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LEAD PROGRAM	**Section**	**4.24, REV 0**
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1.0 PURPOSE AND SCOPE

This Lead Control Program is based on requirements of the OSHA standards 29 CFR 1910.1025, Lead for general industry operations and 29 CFR 1926.62, Lead for construction projects. This program provides the guidance and requirements to identify, evaluate, and control lead hazards, achieve regulatory compliance, and ensure worker protection against lead exposure. This program is to be followed by CHG and represents the standardized approach for compliance with regulatory requirements for lead.

The Lead Control Program applies to all CHG managed facilities and/or operations where work activities may result in employee exposure to lead or lead containing materials.

2.0 SOURCES

2.1 Requirements

1. 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances."

2. 29 CFR 1910.1025, "Lead (general industry)." (S/RID)

3. 29 CFR 1926 Subpart D, "Occupational Health and Environmental Controls."

4. 29 CFR 1926.62, "Lead Exposure (Construction)."

2.2 References

1. Housing Community Development Act of 1992, HUD Guidelines for LBP (Lead Based Paint) Activities.

2. *Inorganic Lead Guidance Document*, American Industrial Hygiene Association, 1995.

3. OSHA Compliance Manual Section on Lead in Construction, Inspection and Compliance Procedures.

4. SRS (Savannah River Site) Matrix of Requirements for Lead Work at SRS.

5. NIOSH ALERT, Preventing Lead Poisoning in Construction Workers, 4/92.

3.0 IMPLEMENTATION

The provisions of this procedure are effective immediately. All affected personnel shall make themselves aware of the requirements of this procedure.

4.0 GENERAL

4.1 Typical Lead Containing Materials and Activities

Lead may be found in paints, shielding materials, bulk metals, solders, alloys, nails for metal roofs, mortars, glass, piping systems, ammunition, metal seams and joints, laboratory and process chemicals, various equipment and building components, waste materials, and contaminated environmental media, as well as in other materials.

Lead exposure may result from a variety of operations, including but not limited to:

- Lead-brick shielding/handling
- Weapons firing (patrol)
- Pouring molten lead
- Soldering
- Welding/cutting/grinding
- Sandblasting, abrasive blasting
- Painting and paint removal
- Loading lead ballast/shot
- Deactivation and decontamination and decommissioning (D&D) activities involving lead and lead containing materials
- Construction and maintenance involving lead and lead containing materials
- Removal or encapsulation of materials containing lead (lead paint abatement)
- New construction, alteration, repair, or renovation of structures, or substrates containing lead or lead containing materials
- Installation of products containing lead
- Emergency or planned cleanup of lead contamination
- Transportation, disposal, storage, or containment of lead or lead containing materials
- Use of powder actuated tools
- Lead cable pulling

4.2 OSHA standards

Operations and activities that may involve lead or lead containing materials are regulated under either the OSHA general industry standard (29 CFR 1910.1025) or the OSHA construction standard (29 CFR 1926.62).

Both standards establish the same maximum limit of exposure to lead. The OSHA permissible exposure limit (PEL) for lead is 50 ug/m^3 when calculated as an 8 hour time weighted average (TWA) over a work shift. These standards also establish an action level (AL) of 30 ug/m^3 as a TWA, which triggers certain requirements under the standards. The standards delineate specific action that must be taken by line management when exposures are at or above the PEL or AL.

4.3 Types of Lead Compounds

The OSHA lead standards and this program apply to inorganic lead. They do not apply to organic lead compounds, except lead soaps.

4.4 Construction Versus General Industry Standard

For any given operation or activity, either the general industry or the construction standard applies. Both cannot apply at the same time to the same activity. Line management supported by industrial hygiene should categorize operations and activities as construction or general industry and follow the appropriate standard.

4.5 Competent Person for Construction Activities

The construction standard requires the designation of a competent person who is capable of identifying existing and predictable lead hazards and who has the authorization to take prompt corrective measures to control the hazard. Line management must designate the competent person. It is preferred that this person be a project industrial hygienist, although other individuals capable of identifying and controlling lead hazards could be named.

If a competent person is named other than an industrial hygienist, the responsibilities designated in Paragraph 5.0 for the project industrial hygienist remain in place. However, the competent person also has a day-to-day role at the worksite in hazard identification and control. The project industrial hygienist shall support the competent person in this role. The project industrial hygienist and competent person should coordinate their roles and activities to ensure lead hazard identification, evaluation, and control.

In the case of a subcontracted effort, the subcontractor must designate a competent person from its staff. CHG project industrial hygienists shall then provide oversight to ensure that lead hazards are identified and controlled.

4.6 Diminimus Condition for Lead in Construction Activities

The OSHA construction standard does not establish a diminimus level of lead in materials below which no action would be required under the standard. For dust generating operations, this Lead

Control Program suggests a diminimus condition that is safe from occupational exposures above the action level (AL) when (a) the total lead content of materials is less than 1,000 ug/g (ppm) (0.1%) and (b) total particulate matter in the breathing zone of workers are maintained below the threshold limit value (TLV) of 10 mg/m3 as an 8-hour TWA. Both of these criteria must be met. This diminimus condition does not apply to lead fume generating activities (i.e., heat producing activities greater than 700° F such as welding and burning). Additional diminimus lead level rationale is located in Appendix A. Qualitative and quantitative exposure assessment and other accepted IH analysis methods and rationale may also be utilized to determine/evaluate diminimus levels of lead. See Appendix A and Table 1 for the applicability of this diminimus condition.

