

Northwestern

Lead Management

Environmental Health and Safety

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I. Purpose

This program establishes the processes and procedures designed to protect the Northwestern community from the hazards associated with exposure to lead through evaluation, reporting, training, notification, safe work practices, medical surveillance, personal protective equipment, mitigation, and abatement.

II. Scope

This program applies to those who perform service or maintenance activities (e.g., Northwestern employees or contractors) or may otherwise encounter lead-based paint and other lead-containing materials on campus property. This program also applies to the removal and disposal of lead-containing materials from campus property. This program does not apply to contractor-controlled sites, lead in drinking water, or lead associated with [welding, cutting, and brazing \(hot work\)](#).

III. Responsibilities

A. Environmental Health and Safety (EHS)

- i. Adhere to the requirements of this program.
- ii. Review and revise this program, as necessary.
- iii. Coordinate and/or administer training (see **Section IX – Training**) and exposure monitoring (see **Section VII – Occupational Air Monitoring**), when necessary.
- iv. May develop safe work practices and lead compliance plans for employee activities that may disturb limited amounts of lead-containing materials (e.g., limited sanding, scraping, stabilizing lead-based paint).
- v. Provide consultation and guidance, as necessary and upon request, to identify, evaluate, and control potential exposure to lead.
- vi. Review the scope of construction and renovation projects that may disturb lead-containing materials to ensure they meet regulatory requirements and the requirements of this program.
- vii. Maintain an inventory of the type, quantity, and location of known lead-containing materials, building materials that have been tested for lead content, and lead-containing materials that have been abated or removed.
- viii. Coordinate with Facilities, Project Managers, schools, units, and contractors to facilitate material sampling and analysis, abatement, removal, air monitoring, and lead compliance plan development as necessary.

B. Schools and Units

- i. Adhere to the requirements of this program.
- ii. Ensure employees complete all required training (see **Section IX – Training**).
- iii. Ensure employees do not disturb lead-containing materials without appropriate training, procedures, and approval.
- iv. Inform employees, contractors, and other relevant parties of the location of known or assumed lead-containing materials where individuals may be exposed to lead.

- v. If suspected lead is discovered and may be disturbed by work or other activities, stop work, and contact EHS to coordinate sampling, analysis, and abatement, if necessary, before work is continued.
- vi. Provide resources and funding for material sampling, laboratory analysis, abatement, removal, air monitoring, and medical surveillance, when necessary.
- vii. Coordinate with EHS and qualified and licensed contractors to identify project scopes, material sampling and analysis, abatement, and air monitoring.
- viii. Provide material sampling results, reports, abatement plans, and air monitoring results to EHS for review.

C. Project Managers (including those who oversee activities that may encounter lead)

- i. Adhere to the requirements of this program.
- ii. Complete all required training (see **Section IX – Training**).
- iii. For activities that are not covered by an established lead compliance plan, notify EHS and other affected parties of any known or suspected lead-containing materials that have been disturbed, damaged, appear deteriorated, or may be disturbed by planned activities.
- iv. Inform EHS of all material sampling. Coordinate material sampling with EHS, as necessary and when requested.
- v. Ensure project-specific lead compliance plans are developed, submitted to EHS for approval, and adhered to whenever known or assumed lead-containing materials will be disturbed.
- vi. Provide material sampling results, reports, abatement plans, and air monitoring results to EHS for review.

D. Employees

- i. Adhere to the requirements of this program.
- ii. Complete all required training (see **Section IX – Training**).
- iii. Are not permitted to disturb any material that is known or assumed to contain lead without appropriate training, procedures, and an approved lead compliance plan.
- vii. Adhere to project-specific lead compliance plans whenever known or assumed lead-containing materials will be disturbed.
- iv. Notify a supervisor or EHS immediately if known or suspected lead-containing materials have potentially been disturbed.

