpamph.pdf)
- [Reducing Lead Hazards When Remodeling Your Home \(En Español\) <http://www.epa.gov/lead/span_web_secure.pdf>](http://www.epa.gov/lead/span_web_secure.pdf)
- [Ten Tips to Protect Children from Pesticide and Lead Poisonings around the Home <http://www.epa.gov/lead/tentips.pdf>](http://www.epa.gov/lead/tentips.pdf)
- [The Lead-Based Paint Pre-Renovation Education Rule: A Handbook for Contractors, Property Mangers, and Maintenance Personnel <http://www.epa.gov/lead/interiorfinal2.pdf>](http://www.epa.gov/lead/interiorfinal2.pdf)
- [Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work <http://www.epa.gov/lead/leadsafetybk.pdf>](http://www.epa.gov/lead/leadsafetybk.pdf)

	<p>Fight Lead Poisoning with a Healthy Diet (PDF format). Discusses proper nutrition and lead poisoning prevention, and features fast, nutritious recipes. Also available in Spanish (PDF format).</p>
	<p>Lead in Your Home: A Parent's Reference Guide (PDF format). Sixty-seven page comprehensive resource for parents on many lead-related topics. An 18"X24" poster (PDF format) is also available.</p>
	<p>Protect Your Family From Lead in Your Home (PDF format). Required to be provided to prospective buyers and renters of pre-1978 homes, and residents of homes where renovations will take place. Also available in Spanish and other formats.</p>
	<p>Reducing Lead Hazards When Remodeling Your Home (PDF format). Helps home owners understand what precautions should be taken before work is done on their homes. Also available in Spanish (PDF format).</p>
	<p>Runs Better Unleaded wall poster. Colorful, general lead awareness message. 8.5"x11" Black And White (PDF format) 8.5"x11" Color (PDF format) 18"x22" Color (PDF format)</p>
	<p>Testing Your Home for Lead in Paint, Dust, and Soil (PDF format). Provides home owners with an understanding of lead testing methods.</p>
	<p>Lead Poisoning and Your Children (PDF format). General lead information and safe practices for parents in an 11"x17" fold-out poster. Also available in Spanish (PDF format).</p>