Whenever applying the diminimus condition to construction activities, it must be done with appropriate input from the project industrial hygienist who should evaluate whether there is reason to believe if exposures could be at or above the action level.

5.0 REQUIREMENTS (2.1.1)

Line management, supported by project industrial hygienists, medical contractor, and training providers shall conduct the following basic steps to control exposure to lead.

1. Identify and evaluate lead hazards.

2. When a potential lead hazard is present, implement requirements of the applicable lead standard.

3. When exposure is or is likely to be above the PEL, develop and implement a Lead Compliance Plan.

4. Determine lead exposure initially and periodically as work is conducted.

5. Provide workers with appropriate training and medical surveillance.

6.0 PROCEDURE

6.1 Identify and Evaluate Lead Hazards (2.1.2)

1. Line management:

   a. Determines the types of projects, activities, and operations that could involve lead or lead containing materials.

   b. For those jobs, conducts an automated job hazard analyses (AJHA) and/or another appropriate hazard identification processes as part of the work design, planning, and control process. Ensure that the project industrial hygienist participates in or conducts the hazard identification.

c. If lead or lead materials are involved, ensures that the project industrial hygienist conducts a lead hazard evaluation to determine the potential exposure and to recommend initial controls.

d. To identify and evaluate the potential lead hazards for a task, operation, or facility:

- Reviews material data safety sheets especially for any paint products
- Reviews any material or product specifications to determine if lead is present
- Evaluates past use of products that may have contained lead such as paint, mortar, shielding, and solders
- Reviews environmental survey and characterization data for lead content of building substrates or environmental media
- Conducts quantitative lead sampling and analysis of materials, as appropriate.

e. As necessary to identify and evaluate the potential for lead hazards, arranges for the project industrial hygienist to quantitatively determine, through sampling or field tests, the presence of lead in substrates or materials involved in the work.

f. Incorporates industrial hygiene recommendations for lead hazard control measures into any job hazard analysis and work control documents.

2. The Industrial Hygienist:

a. Supports line management in all aspects of lead hazard identification and evaluation. As part of the job hazard analysis and other hazard evaluation processes, identifies and evaluates lead hazards and potential exposure during the planning and conduct of work.

b. As necessary, quantitatively determines the presence of lead in materials, substrates, and other media. This may involve the collection of samples for analysis by a qualified laboratory or the conduct of field testing using acceptable test methods.

c. Provides results of any lead survey to line management, along with information regarding hazard potential and control measures.

d. Forwards data to CHG Industrial Hygiene Programs for data management and retention purposes.

6.2 Implement Requirements of the Applicable Lead Standard (2.1.2)

1. Line management:

   a. Determines whether a specific operation or activity potentially involving a lead hazard is governed under the construction or general industry standard.

      1) For construction activities involving potential lead hazards, conducts the activity in accordance with the steps shown in Table 2. Notes that specific activities are listed in Table 3 that require specific interim protective measures prescribed by the OSHA standard.

      2) For general industry operations involving potential lead hazards, conducts the operation in accordance with the steps shown in Table 4.

   b. As appropriate, obtains industrial hygiene support to evaluate lead exposures prior to and during the operation/activity to recommend, validate, modify and support implementation of hazard controls. For construction projects, designates a competent person, preferably the project industrial hygienist. See Paragraph 4.0.

   c. Provide feasible engineering and administrative controls to maintain personal exposures below the PEL. Provide respiratory protection to supplement engineering controls, when required.

   d. With project industrial hygienist support, develop a Lead Compliance Plan if the PEL is reached or exceeded or is likely to be exceeded. See Paragraph 6.3.

   e. Specify lead hazard controls in the Lead Compliance Plan, work packages, procedures, and other work control documents.

   f. Arrange for and ensure worker training, medical surveillance, and exposure monitoring are provided, as necessary. See Paragraphs 6.4, 6.5, and 6.6.

2. The Industrial Hygienist:

   a. Assists line management in applying the proper lead standard to the operation/ activity. Supports line management in implementing the steps shown in Tables 2 and 4 for construction activities and general industry operations, respectively.

   b. Serves as or provides support to the competent person designated by line management. See Paragraph 6.3. Supports any onsite construction safety and health representative.

   c. Evaluates lead exposures and designates personal protective equipment, respiratory protection, and other hazard control measures.

d. Recommends controls as part of the work planning process and ensures implementation of specified controls prior to job initiation.

e. Upon job startup and periodically thereafter, evaluates the effectiveness of controls, by observation, surveillance, performance testing, and/or exposure assessment, as appropriate. Makes recommendations to line management to maintain, modify, upgrade, or downgrade controls, accordingly.

f. Takes prompt corrective measures (or support any competent person in this role) to eliminate hazards such as recommending to line management to implement or modify engineering, administrative, work practice, and personal protection (including respiratory protection) controls.

g. Conducts exposure assessment, as appropriate. See Paragraph 6.4 and Table 5.

h. As appropriate, assists line management in ensuring that workers have the necessary training and medical surveillance based upon the activity and hazard. See Paragraphs 6.5 and 6.6.