E. Contractors (e.g., Maintenance, Operations, Construction)

- i. Adhere to the requirements of this program.
- ii. Ensure subcontractors adhere to the requirements of this program.
- iii. Ensure employees complete all applicable lead training, as required (see **Section IX – Training**).
- iv. Inform employees, subcontractors, and Northwestern project managers of the location of known or suspected lead-containing materials where individuals may be exposed to lead.
- v. Develop, submit to EHS, and adhere to a project-specific lead compliance plan whenever known or assumed lead-containing materials will be disturbed.
- vi. Notify a Northwestern Project Manager or EHS immediately if known or suspected lead-containing materials have potentially been disturbed.

- vii. Contractors performing work subject to the Lead Renovation, Repair, and Painting (RRP) Rule must be Lead-Safe Certified Renovators, and firms must be certified, in accordance with 40 CFR 745 Subpart E (see **Section VI – Requirements for Residential and Child-Occupied Facilities**).

F. Environmental Health Consultants and Abatement Contractors

- i. Adhere to the requirements of this program.
- ii. Perform work in accordance with all applicable federal, state, and local rules and regulations.
- iii. Ensure that subcontractors adhere to the requirements of this program.
- iv. Ensure that employees are appropriately licensed, qualified, and trained for the scope of work.
- v. Contractors performing lead abatement and mitigation must submit a notification to the Illinois Department of Public Health (IDPH) at least 7 calendar days prior to the commencement of any lead abatement or lead mitigation project in a residential or childcare facility. Copies of the notification must be shared with EHS and Northwestern Project Managers.
- vi. Abatement contractors must develop and submit to the Illinois Department of Public Health (IDPH) a Work Practice and Occupant Protection Plan for each lead abatement or lead mitigation project, in accordance with 77 IAC Part 845 Section 255. The Work Practice and Occupant Protection Plan must also be submitted to EHS and Northwestern Project Managers and will serve as the lead compliance plan for the project.
- vii. Coordinate inspections, material sampling, testing (e.g., X-ray fluorescence), abatement, and removal activities with Facilities, EHS, and project managers, as necessary.
- viii. Perform air monitoring, as necessary (see **Section VII – Occupational Air Monitoring**).
- ix. Provide thorough project scopes, testing, analysis, reporting, recommendations, and records of service(s) performed on Northwestern property.

IV. Identification and Sampling

- A. EHS must be notified of any known or suspected lead-containing materials that may be disturbed, have been disturbed, or must be disturbed to facilitate repairs, maintenance, renovation projects, or for any other reason, except for routine employee activities that are covered by an established lead compliance plan (e.g., limited sanding, scraping, stabilizing lead-containing paint).
- B. Paint and coatings in buildings constructed before 1978 must be assumed to contain lead unless testing and documentation demonstrate otherwise.
- C. The overall objective is to remove all known or suspected lead-containing materials. However, lead-containing materials that are in good condition (e.g., non-deteriorated lead-based paint) and do not present a danger to individuals as determined by EHS or a qualified environmental health consultant, may be left in place with appropriate recordkeeping (see **Section X – Recordkeeping**). Deteriorated lead-containing materials must be stabilized, removed, or otherwise addressed to no longer present a potential source of lead exposure.
- D. All activities that may disturb suspected lead-containing materials must stop until:

- i. Analysis confirms that the material does not contain lead, or
 - ii. An approved lead compliance plan is developed.
- E. EHS must be informed of all material sampling prior to sampling.
- F. When a lead inspection is performed in a building, reasonable efforts should be made to sample all suspect materials in the building for lead to avoid repeated sampling in the same location.
- G. Potential lead-containing materials must be assessed by either bulk sampling and analysis or the use of an X-ray fluorescence (XRF) analyzer.
- H. Survey reports must include analytical results and recommendations for abatement and must be communicated to EHS, project managers, and applicable schools and units, including Facilities, as necessary.

