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# **Section I**

## **Introduction**

## Introduction

The purpose of this safety policy and procedure(s) is to establish a program to prevent absorption, inhalation, or ingestion of harmful quantities of lead by Hilscher-Clarke employees.

When absorbed into the body in certain doses lead is toxic. It can be absorbed into the body by inhalation and ingestion. Except for certain organic lead compounds not covered by 29 CFR 1926.20, lead is not absorbed significantly through the skin. When scattered through the air as a dust, fume, or mist, lead can be inhaled and absorbed through the lungs and upper respiratory tract. Inhalation of airborne lead is generally the most common source of occupational lead absorption. Lead can also be absorbed through the digestive system if it enters the mouth and is ingested.

A significant portion of the lead inhaled or ingested gets into the blood stream. Once in the blood stream, lead is circulated throughout the body and is then stored in various organs and body tissues. Some of this lead is quickly filtered out of the body and excreted, but some remains in the blood and tissues. As exposure continues, the amount stored will increase, if the body is absorbing more lead than it is excreting. The lead stored in the tissues can slowly cause irreversible damage, first to individual cells, then to organs and whole body systems.

Lead exposure most generally occurs in construction activities that involve the disturbance of lead or lead containing materials. Additionally, some construction related activities such as the transport, disposal, storage, or containment of lead or lead containing materials on construction sites can also contribute to employee lead exposure.

This safety policy and procedure provides guidelines to protect Hilscher-Clarke's employees from the immediate and long-term effects of lead. It includes requirements for training, exposure assessment, and methods of compliance. Requirements are presented for Personal Protective Equipment (PPE), housekeeping, and hygiene facilities. It also presents provisions for medical surveillance, medical protection, signs, recordkeeping and observation and monitoring.

This document also details areas of responsibility for the President, Safety Manager, Supervisor, Competent Persons, Qualified Persons, and Employees.

This safety policy and procedure covers, at a minimum, the following job activities within Hilscher-Clarke:

- Power Tool Use;
- Welding, Cutting, Burning;
- Paint Removal
- Soldering & Brazing.

Hilscher-Clarke will evaluate their worksites for the presence of Lead fumes and dust, which may be generated during the above stated work procedures. These results will be used to determine the appropriate Engineering, Administrative and Personal Protective Equipment controls.

## Introduction (cont.)

Hilscher-Clarke has created this safety policy and procedures to provide guidelines for safely working with Lead. It includes provisions for training, Personal Protective Equipment (PPE) guidelines, Employee Monitoring, Medical Surveillance Program, Hygiene Facilities, Housekeeping and general safety related work practices. Additionally, it presents examples of labels, signs, and marking requirements.

Because every person on a Hilscher-Clarke work site has a potential for being exposed to lead in the performance of their duties, Hilscher-Clarke employees, subcontractors, supplemental labor employees and visitors must follow the procedures outlined in this supplement when performing or being exposed to lead work.

These safety policies and procedures have been established in accordance with Occupational Safety and Health Administration (OSHA) standards for the Construction Industry 29 CFR 1926.62.

## Policy

Because it is the policy of Hilscher-Clarke to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public, employee, subcontractors, and supplemental labor employees will not...

***...perform any Lead related job activity without the proper training and proper Personal Protective Equipment (PPE).***

Where Lead hazards exist that cannot be eliminated, then additional engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Lead in Construction will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees *and the public*.

It is the responsibility of each officer, manager, supervisor and employee to ensure implementation of Hilscher-Clarke's safety policy and procedure on lead safety. It is also the responsibility of each Hilscher-Clarke employee to report immediately any unsafe act or condition to his or her Supervisor. Specific responsibilities are found in Section II (General Program Management).

**Section II**  
**General Program**  
**Management**

## Specific Responsibilities

### **The President is responsible for:**

- ❑ The President will ensure compliance with this safety policy and procedure through the auditing process (as outlined in Hilscher-Clarke's written Disciplinary Program/Safety Policy Statement).
- ❑ The President will provide prompt assistance to the Safety Manager, Supervisors, and others as necessary on any matter concerning this safety policy and procedure. Additionally, the President will provide consultative and audit assistance to ensure effective implementation of this safety policy and procedure.
- ❑ The President may delegate the responsibility of various aspects of the Lead Safety Program to a Qualified Organization. However, the President's ultimate responsibility for his/her aspects of the program cannot be delegated.

### **Safety Manager is responsible for:**

- ❑ Ensuring that ANSI approved PPE and supplies are available to protect employees from lead exposure. Also, obtaining and coordinating all required training for Affected Employees.
- ❑ He/she will designate Competent Persons for those work activities affected by this safety policy and procedure.
- ❑ The Safety Manager will develop, or secure, the all required training, under this policy and procedure.
- ❑ The Safety Manager will be responsible for providing training, expertise, and guidance to Qualified Persons to perform lead exposure assessments. Also, the Safety Manager may appoint and/or designate certain individuals to be Qualified Persons.

### **The Designated Human Resources Representative is responsible for:**

- ❑ Preparing and maintaining an Employee Education and Training Record (*see Appendix E*) upon completion of training and any retraining. These documents will include, but not be limited to;
  - Names or other identities of employees trained;
  - Signature of the person receiving the training;
  - Date of the training;
  - Date of retraining;
  - Specific topics addressed during the training session;
  - Specific topic(s) addressed during the retraining session;
  - Signature of the person, or company, conducting the training;
  - Signature of the person, or company, conducting the retraining.
- ❑ Making the written Lead Safety Plan and any applicable PSM Plans/Documents available to employees, OSHA & NIOSH representatives
- ❑ Retention and, if applicable, distribution, of all medical records (i.e., confidential) for the specific time periods outlined in this plan.
- ❑ The original document will be kept with the employee's records at Hilscher-Clarke's main office and a copy of this training record will be kept in the "Safety File" at the work site, as appropriate.

### **Supervisory Personnel**

- ❑ The Supervisor will ensure that no lead-related task/operation is performed without the appropriate controls being in place as prescribed in this safety policy and procedure. He/She will also assist "Competent" and "Qualified" persons as requested in the performance of their duties.

## Specific Responsibilities (cont.)

### Supervisory Personnel (cont.)

- ❑ With the approval of the Safety Manager, the Supervisor may delegate the responsibility of various aspects of the Lead Safety Program to a Qualified Organization (as approved by the Safety Manager). However, the Supervisor's ultimate responsibility for his/her aspects of the program cannot be delegated

### Competent Person

- ❑ Competent Person(s) will be responsible for identifying existing and potential Lead hazards in the workplace. They will also be responsible for, and have complete authority to, take prompt corrective measures to eliminate or control Lead hazards.
- ❑ The designated Competent Person must be able to:
  - Determine, prior to beginning a job, whether Lead is present in the workplace.
  - Establish regulated areas and ensure that access to and from those areas is limited to "Authorized" employees.
  - Ensure the adequacy of any employee exposure-monitoring required by the standard.
  - Ensure that all employees exposed to airborne Lead levels above the PEL wear the appropriate PPE (personal protective equipment) and are trained to use appropriate methods to control Lead exposure.
  - Ensure that proper hygiene facilities are provided and that workers are trained to use these facilities.
  - Ensure that required engineering controls are implemented, maintained in proper operating condition, and function properly.
- ❑ With the approval of the Safety Manager, the Competent Person may delegate the responsibility of various aspects of the Lead Safety Program to a Qualified Organization (as approved by the Safety Manager). However, the Competent Person's ultimate responsibility for his/her aspects of the program cannot be delegated.