6.3 Develop and Implement a Lead Compliance Plan (2.1.2)

a. Line management:

1. Ensures that a Lead Compliance Plan is developed where the OSHA PEL is or is likely to be exceeded. Ensures that the project industrial hygienist either prepares or reviews and provides input to the development of a written Lead Compliance Plan for operations and activities. (See Attachment C for a template.) This requirement includes, but is not limited to, the activities specifically listed in Table 3, unless it is demonstrated that the PEL is not exceeded. This Lead Compliance Plan shall include:

- Description of activities emitting lead
- A means to achieve compliance with the PEL and the OSHA standard's requirements, including engineering controls
- Technology to meet the PEL
- Air monitoring data to document lead emission sources
- Schedule for implementation
- Work practices, personal protective equipment, housekeeping, hygiene facilities, and others
- Administrative control schedule, if applicable

- Arrangements between multiple contractors and subcontractors regarding compliance and hazard information (required for construction activities only)

- Other information.

NOTE: As appropriate, at the discretion of line management, a Lead Compliance Plan can be written at the facility/project level for various lead activities or at the task level for a specific activity.

b. Coordinates the Lead Compliance Plan with any applicable work packages and other work control documentation. Some of the information for a Lead Compliance Plan may already be included in work procedures or packages. Siteform A-6001-891 provides a suggested template that can be completed and attached to the work package to provide the required information of a Lead Compliance Plan. Use of this form is optional. Other formats with equivalent information can be used.

c. Implements requirements of the Lead Compliance Plan prior to job initiation or in accordance with the implementation schedule for the Lead Compliance Plan. Addresses requirements of the Lead Compliance Plan and methods of compliance in pre-job and daily worker briefings, as applicable.

d. Based on recommendations of the industrial hygienist, maintains or modifies the plan (upgrade or downgrade requirements) based on lead exposures. (Note that for construction activities in Table 3, interim protective measures are initially prescribed at job start-up. These measures can be modified based on initial exposure monitoring and hazard evaluation.)

e. Documents any modifications as attachments to the initial Lead Compliance Plan or develops appropriate revisions. Maintains all versions of the Lead Compliance Plan with the period that each was in effect.

f. Enforces requirements of the Lead Compliance Plan.

1. The Industrial Hygienist:

a. Either prepares or reviews, approves, and provides input to development of a written Lead Compliance Plan for any operation or activity where the OSHA PEL is or is expected to be reached or exceeded.

b. Supports line management in the implementation of the Lead Compliance Plan.

c. Conducts initial and periodic surveillance (and exposure monitoring as appropriate) to ensure that the Lead Compliance Plan is effective. Participates in pre-job and daily worker briefings regarding the Lead Compliance Plan, as appropriate.

d. Recommends to line management, maintaining, upgrading, or downgrading the requirements of the Lead Compliance Plan based on exposure conditions. Ensures that necessary modifications are effective by conducting surveillance and exposure assessment, as warranted.

6.4 Conduct Exposure Assessment (2.1.2)

1. Line management:

   a. Ensures that during the planning of the job, the project industrial hygienist either uses historical exposure monitoring data or develops exposure monitoring plans to conduct initial exposure assessment.

   b. When historical exposure monitoring or objective data cannot be relied upon, ensures that the work package, exposure monitoring plan, or other work control documents delineate the initial and periodic monitoring to be conducted.

   c. When historical exposure monitoring or objective data are relied upon, includes or references the data in the work control documents and Lead Compliance Plan.

   d. Maintains, upgrades, or downgrades hazard controls based on quantitative and qualitative exposure assessment results and the recommendations of the project industrial hygienist.

   e. If exposure is above the PEL and workers have not been adequately protected, implements guidance shown in Appendix B, as appropriate.

2. The Industrial Hygienist:

   a. In evaluating lead hazards and specifying controls for a job, uses reliable historical exposure monitoring data generated for other similar operations or activities, objective data as defined in Attachment A and/or plans and conducts initial monitoring to determine exposures and assess the effectiveness of hazard controls.

   b. Lacking historical or objective data, conducts initial and periodic monitoring in accordance with requirements shown in Table 5. Maintains accurate records and documentation of all exposure monitoring. Forwards data to the Industrial Hygiene Programs records coordinator for storage and retrieval.

   c. Based on results of monitoring, makes recommendations to line management to maintain, upgrade, or downgrade hazard controls. Amends the Lead Compliance Plan accordingly.

   d. Maintains effective records of jobs monitored, so that a historical database can be used to specify controls and eliminate unnecessary and redundant monitoring for

future activities. Forwards data to and retrieves site-wide data from Industrial Hygiene Programs to serve as historical data for future activities.

e. Supports line management in responding to situations where the concentration of airborne lead exceeds the PEL and workers were not adequately protected. See Attachment B.

