LEAD SAFETY AND LEAD AWARENESS TRAINING

Dee Cramer Inc.

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SOLDERING AND LEAD EXPOSURE

Background: When absorbed into the body in certain doses, lead is a toxic substance. Lead can be absorbed by inhalation (breathing) and ingestion (eating). Lead is not absorbed through the skin. Inhalation of airborne lead is generally the most significant source of occupational lead absorption. Lead can be absorbed through the digestive system if it is swallowed. Inhaled lead dust or particles or ingested lead is circulated by the blood throughout the body, and stored in various organs and body tissues. Some lead is quickly filtered out of the body and excreted, other remains in the blood and other tissues. Excess lead stored in body tissues can slowly cause irreversible damage, first to individual cells, then to organs and whole body systems.

Short-term Acute Over-Exposure to Lead

Lead is a potent, systemic poison which serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill in a matter of days. Lead adversely affects numerous body systems, and causes forms of health impairment and disease which arise after periods of exposure as short as a few days. Children are especially sensitive to the effects of lead and experience health effects at much lower exposure levels than adults.

Long-term Chronic Over-Exposure to Lead

Chronic or long-term over exposure to lead may result in severe damage to blood-forming, nervous, urinary and reproductive systems. Common symptoms of chronic over-exposure to lead include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, excessive tiredness, muscle and joint pain or soreness, numbness, dizziness, hyperactivity, and colic. Severe forms of over-exposure include damage to the central nervous system, kidney disease, and impaired male and female reproductive systems. The best way to prevent all forms of lead-related health impairments and diseases, short- and long-term, is to maintain low levels of lead in the blood.

Training: Must –

1. Include review of Appendices A & B of the Lead Standard (1910.1025)
2. Occur initially for any employee at time of hire, during orientation or before initial assignment to work areas where lead is suspected. Annual refresher training thereafter.
3. Cover the specific nature of expected tasks or operations that could result in exposure above the action level.
4. All training is to be documented in writing and kept secured but available to appropriate employees through the Safety Office.

Lead Exposure in Sheet Metal Work

Certain activities performed in sheet metal work emit lead or may occur where lead is present and may result in exposure to lead above permissible levels:

- Soldering lead on lead, preparatory work and assistance (our primary exposure)
- Industrial exposure to operations with lead dust exp. (e.g. Our work in battery plants)

Action Level:

The Action Level is any employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m^3) averaged over an 8-hour day. The action level initiates several requirements of the lead standard, including exposure monitoring, medical surveillance, training and education.

Permissible Exposure Level (PEL):

The PEL is the maximum allowable exposure to lead of fifty micrograms per cubic meter of air (50 ug/m^3) averaged over an 8-hour day. All efforts must be made to prevent any employee exposure to lead at concentrations greater than fifty micrograms per cubic meter of air over an 8-hour period. Any length of exposure above the PEL will require the use of respirators to supplement other engineering or work practice controls, including work rotation (reduction of total hours of exposure per day).

Exposure Monitoring:

Exposure monitoring is atmospheric monitoring of breathing air for the presence of lead. Full shift personal air monitoring sampling services, representative of our worker's regular, daily exposure to lead, will be provided by our company through available industrial hygiene services of Michigan MIOSHA, our worker's compensation insurance carrier or other services. For initial air monitoring results above the action level, atmospheric monitoring at a minimum will occur every six months; for exposures above the PEL, every three months. Monitoring continues until two consecutive results are below the action level. Results, in writing, are sent to our company and reviewed with all affected employees within fifteen days. Corrective actions, to reduce exposure to or below the PEL if needed, will be communicated at the same time.

Medical Surveillance:

Under the supervision of a physician or other licensed healthcare professional (PLHCP), regular medical exams will be available at no cost and at a reasonable time and place for all employees per the following:

- Employees who are or may be occupationally exposed to lead at or above the action level (AL) for 30 or more days a year.
- Prior to first-time assignment to an area in which airborne concentrations of lead are at or above the Action Level.
- If worker has demonstrated difficulty in breathing during a respirator fit test or during use of the respirator.
- Or, who are experiencing signs or symptoms of the adverse health effects associated with lead exposure.
- Or, who are exposed in an emergency.

The program includes biological monitoring (blood lead and ZPP level sampling and analysis), as well as medical examinations. Blood sampling and monitoring will be conducted every 6 months until two consecutive blood samples & analysis are acceptable. Sampling and monitoring will be performed at least monthly during the medical removal (from exposure) period. Any employee with elevated blood levels will be temporarily removed. Employees will be notified in writing within five days when lead levels are not acceptable.

A written medical opinion from the PLHCP will be obtained for each medical examination performed on each employee and a copy provided to the examined employee. Administration of the medical surveillance program is through the safety office.