### Qualified Person

- ❑ Qualified Person(s) shall be responsible for conducting Lead exposure assessments in accordance with this safety policy and procedure and established exposure assessment protocols.
- ❑ With the approval of the Safety Manager, the Qualified Person may delegate the responsibility of various aspects of the Lead Safety Program to a Qualified Organization (as approved by the Safety Manager). However, the Qualified Person's ultimate responsibility for his/her aspects of the program cannot be delegated.

### Employees

- ❑ Complying with all applicable guidelines contained in this safety policy and procedure.
- ❑ Report any unsafe act associated with this safety policy and procedure to their immediate supervisor.
- ❑ Employees who are assigned PPE are to keep them available and in good working order at all times and to have them replaced when they become worn or unsafe.

## Specific Responsibilities (cont.)

### **General Personnel (not otherwise classified)**

- Personnel employed by Hilscher-Clarke and all contractors and subcontractors working at any and all Work Sites operated by Hilscher-Clarke are required to comply with the procedures and work practices outlined in this Lead Safety Plan. The President is responsible for ensuring that said individuals/organizations, operating under the supervision of the Supervisor, are informed of and adhere to Hilscher-Clarke's Lead Safety Program.

### **Training for Outside Personnel**

- Outside personnel will be trained as a Hilscher-Clarke Authorized Employee or will be provided with a Hilscher-Clarke Authorized Employee escort to assist in the correct procedures of the outside service personnel's Lead Safety Plan.

# **Section III**

## **Terms &**

### **Definitions**

## Terms & Definitions

This section provides applicable definitions, establishes general provisions and identifies responsibilities required by Hilscher-Clarke's safety policy and procedure on Lead in the Work Place.

**ACGIH** – American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

**Action Level (AL)** – The level at which an employer must begin certain compliance activities outlined in the standard. The action level, regardless of respirator use, for the lead in construction, standard is an airborne concentration of 30 ug/m<sup>3</sup> calculated as an 8-hour time weighted average.

**Authorized Person** – Any person authorized, by Hilscher-Clarke, and required by work duties to be present in regulated areas.

**Carcinogen** – A substance that causes cancer.

**CAS Number** – Number assigned by the Chemical Abstracts Service to identify a specific chemical.

**Combustible Substance** – A solid, liquid, or gas that will burn.

**Construction Industry Work** – All work involving Lead. This includes all building and building-related equipment maintenance and repair activities, demolition, remodeling, or new construction.

**Corrosive Substance** – A gas, liquid, or solid that causes irreversible damage to human tissue or containers.

**Competent Person** - A Person designated by the employer to act on the employer's behalf that is capable of identifying existing and potential Lead hazards in the workplace and the proper methods to control them in order to protect workers, and has the authority necessary to take prompt corrective measures to eliminate or control such hazards.

**DOT** – Department of Transportation. Federal agency that regulates the transportation of chemicals.

**EPA** – Environmental Protection Agency. Federal agency responsible for regulating environmental hazards.

**Fetus** – An unborn human or animal.

**Flammable Substance** – A solid, liquid, vapor, or gas that will ignite easily and burn rapidly.

**Flash Point** – The temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

**HEPA** – High Efficiency Particulate Air Filtration (99.97% efficient) for respirable particulates such as asbestos, lead, silica, arsenic, dust, etc. HEPA filtration is used to prevent particulate emissions from vacuum systems used as local exhaust ventilation on hand held coating equipment. HEPA filtration is also used to prevent particle emissions from general exhaust ventilation systems used to maintain negative pressure inside a contained work area during abrasive blasting of lead-containing coatings.

**HHAG** – Human Health Assessment Group of the federal EPA.

**IARC** – International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

**Lead** – Metallic (elemental) lead and all inorganic lead compounds are defined as "lead". Excluded from this policy are all organic lead compounds, such as tetraethyl lead (TEL), which have their own distinct physical, chemical, and toxic properties and exposure control methods.

## Terms & Definitions (cont.)

**Lead Based Coating** – Any paint, primer, or coating containing over 0.06% (600 ppm) lead by dry weight or over 0.1 milligrams of lead per square centimeter.

**Lead Work** – Any operation where a lead based coating or other material containing greater than 0.06% lead is disturbed through burning, welding, sanding, scraping, grinding or any other method that may generate airborne lead in excess of the OSHA Action Level.

**Mg/m<sup>3</sup>** – Milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

**MSHA** – The Mine Safety and Health Administration. The federal agency that regulates mining. It also evaluates and approves respirators.

**Mutagen** – A substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

**NAERG** – The North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

**NCI** – National Cancer Institute. A federal agency that determines the cancer-causing potential of chemicals.

**NFPA** – National Fire Protection Agency. Classifies substances according to their fire and explosion hazard.

**NIOSH** – National Institute for Occupational Safety and Health. Tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

**NTP** – National Toxicology Program. Tests chemicals and reviews evidence for cancer.

**OSHA** – Occupational Safety and Health Administration. Adopts and enforces health and safety standards.

**ppm** – Parts of a substance per million parts of air. It is a measure of concentration by volume in air.

**Permissible Exposure Limit (PEL)** – Airborne concentration of lead at 50 micrograms per cubic meter of air (50 ug/m<sup>3</sup>) calculated as an 8 hour time weighted average.

**Qualified Person** – Person who has training and experience in air monitoring, exposure assessment, and workplace evaluations.

**Reactive Substance** – A solid, liquid or gas that releases energy under certain conditions.

**Regulated Area** – An area clearly marked and posted, where an employee's exposure to airborne concentrations of Lead exceeds, or can reasonably be expected to exceed the permissible exposure limit (PEL).

**TLV** – Threshold Limit Value. Workplace exposure limit recommended by ACGIH.

**Vapor Pressure** – A measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

**Section IV**  
**General Policies**  
**&**  
**Procedures**

## 1.0 Health Effects

- 1.1 Acute Health Effects** – The following acute (short-term) health effects may occur immediately or shortly after exposure to Lead:
- Irritation to the eyes – Lead dust or fumes cause irritation to the eyes on contact.
  - Breathing Lead dust can irritate the nose and throat.
  - Exposure can cause poor appetite, weight loss, colic, upset stomach, nausea and muscle cramps.
  - Lead can cause headache, irritability and disturbed sleep.
- 1.2 Chronic Health Effects** – The following chronic (long-term) health effects can occur at some time after exposure to Lead and can last for months or years.
- 1.2.1 Cancer Hazard:** According to the information presently available to Hilscher-Clarke, Lead has been tested and has not been shown to cause cancer in animals.
- 1.2.2 Reproductive Hazard:** Lead is a *probable teratogen* in humans. Lead may damage the testes (male reproductive glands) and may decrease fertility in males and females.
- 1.2.3 Other Long-Term Effects:**
- Repeated exposure to lead causes a build-up in the body. The earliest symptoms may be tiredness, trouble sleeping, stomach problems, constipation, headaches and moodiness (mostly irritability and depression).
  - Higher levels may cause aching and weakness in the arms and legs, and trouble concentrating and remembering things. These symptoms are usually related to damage to the central nervous system in general and the brain in particular.
  - Lead exposure increases risk of high blood pressure.
  - Lead may cause kidney and brain damage and damage to blood cells causing anemia.
  - Lead can accumulate in the body with repeated exposure. It can take years for the body to get rid of the excess.
- 1.3 A physician should be contacted** if anyone develops any signs or symptoms and suspects that they are caused by exposure to Lead.

## 2.0 Workplace Exposure Limits

The Permissible Exposure Limit (PEL) sets the maximum worker exposure to lead. For example, no employee may be exposed to lead at airborne concentrations greater than  $0.05\text{mg}/\text{m}^3$  averaged over an 8 hour period.

