

## Lead Safety Awareness

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### PURPOSE

This Bulletin provides information on the safe handling of lead and lead compounds during use and storage. Improper handling of lead and lead compounds may impact operations at Department of Energy (DOE) facilities.

### BACKGROUND

Lead is found in batteries, pipes, solder, various metal products, electrical equipment, many paints prior to 1978, corrosion resistant industrial paints, radiation shielding, and ammunition. In addition, the Department has thousands of tons of lead and waste lead stored at sites throughout the DOE complex. In 2006, the DOE Office of Inspector General inspected a facility housing lead bricks at the Nevada Test Site and reported concerns regarding lead contamination ([INS-O-06-02](#)). Similar conditions may exist at other DOE facilities where lead is used or stored.

DOE records show 24 safety incidents involving lead and lead compounds over the past 5 years. Almost 60 percent of the occurrences resulted in worker exposures and unsafe exposure levels in work spaces. The remaining cases involved environmental concerns and potential lead hazards not properly identified or analyzed.

### WHAT ARE THE HAZARDS?

Lead is absorbed primarily through the lungs and stomach, is cumulative in the body, and can potentially cause lead poisoning. Left untreated, lead poisoning can damage the blood-forming system, internal organs, including the reproductive system, kidneys, nervous system, and the brain. Symptoms of chronic overexposure include metallic taste in the mouth, nausea, weakness, insomnia, headache, tremors, numbness, and severe abdominal pain. Severe lead poisoning can lead to seizures, coma, and death.

### OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS AND OTHER FEDERAL REQUIREMENTS

OSHA standards 29 CFR 1910.1025 and 29 CFR 1926.62 set a permissible exposure limit (PEL) of fifty micrograms of lead per cubic meter of air ( $50 \text{ ug/m}^3$ ), averaged over an 8-hour work-day. For potentially higher exposure levels, appropriate respirators, protective work clothing, and other controls must be used. Furthermore, OSHA requires monitoring of affected workers for lead exposure when the OSHA action level of  $30 \text{ ug/m}^3$  is anticipated.

In addition, OSHA requires a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust.

Waste lead and lead-containing cleanup residues (such as dust from vacuuming) may be designated hazardous wastes, as defined in 40 CFR 261, and special handling and worker training may be required under applicable sections of 40 CFR 262 through 268. Furthermore, releases of reportable quantities of lead-containing wastes or compounds require reporting in accordance with 40 CFR 302.

### CONTROLLING THE HAZARDS:

#### LEAD STORAGE

- Use inventory tracking to facilitate proper lead storage and to keep lead inventories to a minimum.
- Store lead in containers or covered in specially designed areas.
- Routinely monitor lead inventories to check for lead dust contamination.

#### GENERAL GOOD WORK PRACTICES

- When necessary, seal off the work area with 6 mil flexible plastic sheeting and wear properly fitting High Efficiency Particulate Air (HEPA) respirator and protective clothing and equipment.
- Post warning signs where lead exposure may occur.
- Clean-up with a HEPA vacuum; for small areas and where a HEPA vacuum is unavailable, wet-clean surfaces with soap having phosphates (the latter binds with lead).
- Never remove lead paint by power-sanding or grinding without a HEPA vacuum attached.
- Never remove lead paint by open torch or high heat gun settings; the process creates highly toxic fumes and dust.
- Contained blasting or pressure washing can be used, but only by certified lead abatement workers.
- Cleaning affected areas should take place during the workday and after the job to minimize contamination.
- Do not bring contaminated clothing home.

#### ADDITIONAL SOURCES OF INFORMATION

- Your Safety and Health Office
- Information on the Web on OSHA Standards and guidance and DOE Operating Experience Summary Report 2004-21: <http://www.osha.gov/SLTC/lead/index.html>  
<http://www.hss.energy.gov/csa/analysis/oesummary/oesummary2004.html>

#### SUMMARY

Exposure to lead can be avoided. Use appropriate respirators and other controls whenever necessary.

If you have any questions, please contact Dr. Bill McArthur by telephone at (301) 903-9674 or at [bill.mcarthur@hq.doe.gov](mailto:bill.mcarthur@hq.doe.gov).

(signed)

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## PREVENT EVENTS

### Learning from Industry Experience

**PREVENT EVENTS is intended for use by personnel during morning meetings, pre-job briefings, and work unit meetings to communicate key industry experience.**

#### Management:

1. Are we using lead blocks, bricks, sheets, or bags of lead shot, and do we store such materials on site?
2. Is our lead shielding inventory properly stored in containers or covered in designated areas?
3. Do we use inventory tracking to facilitate proper lead storage and to keep lead inventories to a minimum?
4. Are our safety and health people and affected workers aware of OSHA's requirement that all surfaces in our lead storage be maintained as free as practical of lead dust?
5. Do we have written procedures for handling lead, lead compounds, and lead wastes?
6. What training have we provided our workers on working with lead and lead compounds?
7. Have we made available to our workforce the personal protective equipment (PPE) to work safely with lead?
8. If workers are exposed to lead above the PEL, are we prepared to provide them the change rooms, showers, and filtered air lunchrooms that OSHA requires?
9. What training have we provided our workers on characterization of lead-containing wastes and reporting of unpermitted releases?

#### Supervisors and Workers:

1. Do we need respirators and other PPE for the job?
2. Is there a respiratory protection program or written procedures to help us select, use, and properly fit the appropriate respirator?
3. Are warning signs posted where lead exposure could occur?
4. Do we need to seal off the work area with plastic sheets or other means?
5. Will the air in the work area be sampled periodically to confirm an acceptable air quality for work?
6. Are there change rooms, showers, and filtered air lunchrooms available to workers if we are exposed to lead above the PEL?
7. In lunchrooms to be used by workers exposed in excess of the PEL, how is the lead dust to be removed from the PPE before entering?
8. Do we need medical examinations because of possible overexposure?
9. Have all employees for the job been properly trained?