3. CHG industrial hygiene personnel:

a. Receive monitoring records from project industrial hygienists.

b. Maintain a database for lead exposure monitoring to serve as historical exposure data for project industrial hygienists regarding trends and exposures established for various types of operations.

6.5 Training (2.1.2)

1. Line management:

a. In accordance with the criteria in Table 6, provides the appropriate type of training of all employees who are exposed to lead, including lead hazard communication, hazard communication, lead worker, respiratory protection, and construction safety. The extent and types of training required are listed in Table 3.

NOTE: Lead hazard communication training can be given in pre-job briefings, safety meetings, daily meetings, and other appropriate forums.

b. Provides information to workers regarding task-specific lead hazards and controls, the Lead Compliance Plan, JHAs, work practices, and other applicable information, including whenever changes are made to these controls.

c. For workers who continue to have exposure to lead, provides training annually, as appropriate.

2. The Industrial Hygienist:

a. Supports line management in ensuring that all workers exposed to lead have been trained in accordance with Table 6 criteria. Assists line management in determining the appropriate level of training based on types of tasks and exposures.

b. Ensures that lead training requirements are included in work procedures or packages or other work control or job-specific safety and health documents.

c. As appropriate, participate in pre-job and daily worker briefings regarding task-specific lead hazards and controls, the Lead Compliance Plan, work practices, and

other applicable information, including whenever any changes are made to controls or to the Lead Compliance Plan.

3. CHG Industrial hygiene personnel:

   Review and approve lead worker training courses developed by the Training Department.

4. CHG Training:

   a. Develops and presents training courses to workers exposed to lead including hazard communication, respiratory protection, lead worker, and general safety and health, in accordance with requirements of the lead standards and Table 6 of this Lead Control Program. Alternately, supports line management in procuring appropriate contractor training services, and/or support project industrial hygienists in developing lesson plans, obtaining training materials, and presenting lead training.

   b. Submits lead worker training courses to Industrial Hygiene Programs for review and approval.

6.6 Medical Surveillance (2.1.2)

1. Line management:

   a. For construction activities, arranges for initial biological monitoring to include blood sampling and analysis for lead and zinc protoporphyrin levels for workers who are (a) engaged in activities listed in Table 3 and (b) occasionally exposed on any day to lead at or above the action level.

   b. For general industry and construction activities where employees are exposed at or above the action level, arranges for initial and follow-up biological monitoring and medical examinations and consultations.

   NOTE: For general industry, biological monitoring is not required unless exposure is at or above the action level. See the flow diagram in Figure 1 for the medical examination process.

   c. When enrolling employees into lead medical surveillance, specifies to the medical contractor the nature and degree of exposure such that appropriate surveillance can be provided.

   d. Requests industrial hygiene assistance in reviewing blood lead levels, medical opinions, and recommendations for medical removals.

   e. Implements employee medical removals, special protective measures, or limitations as appropriate based upon medical monitoring, until the worker can be

returned to normal duty. Obtains medical consultations and recommendations from the medical contractor.

f. Implements the medical surveillance program developed by the medical contractor for lead workers, which includes a biological monitoring program for blood lead and zinc protoporphyrin levels and an examination and consultation program.

g. Schedules medical surveillance for workers exposed to lead, in accordance with the OSHA lead standards.

1) For the general industry standard, biological monitoring shall be scheduled every six months for those workers exposed above the action level, every two months for workers with elevated blood lead levels, and monthly for those medically removed.

2) For construction workers exposed to lead above the action level or prior to conducting tasks shown in Table 3, biological monitoring shall be scheduled prior to job assignment, and every two months during the first six months and every six months thereafter; ensure monitoring by the medical contractor of construction workers with elevated blood lead every two months, and monthly when medically removed.

2. The Industrial hygienist:

a. Assists line management by identifying workers requiring medical surveillance, and helps arrange medical surveillances.

b. Provides the medical contractor with information regarding the nature and degree of lead exposure.

c. Assists line management in reviewing and evaluating blood lead results. Interfaces with the medical contractor regarding blood lead results and exposures. Supports line management in temporary removals/returns, special protective measures, and limitations for affected employees.

d. Works with line management and the medical contractor to determine the appropriate schedule for periodic medical surveillance based upon blood-lead levels and workplace exposures.

7.0 RECORDS

Line managers ensure the following records are maintained:

- Current written Lead Compliance Plans, JHAs, and other required documents (including necessary regulatory forms whenever lead abatement is done).

- Performance testing for engineering controls.

- Training records through CHG Training Services.

At their discretion, Industrial Hygiene personnel should keep copies of pertinent project files regarding:

- Employee and workplace qualitative exposure assessment, exposure monitoring records and exposure assessment plans, including historical and/or objective data used in decision making. Exposure assessment reports and control recommendations.

- Performance testing records for engineering controls.

- Information describing typical lead operations at applicable facilities.

Project Industrial Hygienists shall forward all exposure assessment records and other applicable data to Industrial Hygiene Programs for archiving and records maintenance.