- 2.1 OSHA:** The legal airborne permissible exposure limit (PEL) for Lead over an 8 hour work shift is  $0.05\text{mg}/\text{m}^3$ .
- 2.2 NIOSH:** The recommended airborne exposure limit is less than  $0.10\text{ mg}/\text{m}^3$  averaged over a 10 hour work shift.
- 2.3 ACGIH:** The recommended airborne exposure limit is  $0.15\text{ mg}/\text{m}^3$  averaged over an 8-hour workshift.
- 2.4** Lead is a **Teratogen** in humans. All contact with this substance should be reduced to the lowest possible level.

### 3.0 Employee Exposures above the PEL

Based on available exposure data and OSHA recommendations, there are 3 groups of lead-related tasks/operations that presume employee lead exposure above the PEL. The levels are:

- 3.1** Employee exposure between the PEL and  $500 \text{ ug/m}^3$  with a respirator protection factor of 10. This includes, but is not limited to, the following lead-related tasks/operations:
  - Manual demolition of structures;
  - Manual scraping, manual sanding, heat gun applications, power tool cleaning with dust collection systems.
  - Spray painting with lead based paint.
- 3.2** Employee exposure above  $500 \text{ ug/m}^3$  and less than  $2500 \text{ ug/m}^3$  with a respirator protection factor between 10 and 50. This includes, but is not limited to, the following lead-related tasks/operations:
  - Using lead containing mortar.
  - Lead burning.
  - Rivet busting.
  - Power tool cleaning with dust collection systems.
  - Clean up activities where dry expendable abrasives are used.
  - Abrasive blasting enclosure movement and removal.
- 3.3** Employee exposure greater  $2500 \text{ ug/m}^3$  with a respirator protection factor greater than 50. This includes, but is not limited to, the following lead-related tasks/operations:
  - Abrasive blasting, cutting, welding and torch burning on steel structures where lead containing coatings or paint are present.
- 3.4** For those lead-related tasks/operations which presume lead exposures above the PEL, interim protection must be provided to employees until an employee assessment is completed. Interim protection measures include, but are not limited to:
  - Appropriate respiratory protection.
  - Appropriate Personal Protective Equipment and clothing.
  - Change areas.
  - Hand washing facilities.
  - Biological monitoring.
  - Training.

## 4.0 Training

All Lead worker training will be obtained at an accredited provider.

All levels of employees with potential job-related Lead exposure and Competent Persons must be trained in:

- ❑ Specific hazards associated with their work environment.
- ❑ Protective measures which can be taken against these hazards.
- ❑ The danger of lead to their bodies and their families.
- ❑ Employee rights under this safety policy and procedure and the OSHA Standard on Lead in Construction.

Employees and Competent Persons will be trained prior to their initial job or reassignment. Additionally, refresher training shall be provided annually.

Competent Persons and/or Qualified Persons shall receive training to conduct exposure assessments. This training shall include, as a minimum:

- ❑ Air sample flow calibration.
- ❑ Sample train set-ups.
- ❑ Analytical procedures.
- ❑ Air monitoring protocols.
- ❑ OSHA reference methods.
- ❑ Exposure calculations.
- ❑ Exposure data statistical analysis.

Competent Persons and/or Qualified Persons shall receive training upon initial assignment.

Subsequent training shall be at the discretion of the President and/or Safety Manager. Refresher training shall be provided annually.

## 5.0 Initial Exposure Assessment

### 5.1 Initial Exposure Assessment

If Lead may be present in any operation, then an initial exposure assessment must be made to determine whether an employee's exposure exceeds the action level (0.30 ug/m<sup>3</sup> averaged over an 8 hour day).

**5.1.1** Reasons for believing that Lead is present include:

- Any information, observations or calculation that would indicate employee exposure to Lead (i.e., MSDSs, past reports, relevant plans).
- Any previous measurements of airborne Lead.
- Any employee complaints or symptoms that may be attributable to lead exposure.

**5.1.2** This initial assessment will document the exposure an employee would have without the use of a respirator.

**5.2** The Initial Exposure Assessment *is not* required if:

**5.2.1** Objective data is available which can conclusively demonstrate that no employee will be exposed in excess of the action level.

**5.2.2** An exposure assessment has been conducted within the last 12 months for a project with very similar aspects as the project in question.

**5.3** This initial exposure assessment may be limited to a representative number of employees who are reasonably expected to have the highest exposure levels.

- Table, on the following page, represents typical exposure lead exposure levels for various lead-related work activities.

## 5.0 Initial Exposure Assessment – Table 1

Representative TWA (8) Exposure Levels in  $\mu\text{g}/\text{m}^3$  with No Engineering Controls and Respiratory Protection.

Construction Activity	Exposure Level Used To Specify Controls
Open Abrasive Blasting	23,680
Open Abrasive Blasting In Full Containment	37,300
Vacuum Blasting	558
Welding, Cutting & Burning on Bridges	1,564
Other Welding, Cutting & Burning	973
Lead Burning	663
Spray Painting Lead-Based Paint	101
Hand Scraping	96
Removal & Replacement of Building Components	9
Manual Demolition of Building Components	77
Heat Gun Use	32
Chemical Stripping	15
Encapsulation	4
Power Tool Use (Housing Abatement Projects)	296
Power Tool Use (Other Paint Removal Projects)	1,314
Use of Lead Mortar	8
Soldering & Brazing	9
Use of Lead Mortar	663
Stained Glass Removal	79
Handling Lead Shot, Brick, or Sheet	16
Industrial Vacuuming	994
Cutting Lead Foil Panels	1
Reinsulation Over Existing Mineral Wood	90
Miscellaneous Enclosure Movement	1,156
Miscellaneous Abrasive Blasting/Repainting	1,904
Miscellaneous Remodeling Related Activities	76
Miscellaneous Lead Abatement Activities	8
Miscellaneous Steel structure Rehabilitation	262
Spray Painting Non-Lead-Based Paint	26
Brush Painting Non-Lead Based Paint	3

## 6.0 Monitoring Requirements Due to the Initial Exposure Assessment

- 6.1 Employee Exposures below the action level:** If the initial determination proves employee exposure is below the action level, further exposure determination need not be repeated unless there is a change in processes or controls.
- 6.2 Employee exposures at or above the action level but at or below the PEL:**
- 6.2.1** Require monitoring every 6 months. This monitoring must be continued at the required frequency until at least 2 consecutive measurements, taken at least 7 days apart, are below the action level, at which time monitoring may be discontinued for that employee.
- 6.3 Employee exposures above the PEL** requires quarterly monitoring. This monitoring must continue until at least 2 consecutive measurements taken at least 7 days apart are at or below the PEL but at or above the action level. Hilscher-Clarke must then repeat and continue monitoring every 6 months to bring the exposure to or below the action level.
- 6.4** When there has been a change of equipment, process, control, personnel, or a new task has been initiated that could increase employee lead exposure at or above the action level, Hilscher-Clarke must conduct additional monitoring.
- 6.5** Hilscher-Clarke will notify each employee, in writing, of employee exposure assessment results within 5 working days after their receipt. Whenever the results indicate that the representative employee exposure, without the use of respirators, is at or above the PEL, Hilscher-Clarke will include a written notice stating the employee's exposure was at or above that level and describe the corrective action taken or to be taken to reduce exposure to below that level.
- 6.6** Monitoring for the initial determination whether employees are exposed at or above the action level may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Measurements made within the preceding 12 months, which were performed by the same employer and applicable to the same employee tasks, may be used.
- 6.7** For those Lead-related tasks/operations that presume lead exposures above the PEL, interim protection must be provided to employees until an employee assessment is completed. Interim protection measures include:
- Appropriate respiratory protection.
  - Appropriate Personal Protective Equipment (PPE) and clothing.
  - Change areas.
  - Hand washing facilities.
  - Biological monitoring.
  - Training.