V. Work Practices

- A. Lead-based paint and other lead-containing materials must not be disturbed (e.g., cut, scraped, sanded, abraded, welded, brazed, etc.) unless specific criteria are met, including but not limited to, appropriate training, safe work practices, engineering controls, and personal protective equipment.
- B. Activities that will disturb known or assumed lead-containing materials must be performed using safe work practices according to a task- or project-specific lead compliance plan.
 - i. EHS may establish lead compliance plans for routine employee activities (e.g., limited sanding, scraping, or stabilizing lead-containing paint).
 - ii. When an established lead compliance plan is not available or does not apply to the scope of work, a project-specific lead compliance plan must be developed and submitted on the EHS [website](#) with at least 5 days' notice and approved by EHS prior to the start of work. Each plan will describe the scope of the project and the measures in place to minimize exposure to lead.
- C. General Lead Work Practices
 - i. Work area preparation
 - a) When employees are or may be exposed to airborne lead concentrations above the OSHA action level (AL), the following work area preparations must be in place:
 - (1) Use barrier tape to restrict access to the work area.
 - (2) Remove movable furniture and protect any non-movable furniture, floors, and other horizontal surfaces with polyethylene sheeting.
 - (3) For exterior renovations, the ground must be covered, and vertical containments must be erected as necessary to contain dust and debris within the work area.
 - (4) Isolate the ventilation system and seal vents, windows, and doors within the work area to prevent the spread of lead-contaminated dust.
 - (5) Post signage (see **Appendix A**) stating:

DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD

CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK, OR SMOKE IN THIS AREA

- ii. Prohibited work practices
 - a) The following work practices are prohibited in lead work areas:
 - (1) Open flame burning or torching
 - (2) Sanding, grinding, planing, needle gunning, or blasting with power tools and equipment not equipped with a shroud and HEPA vacuum attachment
 - (3) Using a heat gun at temperatures greater than 1100 °F
- iii. Personal protective equipment
 - a) Employees that are or may be exposed to lead above the OSHA AL must use the following personal protective equipment:
 - (1) Disposable coveralls or a similar full-body suit
 - (2) Gloves, hats, and shoe coverings
 - (3) Respiratory protection, as necessary
 - (a) Northwestern employees using respiratory protection must undergo appropriate training, medical clearance, and fit testing, in accordance with Northwestern's [Respiratory Protection Program](#).
 - (b) Contractors and subcontractors are responsible for adherence to their own respiratory protection programs in accordance with 29 CFR 1910.134 and 29 CFR 1926.103.
- iv. Housekeeping practices
 - a) Work areas must be kept as free as practicable from accumulations of lead.
 - b) Lead dust must be cleaned using high-efficiency particulate air (HEPA) filtered vacuums.
 - c) The use of compressed air or dry sweeping to clean up lead-containing materials is prohibited.
- v. Hygiene facilities
 - a) When employees are or may be exposed to airborne lead concentrations above the OSHA AL, handwashing facilities must be provided at or near the work area.
 - b) Change areas in accordance with 29 CFR 1926.62 must be established at the work area.
 - c) Personal protective equipment must be HEPA-vacuumed and removed prior to exiting the lead work area.
 - d) Employees must wash their hands upon exiting the work area and prior to eating, drinking, or smoking.
 - e) Employees must wash their hands and face at the conclusion of each work shift.
- vi. Waste disposal
 - a) Lead waste, including contaminated protective clothing, must be collected, bagged, and labeled at the end of each work shift. The waste must be labeled as lead-containing waste with an appropriate label (See **Appendix B**), stating:

DANGER
CLOTHING AND EQUIPMENT CONTAMINATED WITH LEAD.
MAY DAMAGE FERTILITY OR THE UNBORN CHILD.
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM.
DO NOT EAT, DRINK, OR SMOKE WHEN HANDLING.
DO NOT REMOVE DUST BY BLOWING OR SHAKING.
DISPOSE OF LEAD-CONTAMINATED WASH WATER IN ACCORDANCE WITH
APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

- b) When Northwestern employee activities generate lead-containing waste, waste bags will be stored at designated hazardous waste accumulation sites and disposed of by Northwestern's hazardous waste disposal vendor.
- c) When contractor activities generate lead-containing waste, contractors must ensure that it is properly stored and disposed of in accordance with all applicable regulations.