Industrial Hygiene Programs shall maintain a database of exposure monitoring records and the project information, and shall make historical data available to project industrial hygienists, as requested.

Employees may obtain lead exposure records from the medical contractor. These shall be kept for the duration of employment plus 30 years, or longer if required by DOE or CHG.

8.0 DEFINITIONS

Action level. An employee exposure, without regard to the use of a respirator, to an airborne concentration of lead of 30 micrograms per cubic meter, as averaged over an 8-hour workday.

Competent person. An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

Construction work. As defined in the preamble to the lead construction standard, work involving construction, alteration, and/or repair, including painting and decorating. Such work includes but is not limited to: demolition or salvage of structures where lead or materials containing lead are present; removal or encapsulation of materials containing lead; construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead; installation of products containing lead; lead contamination/emergency cleanup; transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and maintenance operations associated with the construction activities described above.

NOTE: Transportation, disposal, storage, or containment of lead as well as maintenance operations that are not associated with a construction site/activity are covered under the general industry standard.

Exposure assessments. The determination or estimation (qualitative or quantitative) of the magnitude, frequency, duration, and route of exposure.

General industry work. All work with lead or lead containing materials that is not considered to be construction work.

NOTE: OSHA intends that there shall be no gaps and no overlaps between the general industry and construction standards; that is, all lead work is covered under one or the other standard but never both.

Interim protective measures. A set of measures designed to reduce exposure or likely exposure to lead hazards to be maintained until initial exposure assessment is conducted, and then maintain or revise based on initial exposure assessment.

Lead. Metallic lead, inorganic lead compounds, and organic lead soaps.

Lead worker. A worker who receives complete lead worker training as specified in Table 6, that is to be given when lead exposure is at or above the action level.

Objective data. Data referred to in the lead construction standard that can be used (in place of conducting initial monitoring) to demonstrate that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level under any expected conditions of use [as mentioned in the preamble to the lead construction standard, this data could be industry-wide surveys that pertain to the conditions of the work day and laboratory product test results (other data may also be acceptable)].

Permissible Exposure Limit. An employee exposure, without regard to the use of a respirator, to an airborne concentration of lead of 50 micrograms per cubic meter, as averaged over an 8-hour workday.

Qualitative exposure assessment. Exposure assessment that is not based on quantitative analysis of data; that is, based on integration of information and judgment.

Quantitative exposure assessment. Exposure assessment that is based on quantitative data analysis; that is, based on accurate monitoring results.

Figure 1. Lead Medical Surveillance Process Flow Diagram.