## 7.0 Exposure Controls

- 7.1 Three types of controls are used to mitigate exposure to Lead: engineering controls, administrative controls, and personal protective equipment. Of these, engineering controls are the most preferred method.
- 7.2 **Engineering Controls** – Lead work that is known to result in exposure above the PEL, or activities such as those that require a Lead Compliance Program (Appendix C) will typically require the following engineering and administrative controls:
- 7.2.1 Power tools used for the removal of lead-based paint should be equipped with dust collection shrouds or other attachments exhausted through a high-efficiency particulate air (HEPA) vacuum system.
  - 7.2.2 Operations such as cutting/burning, heating, welding should be provided with local exhaust ventilation.
  - 7.2.3 HEPA vacuums should be used during clean-up activities.
  - 7.2.4 Materials containing Lead shall not be applied by spray methods, if exposures are above the PEL, unless employees are protected with certain specified respirators (as outlined in Hilscher-Clarke’s Respiratory Protection Program) and measures are taken to limit overspray and prevent contamination of adjacent areas.
  - 7.2.5 For abrasive blasting operations where full containment exists or is required, the containment structure should be designed to optimize the flow of ventilation air past the worker(s), so that the airborne concentration of lead is reduced and the visibility is increased. The affected area should be maintained under negative pressure to reduce the chances that lead dust will contaminate areas outside the enclosure. A containment structure should be equipped with dust collection and an air-cleaning device to control emissions of particulate matter to the environment.
  - 7.2.6 Establishment of a regulated area that will keep unprotected employees out and prevent the spread of Lead dust and fumes beyond the boundaries of the area. For work inside buildings, this will involve erection of critical barriers over ventilation system vents, doors, open areas, and other possible points of penetration. Further, it may be necessary to arrange the ventilation system to place the work area under negative pressure relative to the surrounding areas. The President shall specify the necessary controls.
- 7.3 **Administrative Controls** – A current Lead Compliance Program (appendix C). A Lead Compliance Program is required, but not limited to, the following activities:
- 7.3.1 Wrecking, demolishing, and salvaging structures where Lead or Lead-containing materials are present; cutting, brazing, grinding, or welding on surfaces that are painted with Lead-containing paints; and transporting, storing and disposing of Lead or Lead-containing materials on the site or location where construction activities are performed. (Exposure of 10 times the PEL for these operations shall be assumed unless data indicates otherwise.)
  - 7.3.2 Performing activities where Lead-containing paints, coatings, or Lead-containing alloys are disturbed by abrasive blasting, welding, cutting, brazing and grinding where the material contains *any* Lead. (Exposure of 50 times the PEL shall be assumed for these operations unless data indicates otherwise.)
  - 7.3.3 Performing other operations that may result in exposure above the PEL.

## 7.0 Exposure Controls (cont.)

**7.3.4** When performing these tasks employees shall be provided with suitable respiratory protection (as outlined in Hilscher-Clarke's Respiratory Protection Program), protective clothing, change areas, hand-washing facilities, biological monitoring, and training.

**7.3.5** Employee exposure can also be reduced by removing the employee from the hazard (i.e., job rotation). If this administrative control is utilized, Hilscher-Clarke will establish and implement a job rotation schedule. The program must

- Identify the name(s) of each affected employee;
- Specify the duration and exposure level at each job or work station where each affected employee is located; and
- Include other information useful to assess the reliability of administrative controls to reduce employee lead exposure (i.e., PPE, tools, venting systems).

**7.4 Subcontract Work** – Lead work conducted by subcontractors (other than supplemental labor) requires prior submission of a Lead Compliance Program that incorporates all the elements specified in 29 CFR 1926.62, and all related appendices. Contractors are also required to perform Lead-disrupting work in accordance with the practices and procedures as outlined in this plan. The Lead Compliance Program shall be submitted to the President and/or Safety Manager for approval before beginning any work that disturbs Lead.

## 8.0 Respiratory Protection

- 8.1 Respirators must be used when the concentration of Lead is at or above the PEL after engineering and work practice controls have not been sufficient to reduce exposures.
- 8.2 Respirators shall be selected by the Safety Manager in conformance with Hilscher-Clarke's and OSHA requirements
  - (Table II, following page, represents a Respiratory Protection Guideline for Lead Aerosols as published in "Lead Exposure in Construction; Interim Final Rule." *Federal Register* 58(84):26630, May 4, 1993).
- 8.3 Fit testing for respirators must be conducted within 6 months prior to Lead work and at least every 6 months for each employee wearing a negative-pressure respirator.
- 8.4 An appropriate respirator, which has been approved by the Mine Safety and Health Administration (MSHA) and NIOSH must be selected to protect against lead dust, fumes, and mists. (See Table II on following page).
- 8.5 Employees who use filter respirators will be instructed to change the filter elements whenever an increase in breathing resistance is detected and that they must leave the work area to wash their face and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.
- 8.6 In addition, if exposure monitoring or experience indicates airborne exposures to contaminants other than lead, such as solvents or polyurethane coatings, these exposures must be considered when selecting respiratory protection.
- 8.7 A re-evaluation of the respiratory protection program is required when a worker demonstrates a continued increase in blood lead levels.
- 8.8 If requested by the employee, a powered air-purifying respirator must be provided in lieu of a negative pressure respirator.
- 8.9 Before respirators are removed, HEPA vacuuming or other suitable method, such as damp wiping, should be used to remove loose particle contamination on the respirator and at the face-mask seal.
- 8.10 Refer to Hilscher-Clarke's Respiratory Protection Program for additional details on the basic requirement for selection, use, cleaning, and maintenance of respirators.
- 8.11 Respirators, like all PPE furnished in relationship to this safety policy and procedure, are furnished at no cost to the employee.

## 8.0 Respiratory Protection – Table II Respiratory Protection For Lead Aerosols

Airborne Concentration of Lead or Condition of Use	Required Respirator <sup>1</sup>
Not in excess of 500 ug/m <sup>3</sup>	Half mask air purifying respirator with high efficiency filters. <sup>2,3</sup>
	Half mask supplied air respirator operated in demand (negative pressure) mode.
Not in excess of 1,250 ug/m <sup>3</sup>	Loose fitting hood or helmet powered air purifying respirator with high efficiency filters. <sup>3</sup>
	Hood or helmet supplied air respirator operated in a continuous-flow mode (i.e., type CE abrasive blasting respirators operated in a continuous flow mode.)
Not in excess of 2,500 ug/m <sup>3</sup>	Full facepiece air purifying respirator with high efficiency filters. <sup>3</sup>
	Tight fitting powered air purifying respirator with high efficiency filters. <sup>3</sup>
	Full facepiece supplied air respirator operated in demand mode.
	Half mask or full facepiece supplied air respirator operated in a continuous-flow mode.
	Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode.
Not in excess of 50,000 ug/m <sup>3</sup>	Half mask supplied air respirator operated in pressure demand or other positive-pressure mode.
Not in excess of 100,000 ug/m <sup>3</sup>	Full facepiece supplied air respirator operated in pressure demand or other positive-pressure mode (i.e., type CE abrasive blasting respirators operated in a positive-pressure mode.)
Greater than 100,000 ug/m <sup>3</sup> , unknown concentration, or firefighting	Full facepiece SCBA operated in pressure demand or other positive-pressure mode.
<sup>1</sup> Respirators specified for higher concentrations can be used at lower concentrations of lead. <sup>2</sup> Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations. <sup>3</sup> A high efficiency particulate filter (HEPA) means a filter that is 99.97 percent efficient against particles of 0.3 micron size or larger.	