Site Specific Compliance Program

Main Fabrication Plant, Field OPS

1. As a work practice control all solder operations will be performed outside of any shop production or field construction facility as possible. An area (s) will be located and prepared for soldering operations to take place (regulated work areas). Warning signs will be posted in any work area where the PEL is exceeded. EMPLOYEES MUST ABIDE BY ALL WARNING SIGNS, LABELS, ASSESSMENT REPORTS AND NEVER DISTRUB ANY LEAD CONTAINING MATERIAL. Respirator use will be required during the installation or implementation of engineering or work practice controls, where such controls are insufficient and during emergencies.
2. Soldering that will take place inside of a building or facility, including in or near occupied work areas or inside of any confined space, must use local exhausting equipment, as engineering controls, to safely remove fumes, gases and vapors, and to prevent circulation of same to occupied areas within the facility. Portable or installed fans or other air movement systems are not to be used.
    a) Additional air monitoring of soldering operations is to take place to verify if, with the use of local exhaust controls, exposures to lead are at or below permissible levels.
    b) The soldering work area should be detached from other work areas or be cordoned off with safety cones or stanchions with Red Danger tape. Employees other than those working with lead, as well as equipment, tools and material are not to enter this work area while lead work is being performed and prior to clean-up of the site.
3. A clipboard or other information system will be kept at or near the solder area, used to record the day and length of time of each employee's soldering work.

This information will be used to track days of soldering exposure per 12-month periods.

4. All shop and field craftworkers who perform or are likely to perform soldering tasks must at a minimum have completed review and training to this written program.
5. Where respirator use will be required assigned workers:
   a) Must have competed a medical evaluation and received safety office fit-testing and training in respirator purpose, selection, use and limitations plus care/maintenance/disposal of respirators.
   b) Must have completed initial or baseline medical surveillance biological monitoring with blood sampling for lead and zinc protoporphyrin levels.
   c) May be required to participate in additional blood lead tests to periodically monitor accumulated exposure days to lead from soldering operation.
   d) Are offered medical exams (see above).
6. The use of company supplied and approved respiratory masks, gloves, hats, vented goggles, aprons that cover the sleeves and disposable shoe covers (work conditions permitting) are required for all soldering work, shop and field, that is expected or could be at or above the Action Level for lead. These and other required personal protective equipment are supplied at no cost to the employee.
   a) Contaminated PPE are to be left in the work area when leaving for break, lunch, other tasks, end of shift. Employees should wash thoroughly before eating, drinking, smoking and leaving at the end of the day. Upon returning to the work area, workers can continue use of their PPE or obtain replacements.
   b) At no time is lead to be removed from protective clothing or the work area by any means which result in uncontrolled dispersal of lead into the air. (Brushing, use of compressed air, etc.) Wet-wipe of work tables, other surfaces is an acceptable method of clean-up. Clothes and tops and bottoms of work boots/shoes can be vacuumed. (Vacuum w/HEPA filtration required.) Towels, rags, etc. used are to be disposed in appropriate waste containers. Any company provided clothing that can be cleaned will be laundered at least weekly.

c) Remove respirators last; dispose of HEPA filters in appropriate waste containers, rinse respirator with water, dry and store for future use.
d) Disposable aprons, booties and gloves are to be removed by carefully rolling each garment piece to reduce exposure to dust, then disposing of the various garments in appropriate waste containers, gloves last. **Wash hands and face even if contact with lead materials is not suspected.**

7. Work station and tools are to be cleaned at the end of each soldering task.
    a) In addition to HEPA-vacuuming referenced above,
    b) All hand and power tools and equipment that have been exposed to lead dust must be decontaminated prior to leaving the work site. This is to include electric drills, grinders, all other power tools; hammers, snips, pliers, all other hand tools, and all other equipment including welding leads, power extension cords, ladders, rigging equipment, etc. Cleaning procedure is as follow:
        - Use of D-Lead Soap or equivalent, concentrated in spray water bottle, with warm running water over contaminated tool/equipment.
        - Uses of scrubbing pads, in addition to above, to remove contaminate.
        - Electric tools to be immersed in water/soap mixture and scrubbed as necessary.
        - Steam cleaning is an alternative on large or hard to clean or reach equipment.
8. When exposures would be or are above the PEL a lunch room, hygiene, shower, and changing facilities will be provided.
9. When working on mulit-contractor worksites, plans must be in place to protect Dee Cramer, Inc employees from any lead exposures.

This site specific compliance program is to be reviewed and updated as needed annually. Further information on protection around lead can be found in the OSHA Lead Standards, 1926.62 Construction and 1910.1025 General Industry, including Appendices A and B with information on medical surveillance and medical removal protection, all available through the safety office.