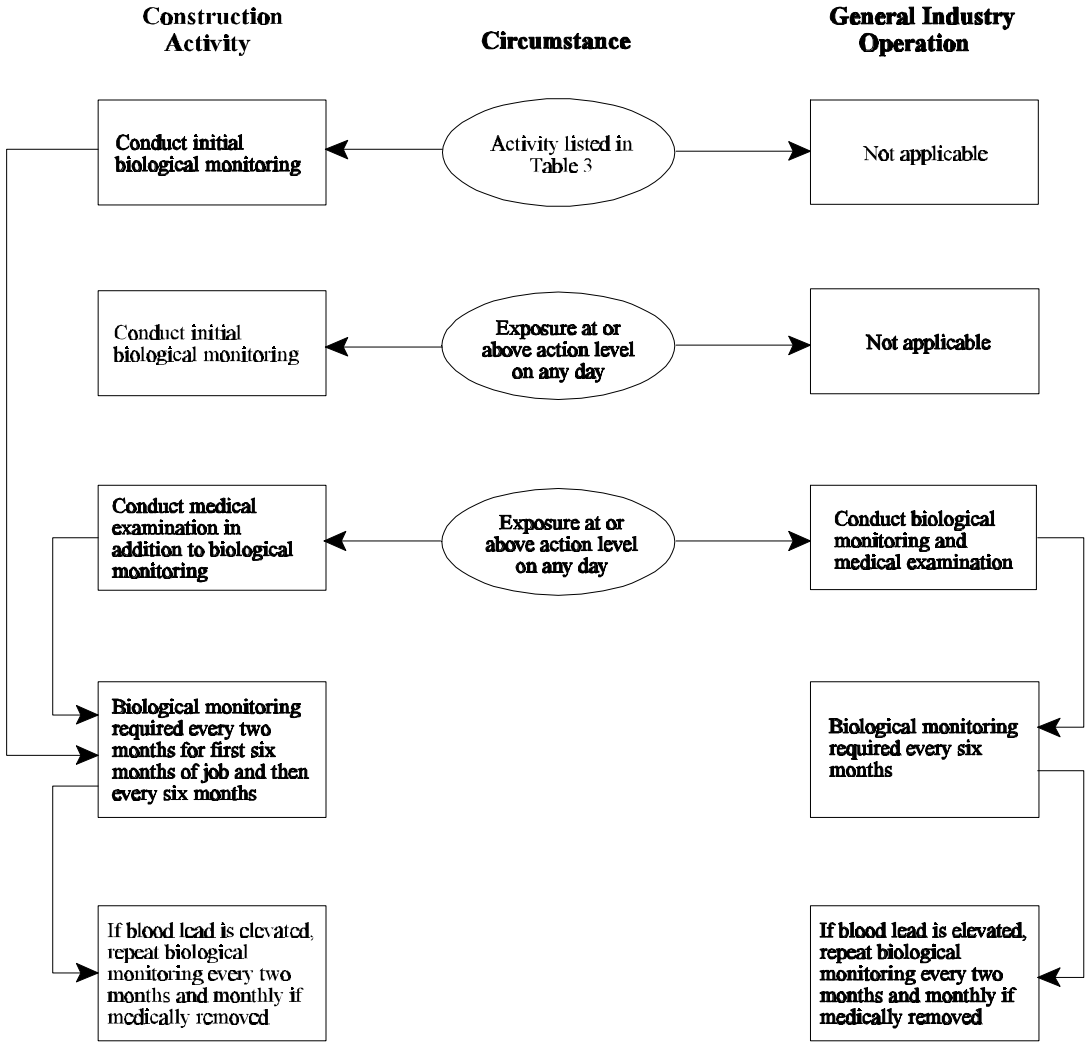

Table 1. Logic for Diminimus Hazard Decision or for Implementation of Lead Construction Standard.

1. Does the activity involve lead or lead materials at concentrations above 1,000 ppm.

   Yes - Proceed according to Table 2.

   No - Go to question 2.

2. When lead is present but concentrations are less than 1,000 ppm, is work expected to produce total dust levels above the ACGIH TLV of 10 mg/m3 as an 8-hour TWA, or does work involve heating/burning of the material which could produce lead fume?

   Yes - Proceed according to Table 2.

   No - Go to question 3.

3. Regardless of the lead material concentration, based on industrial hygiene hazard analysis, is there any reason to believe that exposures could be at or in excess of the action level?

   Yes - Proceed according to Table 2 or go to Question 4.

   No - No action required regarding lead construction standard, assuming the answers to questions 1-3 are "No."

4. Is historical exposure monitoring data in place that demonstrates that the activity (or very similar activities) does not result in lead exposures above the action level?

   No - Proceed according to Table 2.

   Yes - Document the rationale based on historical data. No action is required regarding the lead construction standard.

Table 2. Stepwise Process for Implementation of Lead Construction Standard.

1. Conduct a qualitative hazard analysis for the activity. Conduct quantitative lead surveys, as appropriate.

2. Review any historical lead exposure monitoring generated for similar types of activities.

3. Based on items 1 and 2, implement hazard controls, emphasizing feasible engineering, administrative, and work practice controls. Specify respiratory protection and personal protective equipment, as necessary, in addition to but not in replacement of other feasible controls.

4. Provide the appropriate level of training and medical surveillance to workers depending on anticipated or historical exposure levels and frequency of exposure. See Table 6 and Paragraphs 6.5 and 6.6.

5. For tasks specifically identified in Table 3, implement interim protective measures to include respiratory protection (see Table 3), personal protective clothing and equipment, change areas, hand washing facilities, biological monitoring, and training (hazard communication, respiratory protection, and safety training).

6. When the OSHA PEL is or is likely to be reached (including but not limited to those activities specified in Table 3), develop and implement a Lead Compliance Plan for the job. See Paragraph 6.3. Post warning signs.

7. Conduct initial exposure assessment during initial shift(s).

   NOTE: If recent (within 12 months) historical data are in place for similar jobs, historical data can be relied upon to satisfy initial monitoring requirements. See Paragraph 6.4 and Table 5.

8. For the current job as well as future similar jobs, maintain, modify, upgrade, or downgrade hazard controls and interim protective measures based on exposures. Also upgrade training and medical surveillance, as required based on exposures.

9. Depending on initial monitoring results and stability of conditions, conduct periodic monitoring for the activity, and maintain or modify controls as warranted. See Paragraph 6.4 and Table 5.

Table 3. Construction Activities That Require Respiratory Protection as an Interim Protective Measure[1].

Activity	Minimum Respiratory Protection Required[2]
Lead containing coatings or paints - manual demolition (e.g., dry walls), manual scraping, manual sanding, heat gun applications, power tool cleaning with dust collection system. Spray painting with lead paint. Others with possibility of exposures at or above PEL.	Respirator with Protection Factor (PF) of at least 10, such as half facepiece Air Purifying Respirator (APR).
Using lead containing mortar or lead burning. Lead containing coatings or paints - rivet busting, power tool cleaning without dust collection system, cleanup activities where dry expendable abrasives were used, movement/removal of enclosures used for abrasive blasting	Respirator with PF of at least 25 such as hooded/helmeted powered air purifying respirator (PAPR); or with PF of 50 such as full facepiece APR or tight fitting full facepiece PAPR.
Abrasive blasting, welding, cutting, torch burning on surfaces with lead containing coatings, or paints[3].	Respirator with PF of at least 1,000 or appropriate supplied air respirator with tight fitting facepiece operated in pressure demand mode or other positive pressure mode.