## 9.0 Protective Clothing & Equipment

**9.1** Appropriate protective clothing and equipment must be provided to employees who are exposed to Lead above the PEL without regard to the use of a respirator. This clothing and equipment will be furnished at no cost to the employee.

**9.2** Protective clothing and equipment is necessary to protect employees from transporting Lead from work to home. Appropriate protective clothing and equipment includes:

<b>Coveralls or similar full bodywork clothing</b>	<ul style="list-style-type: none"> <li>▪ Employees may be issued reusable work coveralls in lieu of disposable coveralls. These coveralls shall not be worn home as an alternative to disposable coveralls. Coveralls shall be laundered by Hilscher-Clarke (or the subcontractor for subcontracted work) and provided to employees at least weekly, or daily, if exposure levels exceed 0.05 mg/m<sup>3</sup>, and to employees with skin and eye irritation from Lead. Reusable clothing must comply with the requirements in 29 CFR 1926.62(g)(2).</li> <li>▪ Use work garments of appropriate size, and use duct tape to reinforce their seams (i.e., underarm, crotch, and back).</li> </ul>
<b>Gloves</b>	<ul style="list-style-type: none"> <li>▪ That meet ANSI Standards.</li> </ul>
<b>Hats or Hoods</b>	<ul style="list-style-type: none"> <li>▪ (i.e., Tyveck Hoods) – That meet ANSI Standards.</li> </ul>
<b>Shoes or Disposable Coverlets</b>	<ul style="list-style-type: none"> <li>▪ That meet ANSI Standards.</li> </ul>
<b>Eye Protection</b>	<ul style="list-style-type: none"> <li>▪ That meet ANSI Standards.</li> <li>▪ Wear impact resistant eye protection with side shields or goggles.</li> <li>▪ Wear a face shield along with goggles.</li> </ul>

**9.3** Protective clothing and equipment is required to be removed in an approved and designated change area.

**9.4** The contaminated protective clothing that is to be cleaned, laundered, or disposed of is to be placed in a closed labeled container in the change area. Containers shall be labeled with the following warning:

***CAUTION: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead-contaminated wash water in accordance with applicable local, state, or federal regulations.***

**9.4.1** At no time may any worker leave the work site wearing lead contaminated clothing or equipment (i.e., shoes, coveralls, respirators, head gear).

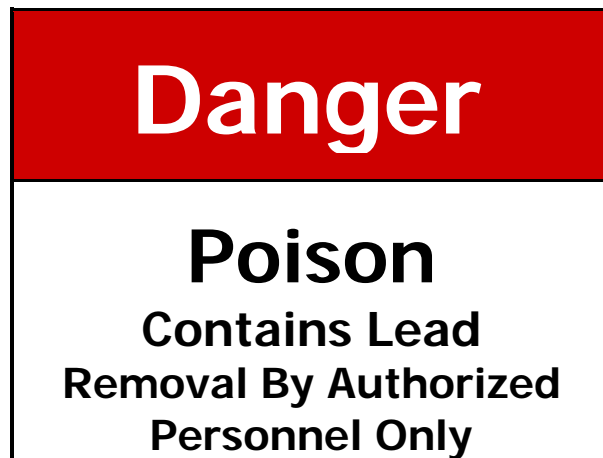
**9.4.2** All contaminated clothing and equipment must be prevented from reaching the workers' home or vehicle. This is an essential step in reducing the movement of lead contamination from the workplace into a worker's home and provides added protection to employees and their families.

**9.5** Persons responsible for handling contaminated clothing should be informed of the potential hazard in writing. At no time should lead be removed from protective clothing or equipment by any means that disperses lead into the work area, such as brushing, shaking, or blowing.

**9.6 Heat Stress** – Workers' wearing protective clothing face a risk from heat stress. Additionally, heat stress may be an important concern when working in a hot environment or within containment structures. Heat stress is caused by a number of interacting factors, including: environmental conditions, type of protective clothing worn, the work activity required, and the individual characteristics of the employee. (See Appendix G – Heat Stress).

## 10.0 Housekeeping

- 10.1** An effective housekeeping program involves at least daily removal of accumulations of lead dust and lead-containing debris. Vacuuming lead dust with high-efficiency particulate air (HEPA)-filtered equipment or wetting it with water before sweeping are effective control measures. Such cleaning operations should be conducted, whenever possible, at the end of the work shift/day, after normal operations cease. Furthermore, all persons doing the cleanup should be provided with suitable respiratory protection and personal protective clothing to prevent contact with lead.
- 10.2** HEPA filters must be emptied in a manner that minimizes Lead dust reentry into the workplace.
- 10.3** Dry or wet sweeping, shoveling or brushing may be used only if vacuuming or equally effective methods have been tried and do not work.
- 10.4** Promptly place waste, scrap, debris, bags, containers, equipment, and clothing contaminated with Lead, and consigned for disposal, in sealed impermeable bags (or other closed impermeable containers). Do not allow them to accumulate in the workspace.
- 10.4.1** These bags and containers must be clearly and visibly labeled as follows:



## 11.0 Hygiene Facilities

To minimize exposure to lead, special attention should be given to workers' personal hygiene. Hilscher-Clarke will provide and ensure that workers use washing facilities. Clean change areas, and separate non-contaminated eating areas must also be provided. Employees will be instructed to park cars where they will not be contaminated with lead. These measures are imperative in reducing the employee's period of exposure to lead and the ingestion of lead.

**11.1 Shower Facilities** - When there is potential for extensive contamination of the employee's skin, hair, and protective clothing, shower facilities must be provided so that exposed employees can wash lead from their skin and hair prior to leaving the worksite.

**11.1.1** Have shower and washing facilities in the area if the airborne levels are greater than the PEL. Showers used for Lead work must be decontaminated before they can be used by other Hilscher-Clarke employees. Portable shower units may be used for required decontamination activities.

**11.1.2** Where showers are provided, employees must change out of their work clothes and shower before changing into their street clothes and leaving the work site.

**11.1.3** Shower/Washing facilities shall be in near proximity to the worksite and provided with water, soap, and clean towels to enable employees to remove lead contamination from their skin.

**11.1.4** Contaminated water from washing facilities and showers must be disposed of in accordance with applicable local, state, or federal regulations.

**11.2 Change Areas** - When lead work operations generate airborne lead levels exceeding the PEL, the employer shall provide a clean change area equipped with storage facilities for street clothes and a separate area with facilities for the removal and storage of lead-contaminated PPE. The separation is essential in preventing cross contamination of the employee's clothing.

**11.2.1** Clean change areas are to be used for taking off street clothes, suiting up in clean working clothes, donning respirators prior to beginning work, and dressing street clothes after work. No lead-contaminated items should enter this area.

**11.2.2** Work clothing should not be worn away from the job site. Under no circumstances should lead-contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or properly disposed of following applicable federal, state, and local regulations.

**11.3 Hand Washing Facilities.** For all employees who perform Lead-related tasks/operations (regardless of Lead level), hand-washing facilities must be provided. Employees will be instructed to wash their hands and face before eating, drinking, using tobacco products, applying cosmetics or using the toilet.

**11.3.1** Hand Washing facilities shall be in near proximity to the worksite and provided with water, soap, and clean towels to enable employees to remove lead contamination from their skin

**11.4 Eye Wash Stations.** Where there is any possibility that employee's eyes may be exposed to lead dust, an eyewash station will be provided within the immediate work area for emergency use.

**11.5** Employees are prohibited from smoking, eating, and applying cosmetics in areas where the PEL is exceeded. Additionally no tobacco products, food items, or cosmetics are to be kept in work areas where employees are exposed to Lead above the PEL.