VI. Requirements for Residential and Child-Occupied Facilities

A. Lead Renovation, Repair, and Painting (RRP) Requirements

- i. Renovations in residential or child-occupied (as defined by 40 CFR 745 Subpart E) buildings built before 1978 are subject to the Lead Renovation, Repair, and Painting (RRP) Rule if they disturb interior painted surfaces of more than 6 square feet in a single room, more than 20 square feet of any exterior painted surface, or involve the renovation or replacement of windows.
- ii. All renovations subject to the RRP Rule must be completed by EPA Certified Renovators in accordance with 40 CFR 745 Subpart E.
- iii. In addition to the requirements of **Section V – Work Practices**, special requirements for RRP projects include, but are not limited to:
 - a) Certified renovators must engage the Northwestern Project Manager to ensure that the EPA Renovate Right pamphlet is distributed to all building occupants.
 - b) At each entrance to the work area where the RRP Rule applies, signs must be posted stating

CAUTION
RENOVATION WORK
DO NOT ENTER WORK AREA UNLESS AUTHORIZED
NO SMOKING, EATING, OR DRINKING

- c) At the conclusion of work, the certified renovator must verify clean conditions using the EPA RRP cleaning verification card.

B. Lead Abatement and Mitigation

- i. Lead abatement is defined as any activity designed to permanently eliminate lead exposure or remove lead-bearing substances in a residential or childcare facility. Lead abatement does not refer to RRP projects that incidentally disturb lead-bearing substances. Lead mitigation (e.g., stabilization or encapsulation) is

defined as the remediation of a lead hazard so that a lead-bearing substance does not pose an immediate health hazard to humans.

- ii. In addition to the requirements of **Section V – Work Practices**, lead abatement and mitigation must be performed by licensed lead workers using work area preparations, work practices, and clearance procedures for lead in accordance with 77 IAC 845.
- iii. Contractors performing lead abatement and mitigation must submit a notification to the Illinois Department of Public Health (IDPH) at least 7 calendar days prior to the commencement of any lead abatement or lead mitigation project in a residential or childcare facility.
- iv. Contractors performing lead abatement and mitigation must develop a project-specific Work Practice and Occupant Protection Plan, in accordance with 77 IAC 845. The Work Practice and Occupant Protection Plan must also be submitted to EHS and Northwestern Project Managers and will serve as the lead compliance plan for the project.

VII. Occupational Air Monitoring

A. Personal exposure monitoring

- i. Whenever the potential exists for employee exposure to airborne lead concentrations above the OSHA AL of $30 \mu\text{g}/\text{m}^3$, initial representative personal exposure monitoring must be performed.
- ii. Objective data used to demonstrate that a specific process, operation, or activity involving lead cannot result in employee exposure to lead at or above the OSHA AL must meet the requirements of 29 CFR 1926.62.
- iii. Periodic exposure monitoring
 - a) If the results of the initial exposure monitoring indicate that employee exposure to airborne lead concentrations is greater than or equal to the OSHA AL of $30 \mu\text{g}/\text{m}^3$, periodic exposure monitoring is required.
 - b) If employee exposure is greater than or equal to the OSHA AL of $30 \mu\text{g}/\text{m}^3$ and less than the OSHA Permissible Exposure Limit (PEL) of $50 \mu\text{g}/\text{m}^3$, exposure monitoring must be repeated every 3 months.
 - c) Periodic exposure monitoring may be discontinued if results from two consecutive sampling periods, taken at least 7 days apart, indicate that employee exposure is below the OSHA AL of $30 \mu\text{g}/\text{m}^3$.
- iv. Unless and until a negative exposure assessment is produced demonstrating that employee exposure will remain below the AL, employees engaged in activities that disturb lead must be provided with interim controls in accordance with 29 CFR 1926.62(d)(2)(v), including
 - a) Until employee exposure monitoring is complete and demonstrates that employee exposure is below the OSHA PEL, the employee exposure level must be assumed based on the requirements found in 29 CFR 1926.62(d)(2), and appropriate respiratory protection must be used to maintain employee exposure below the PEL.
 - b) Personal protective clothing and equipment
 - c) Change areas
 - d) Hand washing facilities
 - e) Biological monitoring (see **Section VIII - Medical Surveillance Program**)