[1]Other interim protective measures are also required for these activities including PPE, change areas, handwashing facilities, biological monitoring, and certain training. Such measures must remain in place until exposure assessment demonstrates that they may be eliminated or relaxed.
[2]All APRs and PAPRs must be fitted with HEPA filters. Note that Protection Factors assigned to respirators for lead exposure may be different than those assigned for radiological protection, the asbestos standard, and the ANSI respiratory protection standard (e.g., a full facepiece APR or PAPR has a PF of only 50 for lead). Also refer to Table 1, Respiratory Protection for Lead Aerosols in 29 CFR 1926.62.
[3]Also see 29 CFR 1926.353 and 1926.354, regarding requirements for welding, cutting, and heating of metals with lead-bearing materials.

Table 4. Process for Implementation of the Lead General Industry Standard.

1. Conduct a qualitative hazard analysis for the operation.

2. Review any historical exposure monitoring data generated for the specific or similar operations.

3. Based on items 1 and 2, implement feasible engineering, administrative, and work practice controls to reduce exposures to below the PEL. If it is uncertain whether feasible controls will reduce the exposure to below the PEL, clearly document this situation, keep the feasible controls in place, and add respiratory protection and other personal protection controls.

4. Provide the appropriate level of training to workers based on whether exposures are anticipated to be below the action level or at or above the action level. See Table 6 and Paragraph 6.5.

5. Develop a Lead Compliance Plan if exposures are or are likely to be at or above the PEL, regardless of respiratory protection.

6. Conduct initial exposure assessment.

   NOTE: If historical data are in place for the specific or similar operations, then historical data can be used to satisfy initial sampling requirements. See Paragraph 6.4 and Table 5.

7. If exposures are above the action level, provide additional training if not already provided. Provide medical surveillance to workers exposed at or above the action level for 30 or more days per year.

8. Depending on exposures, maintain, modify, upgrade, or downgrade exposure controls, as appropriate.

9. If exposures are above the PEL, implement additional engineering, administrative, and work practice controls, if feasible to reduce exposure to below the PEL. If not feasible, implement respiratory and personal protection controls. Develop or modify the existing Lead Compliance Plan as appropriate. Provide additional training and medical surveillance, as required. See Paragraphs 6.5 and 6.6.

10. If exposures are above the PEL, provide change rooms, showers, and lunchrooms. Post warning signs.

11. Depending on initial monitoring results and stability of conditions, conduct periodic monitoring and maintain or modify controls as warranted based on results. See Paragraphs 6.4 and Table 5.

Table 5. Exposure Assessment Requirements for Construction and General Industry Activities and Operations.

	Circumstance	Action	Frequency
1.	Initial Determination (e.g., at project startup)	Conduct qualitative exposure assessment. Based on qualitative assessment, either take representative sample(s) of worst case exposure, or go to item 2	Follow-up based on results. See items 2-6.
2.	Possibility of exposure at or above action level either based on qualitative assessment or worst case monitoring	Take representative samples of each employee's exposure (e.g., representative of each job classification)	See items 3-6.
3.	If initial determination is less than action level	No further monitoring required, unless conditions change (go to item 6)	N/A, except for item 6.
4.	If exposure is at or above action level but below PEL	Repeat monitoring	Every 6 months or until 2 consecutive monitoring episodes taken at least 7 days apart are less than action level. Also see item 6.
5.	If exposure is at or above PEL	Repeat monitoring	Every 3 months or until 2 consecutive monitoring episodes taken at least 7 days apart are less than PEL. Also see item 6.
6.	If conditions change that could increase exposures or expose more employees	Conduct qualitative exposure assessment and repeat monitoring accordingly.	After any such change. Based on results of monitoring after change, repeat as per items 3-5. NOTE: Particularly for construction activities, work day conditions can vary frequently, therefore, regular and frequent monitoring may be appropriate.

Table 6. Lead Training Requirements General Industrial Standard.

Circumstance		Action
1.	Potential exposure to lead at any level.	Lead Hazard Communication Training comprised of information found in Appendices A and B of 29 CFR 1910.1025.
2.	Exposure at or above action level, or potential for skin/eye irritation*.	Lead Worker Training specified by 29 CFR 1910.1025 (1) (l) (v), prior to job assignment and annually.
3.	If respirators are used.	Respiratory Protection Training (can be included in lead worker training).

*Have IH make this determination. Some lead compounds are irritants.

Construction Standard

Circumstance		Action
1.	As an interim protective measure for activities in Table 3.	Hazard Communication Training (29 CFR 1926.59), Respiratory Protection Training, General Construction Safety Training (29 CFR 1926.21).
2.	Exposure at or above action level on any day, or potential for skin/eye irritation*.	Lead Worker Training specified by 29 CFR 1926.62 (l) (2), prior to job assignment and annually.
3.	If respirators are used.	Respiratory Protection Training (can be included in lead worker training).

*Have IH make this determination. Some lead compounds are irritants.