## 11.0 Hygiene Facilities (cont.)

**11.6 Eating Areas** (apart from contaminated areas). Designate separate food storage, preparation areas, and eating areas to avoid the possibility of ingesting Lead. *No Lead work shall be performed in these designated areas.*

- Eating areas must be as free as practicable from lead contamination and easily accessible to all employees.
- Employees must wash their face and hands prior to eating, drinking, smoking or applying cosmetics in eating areas.
- Employees are prohibited from entering these areas when wearing personal protective clothing or equipment unless surface lead dust has been removed by vacuuming, downdraft booth, or other cleaning method.

**11.7 End-of-Day Procedures:** Workers who are exposed to lead should follow these procedures upon finishing work for the day:

- Place disposable coveralls and shoe covers with the lead waste;
- Place lead-contaminated clothes, including work shoes, and personal protective equipment for laundering/cleaning (by the employer) in a closed container;
- Take a shower and wash hair; and
- Change into street clothes, in designated changing area.

## 12.0 Regulated Areas

- 12.1** Whenever it can be reasonably anticipated, that Hilscher-Clarke employees, will be exposed to lead in excess of the PEL, Hilscher-Clarke will establish a regulated area alerting employees to the hazard. This regulated area is required to be:
- 12.1.1** Set apart from the rest of the workplace in a way that establishes and alerts employees to the area and its hazards.
  - 12.1.2** Is entered only by Authorized Personnel.
  - 12.1.3** Is entered only by employees using proper respirators.
- 12.2** All employees, upon entering a regulated area, must refrain from eating, drinking, smoking, chewing tobacco or gum, and applying cosmetics. Neither shall employees, carry, store, nor use products associated with these activities in these areas.
- 12.3** Warning signs bearing the following information will be posted at all approaches to regulated areas:



The signs shall be well illuminated and kept clean, so that they are easily visible to employees and visitors.

- 12.3** The following activities are to be considered and evaluated, for the establishment of, regulated areas on Hilscher-Clarke worksites:
- Electrical grounding with lead welding.
  - Cutting, brazing, burning, grinding, or welding on surfaces that are painted with Lead-containing paints.
  - Electrical work using Lead-coated conduits.
  - Using Lead-containing paints.
  - Cutting and welding Lead-plated steel.
  - Brazing or welding with Lead alloys.
  - Fusing of reinforced steel by lead welding.
  - Maintaining or retrofitting Lead-coated equipment.
  - Wrecking and demolishing where Lead is present.

## 13.0 Medical Surveillance & Removal Program

The purpose of medical surveillance is to prevent lead-related disease. Although controls may be in place to prevent overexposure to lead, control systems may fail and/or hygiene and respirator programs may be inadequate. Therefore, a medical program with periodic surveillance will help detect those failures.

Medical surveillance provisions include two phases:

- Initial
- Full Program

**13.1 Initial Medical Surveillance** is to be provided to employees prior to assignment who are being assigned to an area where the airborne concentration of lead exceeds the action level at any time. This initial medical surveillance will consist of an initial medical examination and biological monitoring.

**13.1.1** The initial medical examination will provide information to establish a baseline to which subsequent data can be compared. Biological monitoring consists of blood lead level (BLL) and zinc protoporphyrin (ZPP) level tests.

**13.1.2** Biological monitoring results determine whether an employee will or will not require full medical surveillance.

**13.2 A Full Medical Surveillance Program** is to be provided to employees whose blood lead level is at or above 40 micrograms per deciliter (40 ug/dl) and who are exposed to lead in excess of the action level for more than 30 days a year. This program consists of:

**13.2.1 Periodic Biological Monitoring** – Biological monitoring must be performed every 2 months for the first 6 months and every 6 months thereafter until the blood level is below 40 ug/dl.

- If an employee's BLL exceeds 40 ug/dl, then the employee must be notified in writing within 5 working days of the receipt of the test result.

**13.3 Medical Examinations** includes several requirements and conditions that must be followed. These include, but are not limited to:

- Initial medical examinations (as discussed in section 12.1 of this policy and procedure).
- Annual medical examinations.
- Medical examinations on request.
- Follow-up medical examinations.
- Multiple physician review.
- Information provided to a physician performing a medical examination.
- Physician's report.
- Appendix A further details the requirements and conditions associated with medical examinations.

**13.4 Medical Removal Protection (MRP)** – a means of protecting employees when engineering controls, work practices, and respirators have failed to provide the required protection to employees.

## 13.0 Medical Surveillance & Removal Program

- 13.4.1** MRP involves the temporary removal of an employee from the regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other rights and benefits.
- 13.4.2** Temporary medical removal can occur:
- When an employee's blood lead level (BLL) exceeds 50 ug/dl; and
  - Upon the recommendation of the examining physician.
- 13.4.3** Employees who are removed due to an elevated BLL (BLL exceeds 50 ug/dl at time of removal) must receive a monthly BLL test. If medical opinion caused employee removal, the employee must be provided medical tests or examinations that the physician believes to be appropriate.
- 13.4.4** Employees with elevated blood levels can be removed for up to 18 months providing the job continues.
- 13.4.5** Employees may return to their former job when 2 consecutive blood lead level tests are at 40 ug/dl or below.
- 13.4.6** Employees removed by medical opinion may return only when the physician indicates that it is safe to do so.
- 13.4.7** When the "Medical Removal" is due to the employee's inability to wear a respirator, the removal need only be from jobs with exposure to Lead above the PEL.

## 14.0 Recordkeeping

**14.1 Recordkeeping** - Three sets of records may be required based upon the severity of the exposure.

These include:

- Exposure Monitoring Records;
- Biological Monitoring & Medical Examination Records;
- Medical Removal Protection Records.

**14.2 All Exposure Monitoring Records** for airborne lead must be retained. These records must include:

- Monitoring date and shift (i.e., time of sampling).
- Details of the sampling (i.e. duration of the sampling, air volume, etc.) and analytical techniques used and evidence of their accuracy.
- Type of respiratory protective device, if any, worn by the monitored employee and by any other employee whose exposure the monitoring result is intended to represent.
- Results in terms of an 8 hour TWA of each sample taken, and if Lead is not detected, the detection level utilized.
- Explanation of any conditions present that might have affected the monitoring results.
- The name, social security number, and job classification of all employees monitored and of all other employees whose exposures the monitoring result is intended to represent, including where applicable, a description of how it was determined that the employee's monitoring result could be taken to represent other employee's exposures.

**14.2.1** These exposure monitoring records are to be retained for 30 years.

**14.2.2** Hilscher-Clarke will provide a copy of the results of an employee's air monitoring to an industry trade association and to the employee's union, if any, or, if either of such associations or unions do not exist, to another comparable organization that is competent to maintain such records and is reasonably accessible to employers and employees in the industry.

**14.3 Medical Surveillance Records** – These records must also be retained. These records shall include, at a minimum:

- Employee's name, social security number, and description of duties.
- A copy of the physician's written opinions and of the explanation sheets for biological monitoring results.
- Results of any physical examination and all test results that are required to be provided by this policy and procedure (i.e., biological tests, X-rays, pulmonary function tests, etc.), or that have been obtained to further evaluate any condition that might be related to lead exposure.
- Any symptomology the employee is experiencing that could be related to exposure to Lead.
- Information provided to the physician at the time of the exam.
- Copy of the result of the examination.

**14.3.1** These medical surveillance records must be retained for the duration of employment plus 30 years in accordance with 29 CFR 1910.20.

**14.3.2** If employee's employment is less than 1 year, these records need not be retained if they are provided to the employee at termination of employment, however, proof of this transfer of records (including a complete inventory of records turned over to the employee) should be retained.

## 14.0 Recordkeeping (cont.)

**14.3.3** At the employee's request, Hilscher-Clarke, will promptly provide a copy of the employee's medical record, or update as appropriate, to a medical doctor or a union specified by the employee.