- f) Training in accordance with **Section IX – Training**
- B. EHS reserves the right to require perimeter air monitoring when lead work that may produce airborne concentrations above the OSHA AL occurs adjacent to an occupied area or other employees.
- C. Lead air samples must be collected and analyzed by NIOSH Method 7082, 7105, 7300, 7701, 7702, or an equivalent method.
- D. Records of air monitoring must include:
 - i. The date, number, duration, location, and results of the samples
 - ii. The name and job classification of the monitored employee
 - iii. A description of the respiratory protection used
 - iv. A description of the sampling and analytical method used
- E. Within five days of the receipt of laboratory results, EHS will share the monitoring results with the department and monitored employees. If the monitoring results indicate an exposure above the PEL, EHS will include necessary steps to reduce exposure.

VIII. Medical Surveillance Program

- A. Initial Biological Monitoring
 - i. Any employee who is or may be exposed on any day to airborne lead concentrations above the OSHA action level (AL) of $30 \mu\text{g}/\text{m}^3$ will have the opportunity to receive baseline biological monitoring for blood lead level (BLL) and zinc protoporphyrin and be enrolled in the medical surveillance program.
 - ii. Any employee potentially exposed to airborne lead concentrations at or above the AL for more than 30 days in any 12-month period, or any employee exposed to any amount of lead who develops symptoms of lead exposure, will undergo baseline biological monitoring for blood lead level (BLL) and zinc protoporphyrin and be enrolled in the medical surveillance program.
- B. Periodic Biological Monitoring
 - i. Employees enrolled in the medical surveillance program who are exposed to lead above the OSHA AL will undergo periodic biological monitoring for blood lead levels and zinc protoporphyrin every 2 months for the first 6 months, and every 6 months thereafter.
 - ii. Employees enrolled in the medical surveillance program with blood lead levels above $40 \mu\text{g}/\text{dl}$ will undergo periodic biological monitoring for blood lead levels and zinc protoporphyrin every 2 months until two consecutive tests indicate blood lead levels below $40 \mu\text{g}/\text{dl}$.
- C. Medical Removal
 - i. Elevated Blood Lead Level
 - a) Employees with blood lead levels at or above $50 \mu\text{g}/\text{dl}$ (as confirmed by a follow-up test) will be temporarily removed from tasks that present an exposure to lead at or above the OSHA AL.
 - b) If biological monitoring indicates that an employee's blood lead level is at or above the level for medical removal (i.e., $40 \mu\text{g}/\text{dl}$), the employee will be informed about the requirements for medical removal and the associated Medical Removal Protection benefits.