ATTACHMENT A

OBJECTIVE BASIS FOR ESTABLISHING A DIMINIMUS CONDITION FOR LEAD

The construction standard does not specify a diminimus level of lead in materials below which the requirements of the lead standard do not apply. It is noted in the preamble to the lead construction standard (58 FR 26590, May 4, 1993), that the construction standard applies to all occupational exposure to lead in all construction work in which lead, **in any amount,** is present in an occupationally related context. Exposure of employees to the **ambient environment** which may contain small concentrations of lead unrelated to the job is **not** subject to the standard (i.e., soils containing normal ambient concentrations of lead). Where the source of lead is employment related, all exposure to lead is covered by the standard.

The preamble goes on to state that although the standard may apply to a particular activity that involves materials containing small lead concentrations, almost all of the obligations in the standard are triggered by certain minimum levels of lead **exposure**. For example, periodic exposure monitoring and medical surveillance are required only if employee exposure is in excess of the action level (AL). This distinction is made to differentiate between hazardous and relatively unhazardous work operations and to impose obligations commensurate to the degree of hazard present. It is, therefore, not the intent of the standard to require compliance with all provisions where exposure to lead is at levels insignificant to workers' health.

The preamble also explains the logic for not establishing a diminimus level of lead in materials. The rationale points out the difficulty in relying on material concentrations to predict airborne concentrations, because of the variability based on activity and material type. Therefore, OSHA opted to trigger obligations of the standard based on personal exposures (i.e., the action level and permissible exposure limit.)

A diminimus level of lead, therefore, cannot be defined in this Lead Control Program that would be applicable to all materials and all activities. However, a defensible rationale can be developed for a diminimus condition that combines a lead-in-material concentration threshold with a co-located indicator parameter (total particulate matter) as well as builds in a safety factor.

For the purposes of this Lead Control Program, dust or mist generating activities are generally safe from occupational exposure to lead above the AL (a) when the total lead content of materials involved is less than 1,000 ug/g (ppm) (0.1%) and (b) when total particulate matter in the breathing zone of workers are maintained below the Threshold Limit Value (TLV) of 10 mg/m3 as an 8-hour TWA. Both of these criteria must be met. This diminimus condition does not apply to lead fume generating activities (i.e. heat producing activities such as welding and burning).

ATTACHMENT A

OBJECTIVE BASIS FOR ESTABLISHING A DIMINIMUS CONDITION FOR LEAD (cont.)

The objective basis for this diminimus condition is as follows. For a material with a total lead concentration of 1,000 ug/g, total airborne particulate concentrations of 30 mg/m3 would have to be generated in the breathing zone of a worker over an 8 hour workshift to result in a lead exposure at the action level. This total particulate concentration is three times greater than the TLV of 10 mg/m3 for total particulate matter. To apply this 1,000 ug/g (0.1%) criterion, line management must ensure that total particulate concentrations in the breathing zone of workers, regardless of respiratory protection, are controlled to below the total particulate TLV of 10 mg/m3, which offers a three fold margin of safety for lead exposure relative to the action level. This diminimus condition does not apply to fume generating activities, because heat can selectively liberate lead fume from the material into the air and the worker's breathing zone.

This diminimus condition is based on fundamental industrial hygiene principles and not based on regulation. As such, its application must be done with industrial hygiene input based on a hazard analysis of jobs and tasks. Other accepted risk assessment or industrial hygiene analyses may also be acceptable for defining diminimus conditions.

It is the intent of Industrial Hygiene Programs to coordinate exposure monitoring of representative projects to validate and/or refine this diminimus condition for site-wide application.

ATTACHMENT B

GUIDANCE FOR ADDRESSING EXPOSURES ABOVE THE OSHA PEL

The following guidance is provided to address situations where exposure occurred at levels above the OSHA Permissible Exposure Limit (PEL), and where workers were not adequately protected with respiratory protective equipment. Line management supported by industrial hygiene should take the following action.

- For general industry activities, evaluate whether exposure above the action level is/was possible. If so, ensure that the exposed employee(s) receive(s) medical examination and consultation including, but not limited to biological monitoring. See Section 4.6. For construction activities exceeding the PEL, biological monitoring is required as an interim protective measure; therefore, it must be provided if exposure is expected to exceed (or has exceeded) the PEL, even once.

- Evaluate and determine the source and cause of exposure. If feasible, eliminate or mitigate the source or cause by such techniques as substitution of materials, use of alternate technologies or methods, remediation of the source under controlled means, etc.

- If the source and cause cannot be eliminated, implement or upgrade control measures for the current activity and similar future activities. Engineering, administrative, and work practice controls are preferred over respiratory and personal protective equipment controls.

- Implement other applicable requirements of the Lead Control Program, based on whether exposure above the action level and PEL (regardless of respiratory protection) is likely to continue.

- Determine exposures with the upgraded controls in place.

- Maintain or modify upgraded control measures, as appropriate based on exposure results. Conduct periodic monitoring to ensure control measures remain effective.

- Distribute information concerning the exposure and actions taken to control the exposure to other line organizations, industrial hygienists, and CHG Industrial Hygiene Programs so that appropriate controls can be implemented site wide for similar activities.