**14.4 Medical Removal Protection Records** must also be retained as applicable. These records must include:

- Name of employee.
- Employee' social security number.
- Date of employee removal.
- Date of employee return.
- How the removal was accomplished.
- Whether or not the removal was for an elevated blood lead level.

**14.4.1** These records are to be retained for the duration of an employee's employment.

**14.5 Training Records** – Hilscher-Clarke will certify that employees have been trained by preparing a certification record (see Appendix E) for each employee trained. The training records shall be maintained on file for 1 year beyond the date of training and/or retraining.

**14.6 Availability** – Within 15 days following a valid request, Hilscher-Clarke will make an employee's medical records (as required to be kept by this policy and procedure) available for examination and copying to the subject employee, designated representatives, to anyone having the specific written consent of the subject employee, and after the employee's death or incapacitation, to the employee's family members.

## 15.0 Observation of Monitoring

**15.1** Employees, or their designated representatives, may observe Lead monitoring procedures at their worksite. Employees, or their designated representatives, who observe the Lead air monitoring are entitled to an explanation of the measurement procedure and to record the results that are obtained. Employee, or their designated representatives, must be provided with appropriate personal protective equipment during the Lead monitoring.

## 16.0 Mixed Exposures

- 16.1** Cigarette smoke contains some Lead. Because it is so hard for the body to eliminate Lead, it tends to build up in the body. Any workplace exposure adds to these levels.
- 16.2** Smoking cigarettes near Lead increases release of toxic fumes. Also, because Lead can cause emphysema, lung effects may be greater in smokers.
- 16.3** Fish, plants and animals pick up Lead from the environment and consequently their Lead exposure is passed onto humans through the food chain. The highest levels are in shellfish, liver, and kidney meats.

## 17.0 Emergency Information

### Lead

DOT Number <b>None</b>	CAS Number <b>7439-92-1</b>
Hazard Rating	NFPA
<b>Flammability</b>	<b>Not Rated</b>
<b>Reactivity</b>	<b>Not Rated</b>
<ul style="list-style-type: none"><li>▪ <b>Do Not Use Water</b></li><li>▪ <b>Toxic Fumes Are Produced In Fire</b></li></ul>	

#### 17.1 Fire Hazards:

17.1.1 Lead powder is flammable when exposed to heat or flame.

17.1.2 Poisonous Gases are produced in fire.

17.1.3 Use dry chemical CO<sub>2</sub> extinguishers.

17.1.4 If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

#### 17.2 Spill Response; If Lead powder is spilled, take the following steps:

17.2.1 Evacuate persons not wearing protective equipment from area of spill until clean-up is complete. And air monitoring shows levels below the PEL.

17.2.2 Remove all ignition sources.

17.2.3 Ventilate the area of spill.

17.2.4 Collect powdered material in the most convenient and safe manner and deposit in sealed containers.

17.2.5 It may be necessary to contain and dispose of Lead as a Hazardous Waste. Contact the Department of Environmental Protection (DEP) or the regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

17.2.6 If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

17.2.7 For large spills and fires, immediately evacuate the area and call the fire department.

#### 17.3 First Aid:

17.3.1 **Eye Contact** – Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.

17.3.2 **Skin Contact** – Remove contaminated clothing. Wash contaminated skin with soap and water.

## 17.0 Emergency Information (cont.)

### 17.3.3 Breathing:

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR of heart action has stopped.
- Transfer promptly to a medical facility.

**17.3.4 Poison Information** – In Ohio for poison information contact Children's Hospital Medical Center of Akron at 1-800-872-5111.

### 17.4 Physical Data:

**17.4.1 Vapor Pressure** – -1.77 mm Hg at 1832°F (1000°C).

**17.4.2 Water Solubility** – Insoluble

## Appendix A – Medical Examination Requirements & Conditions

Description	Requirements
<p><b>Initial Medical Examinations:</b> The initial medical examinations provides information from which baseline date can be established for the employee.</p>	A detailed work and medical history.
	A through physical examination including an evaluation of the employee's pulmonary status if they will be required to wear a respirator.
	Vital signs.
	A series of laboratory test to check the employee's blood chemistry and kidney function.
	Upon request of the employee, a laboratory evaluation of male fertility or a pregnancy test.
<p><b>Annual Medical Examinations:</b> Annual medical examinations must be made available to employees whose BLL exceeds 40 ug/dl at any time during the preceding year and who are exposed to airborne lead concentration that exceeds the action level (30 ug/m<sup>3</sup>) for more than 30 days.</p>	A detailed work and medical history.
	A through physical examination including an evaluation of the employee's pulmonary status if they will be required to wear a respirator.
	Vital signs.
	A series of laboratory test to check the employee's blood chemistry and kidney function.
	Upon request of the employee, a laboratory evaluation of male fertility or a pregnancy test.
<p><b>Medical Examinations Upon Request:</b> If an employee experiences signs or symptoms associated with lead poisoning or has difficulty breathing while wearing a respirator, a medical examination or consultation must be provided as soon as possible. Additionally, employees may request medical advice concerning the effects of current or past exposure to lead on their reproductive abilities.</p>	<p>The content of the types of medical examinations and tests are at the discretion of the examining physician.</p>
<p><b>Follow-up Medical Examinations:</b> Appropriate follow-up medical examinations or consultation must be provided to employees who have been temporarily removed from exposure under the medical removal protection provisions of this safety policy and procedure and the OSHA standard.</p>	<p>The content of the types of medical examinations and tests are at the discretion of the examining physician.</p>
<p><b>Multiple Physician Review:</b> If an employee is dissatisfied with an examination by the physician selected by Hilscher-Clarke, a second physician can be selected to conduct an independent analysis. The two physicians would attempt to resolve any differences of opinion, and select a third physician to resolve any unresolved dispute.</p>	A detailed work and medical history.
	A through physical examination including an evaluation of the employee's pulmonary status if they will be required to wear a respirator.
	Vital signs.
	A series of laboratory test to check the employee's blood chemistry and kidney function.
	Upon request of the employee, a laboratory evaluation of male fertility or a pregnancy test.

**Appendix A – Medical Examination Requirements & Conditions (cont. page 2)**

<p><b>Information that is to be provided to the Examining Physician:</b> Physicians must be provided with information from Hilscher-Clarke on employees that are to be medically examined.</p>	<p>This safety policy and procedure and the related OSHA standard with its appendices.</p>
	<p>A description of the employee's duties as they relate to occupational lead exposure.</p>
	<p>The employee's exposure level or anticipated exposure level.</p>
	<p>A description of the personal protective equipment the employee wears (i.e., respirators, tyvek suit).</p>
	<p>Prior blood lead level results.</p>
	<p>Prior written medical opinions.</p>
<p><b>Physician's Report:</b> After an examination or consultation, the physician must prepare a written report that contains:</p>	<p>Physician's opinion as to whether or not the employee has any medical condition which places the employee at increased risk of health impairment from exposure to lead.</p>
	<p>Special protective measures that are to be provided to the employee.</p>
	<p>Blood lead level determinations.</p>
	<p>Limitations on the use of respirators. (This determination must also include whether the employee can wear a powered air purifying respirator if unable to wear a negative pressure respirator.)</p>

**The use of chelating drugs as a prophylactic measure (i.e., to prevent a detectable rise in blood lead) is an unacceptable medical practice. Chelation may be used by a qualified physician only for diagnostic or therapeutic reasons (that is, to diagnose or treat the signs and symptoms of severe lead toxicity.)**