- ii. Final Medical Determination
 - a) Employees for whom a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition that places the employee at increased risk of material impairment to health from exposure to lead will be temporarily removed from tasks that present an exposure to lead at or above the OSHA AL.
 - b) If a final medical determination recommends special protective measures or limitations on exposure, these recommendations must be implemented.
- iii. Return to Former Job Status following Medical Removal
 - a) Employees removed due to a blood lead level may return to normal job duties when two consecutive blood samples indicate that the employee's blood lead level is below 40 µg/dl.
 - b) Employees removed or restricted due to a final medical determination may return to normal job duties and/or remove any job limitations when a subsequent final medical determination finds that the employee is no longer at increased risk from exposure to lead.
- iv. Northwestern will provide up to 18 months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited, in accordance with 29 CFR 1926.62(k)(2). These benefits include, but are not limited to maintaining the total normal earnings, seniority, and other employment rights and benefits of an employee, including the employee's right to his or her former job status.
- D. Medical examinations and consultations must be made available to employees exposed to lead above the OSHA AL for more than 30 days in any consecutive 12 months and in accordance with the requirements found in 29 CFR 1926.62(j)(3).
- E. All medical evaluations, including multiple physician reviews, will be free of cost to employees and take place at a reasonable time and place.
- F. Biological monitoring results must be shared with the employee within 5 days.

IX. Training

- A. Northwestern employees must complete training, as follows:
 - i. Those who have the potential for hazardous chemical exposure (e.g., lead exposure) must complete annual [Hazard Communication](#) training, in accordance with Northwestern's [Hazard Communication Program](#).
 - ii. Online [Lead Awareness](#) training must be completed by employees annually who may perform maintenance and repair work near lead-containing materials.
 - iii. In addition to the requirements of **Section IX.A.i-ii**, employees who perform maintenance, construction, repair, or renovation activities during which they may disturb lead-containing materials must first complete additional training (e.g., RRP Training) and are subject to the requirements for the applicable periodic refresher training.
 - iv. Northwestern employees who are required to use respiratory protection must complete annual [Respirator Training and Fit Testing](#) in accordance with Northwestern's [Respiratory Protection Program](#).

- B. Contractors (including subcontractors) must ensure employees:
 - i. Who may be exposed to lead receive training in accordance with 29 CFR 1926.62, 29 CFR 1910.1025, and 40 CFR 745 Subpart E, as applicable.
 - ii. Who perform renovations subject to the RRP Rule are trained and certified in accordance with 40 CFR 745 Subpart E.
 - iii. Who perform lead abatement or mitigation are trained and licensed in accordance with 40 CFR 745 Subpart E and 77 IAC 845.
 - iv. Who are required to use respiratory protection receive training in accordance with 29 CFR 1910.134 and 29 CFR 1926.103.

X. Recordkeeping

- A. Project managers must forward all project scopes, sampling and analytical reports, abatement records, and air monitoring results to EHS for recordkeeping.
- B. EHS will maintain records of lead testing and the type, quantity, and location of all known lead-containing materials that have been identified, removed, encapsulated, enclosed, or repaired. These records will be maintained for at least the life of the building or structure where the materials are found.
- C. EHS will provide records of lead testing to schools, units, and contractors upon request and in the event of a potential exposure.
- D. Training records will be maintained by EHS in myHR Learn and kept for the duration of employment, plus 1 year.
- E. EHS will maintain records of medical removals for at least the duration of the employee's employment.
- F. Records of employee exposure monitoring and medical surveillance will be maintained by EHS for at least 40 years or for the duration of the monitored employee's employment and 20 years thereafter, whichever is longer.
- G. If objective data is used to determine employee exposure levels, records of the objective data will be maintained by EHS for at least 30 years.

XI. Regulatory Authority

Northwestern and its contractors will comply with the Occupational Safety and Health Administration's (OSHA) standards and any other applicable codes and standards, including:

[OSHA 29 CFR 1910.1025 – Lead in General Industry](#)

[OSHA 29 CFR 1926.62 – Lead in Construction](#)

[OSHA 29 CFR 1910.1200 – Hazard Communication](#)

[OSHA 29 CFR 1910.134 – Respiratory Protection in General Industry](#)

[EPA 40 CFR 745 – Lead-Based Paint Poisoning Prevention in Certain Residential Structures](#)

[US DOT Hazardous Material Regulation – 49 CFR Part 171](#)

[EPA 40 CFR 61 – National Emissions Standards for Hazardous Air Pollutants](#)