## Appendix B: Summary of Control Practices

Control Practice	Exposure Below 30 ug/m <sup>3</sup> (AL)	Exposure Between AL & PEL	Exposure Above 50 ug/m <sup>3</sup> (PEL)
Determination of the Presence of Lead	X	X	X
Competent Person			X
Exposure Monitoring & Associated Recordkeeping	X	X	X
Mechanical Ventilation		X*	X
Local Exhaust Ventilation		X*	X
Enclosures/Containment Systems			X
HEPA Vacuums	X	X	X
Wetting Agents	X	X	X
Written Compliance Program			X
Warning Signs			X
Worker Training		X	X
Notification of Other Employees	X	X	X
Respiratory Protection			X
Protective Clothing/Gloves/Shoe Covers			X
Handwashing Facilities Only	X	X	X
Change Areas w/Storage Facilities			X
Decontamination Facilities Including Showers			X
Eating Areas and Facilities			X
Biological Monitoring and Associated Recordkeeping		X	X
Medial Examinations and Associated Recordkeeping		X	X
Medical Removal Practices	X	X	X

**X** Indicates that the corresponding control practice is required at that exposure level.

**\*** Could eliminate blood test.

## Appendix C: Model Lead Compliance Plan

This Plan is to be Site Specific and is to be updated (at a minimum) every 6 months.

### Lead, Compliance Plan

For \_\_\_\_\_  
(**American Power Seal** or Contractor/Subcontractor Name)

Compliance Plan Date: \_\_\_\_\_

Location/Construction Site \_\_\_\_\_

Division/Unit \_\_\_\_\_

Plan Submitted by \_\_\_\_\_ Title \_\_\_\_\_

*This plan should be updated (at a minimum) every six (6) months.*

### This Lead Compliance Plan contains the following:

- Lead-Emitting activities covered by this plan.
- Equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures, maintenance practices, means used to achieve compliance, plans and studies used to determine compliance and technology considered to meet the PEL for each of the activities covered by this plan.
- Air monitoring data.
- Compliance plan implementation schedule.
- Work practice requirements.
- Hygiene facilities and practices.
- Administrative controls.
- Contractor arrangements.

## Appendix C: Lead Compliance Plan (cont. 2)

### Lead-Emitting Activities Covered by this Plan

(Check the appropriate box(es) for the Lead-Emitting activities covered by this plan.)

Activity #	Check if Appropriate	Activity
1		Open abrasive blasting.
2		Open abrasive blasting in full containment.
3		Vacuum blasting.
4		Welding, cutting, and burning on tanks.
5		Other Welding, cutting, and burning
6		Lead burning.
7		Spray painting lead-based paint.
8		Hand scraping.
9		Removing and replacement of building components.
10		Manual demolition of building components.
11		Heat gun use.
12		Chemical stripping.
13		Encapsulation.
14		Power tool use, non-vacuum shrouded.
15		Power tool use, vacuum shrouded.
16		Soldering and brazing.
17		Use of lead mortar.
18		Handling lead shot, brick, or sheet.
19		Cutting lead foil panels.
20		Reinsulation over existing mineral wood.
21		Miscellaneous enclosure movement.
22		Miscellaneous abrasive blasting/repainting.
23		Miscellaneous lead abatement.
24		Miscellaneous steel structure rehabilitation.
25		Spray painting non-lead based paint.
26		Brush painting non-lead based paint.





**Appendix C: Model Lead Compliance Plan (cont. 5)**

For each of the previously checked activities, list the required information.

Activity No.	Operating Procedures



**Appendix C: Model Lead Compliance Plan (cont. 7)**

For each of the previously checked activities, list the required information.

Activity No.	Specific Means That Will Be Used To Achieve Compliance

**Appendix C: Model Lead Compliance Plan (cont. 8)**

If engineering controls are required, list the engineering plans and studies used to determine the Lead control methods for each Lead-emitting activity.

Activity No.	Document/Author or Contributors





## Appendix D: Sample of a Lead Compliance Plan

Procedure for the removal of lead-containing pain from the walls of an existing occupied structure:

Lead containing paint will be removed from the walls and ceilings of the Research and Development Lab located in the Plastics Injection Building of Company A. The total area of paint to be removed is 1289 square feet.

Four employees will trowel past onto the painted surfaces and cover the paste with a fibrous laminated cloth. 24 hours after applying the paste, they will use a taping knife to pry up the edge of the cloth and remove the cloth, past and paint away in one piece. They will remove as much of the residue as possible with the knife or other acceptable tool. They will place the cloth, paste, and paint in labeled bags and dispose of them in compliance with local regulations.

After removal of the cloth, paste, and paint, they will clean the surface with an alkaline solution.

<b>Protective Measures</b>	Employees will wear Tyvek suits with hoods, Tyvek booties, face shields and rubber gloves taped to the sleeves of the Tyvek suits during removal operations.
<b>Technology Considered</b>	Three Technologies were considered: 1. Removal using a hand-held power sander; 2. Use of a contained blast system; and 3. Chemical removal using a paste.
<b>Air Monitoring Data</b>	Since no lead is emitted into the air when paint is removed chemically using a paste, there will be no need to monitor exposures.
<b>Schedule</b>	<ul style="list-style-type: none"> <li>▪ The paste will be applied to the painted surfaces and covered with a cloth on July 5, 2001.</li> <li>▪ The past, paint, and cloth will be removed and disposed of on July 6, 2001.</li> <li>▪ The walls will be cleaned with an alkaline solution on July 7, 2001.</li> </ul>
<b>Work Practice Program</b>	<ul style="list-style-type: none"> <li>▪ Employees will take the protective measures described in Appendix B of Hilscher-Clarke's Lead Compliance Plan.</li> <li>▪ They will perform the same tasks for the same time period.</li> <li>▪ There will be no task rotation on this work site.</li> </ul>
<b>Administrative Control Schedule</b>	Since there will be no rotation of tasks, an administrative control schedule is not applicable to this work site.
<b>Arrangements with Contractors</b>	No part of this project has been contracted out.



# HEAT ILLNESSES

**High Temperature + High Humidity + Physical Work = Heat Illness**

When the body is unable to cool itself through sweating, serious heat illnesses may occur. The most severe heat induced illnesses are *heat exhaustion* and *heat stroke*. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible death.

## **Heat Exhaustion**

*What happens to the body:*

- Headaches
- Dizziness/Light Headedness
- Weakness
- Mood Changes (irritable, or confused/ can't think straight)
- Feeling Sick to your Stomach
- Vomiting/Throwing up
- Decreased and Dark Colored Urine
- Fainting/Passing Out
- Pale Clammy Skin

*What should be done:*

- Move the person to a shaded area. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back (raise their legs 6-8 inches). If the person is sick to their stomach lay them on their side.
- Loosen and remove heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes).
- Cool the skin with water or wet cloth.
- If the person does not feel better in a few minutes, call 911.

*If heat exhaustion is not treated, the illness may advance to heat stroke.*

## **Heat Stroke—a medical emergency**

*What happens to the body:*

- Dry Pale Skin (no sweating)
- Hot Red Skin (looks like a sunburn)
- Mood Changes (irritable, confused/not making any sense)
- Seizures/Fits
- Collapse/Passed Out (will not respond)

*What should be done:*

- Call for emergency help (911)
- Move the person to a cool area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing
- Have the person drink some cool water (a small cup every 15 minutes)
- Try to cool the person with water or a wet cloth.
- If ice is available, place ice packs under the arm pits and groin area.

*How to protect workers:*

- Train the workforce on heat illnesses
- Perform heavier work on cooler days
- Work in pairs
- Drink plenty of cool water every 15-20 minutes
- Wear light, loose-fitting, breathable clothing
- Take frequent breaks in cool areas
- Avoid eating large meals before work

Heat Illness.pub  
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