[77 IAC 845 – Illinois Lead Poisoning Prevention Code](#)

[Northwestern University Hazard Communication Program](#)

[Northwestern University Personal Protective Equipment Program](#)

[Northwestern University Respiratory Protection Program](#)

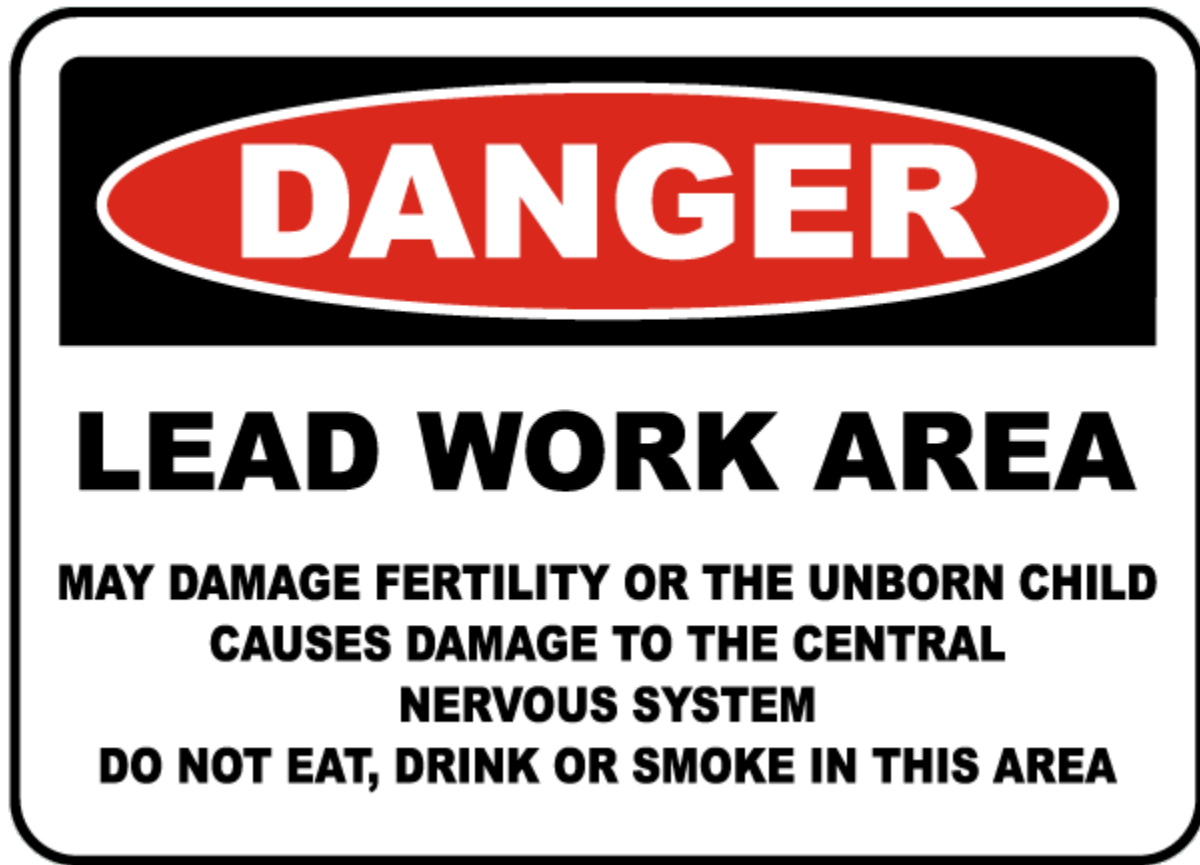
[Northwestern University Contractor Safety Program](#)

[Northwestern University Hot Work Program](#)

XII. Contact

For questions, contact Environmental Health and Safety at ehs@northwestern.edu.

Appendix A – Lead Work Area Signage Example



Appendix B – Lead Waste Label Example

