

Lead Awareness Training



Training Requirements

- Required if you are exposed to lead at or above the action level or if you suffer from skin or eye irritation from lead.
- Includes:
 - Specific job hazards from lead.
 - Protective measures, engineering controls & work practices to be taken.
 - Dangers of lead to your body.
 - Accessibility to written program/regulations.
 - Description of the medical surveillance program & medical removal program.

What is Lead?



- Heavy metal at room temperature
- Bluish-gray
- Low melting point
- Pliable
- Corrosion resistant
- Can form lead compounds

In what products was lead commonly used?



- Gasoline (phase-out began 1980)
- Smelting
- Lead batteries (25-78% of all lead used in U.S.)
- Paints and coatings
- Solder
- Auto manufacturing
- Printing

History

- Late 1950's – Paint manufacturers voluntarily reduced lead content of most paint for residential use.
- 1978 – CPSC limits paint for residential use to 600 ppm.
- Lead paint for non-residential use is still sold.

Where is lead paint found?

■ Before 1950

- Everywhere – inside and outside (all coatings)

■ Between 1950~1960

- Probably outside, may be inside
- Trims, doors, windows, kitchens, bathrooms, etc.

■ Between 1960~1978

- May be outside, less likely inside

****Before 1978 we assume lead!!!*



What is “lead paint”

- EPA/HUD/DHS Definition

1.0 mg/cm² 5000 ppm 0.5%

- Cal-OSHA Definition

Any detectable amount

Where could I find lead on campus?



Buildings on Campus & Year Built

- Chicano House ~ 1963
- Asian American House ~ 1965
- Nautilus Center – 1965
- Engineering and Auditorium – 1965
- Kinesiology – 1962
- Nordhoff Hall – 1963
- Science 1 & 2 – 1960
- Boiler House (old) ~ 1959

When is lead paint a “hazard”

EPA Standard (March 2001)

- Paint of friction surface where dust below exceeds hazardous amount (next slide)
- Damaged paint on impact surface
- Chewable surface where evidence of teeth marks
- Any deteriorated lead-based paint (no size amount)

Hazard???

- $\geq 40\mu\text{g}/\text{ft}^2$ is considered lead contaminated dust

Problem: Sanding 1 ft² of paint with 1.0 mg/cm² lead will result in 93,000 $\mu\text{g}/\text{ft}^2$ lead in dust on floors

- Dry sanding “any detectible” lead will probably result in excess lead in dust

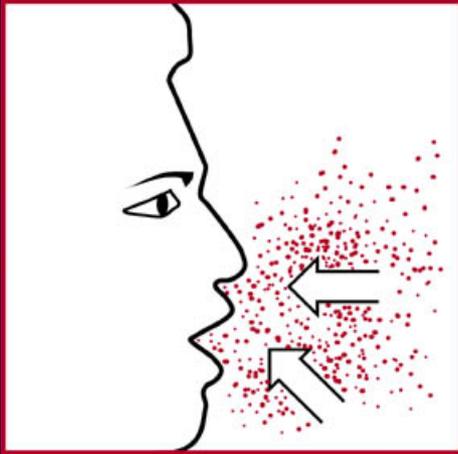
Could I find lead outside of campus?



- If your home was built before 1978, it may contain lead based paint.
- Hobbies: stained glass, home remodeling or painting, recreational target shooting, melting lead for fishing weights, lead glaze in ceramics.
- Non-occupational exposures: backyard scrap metal recycling, leaded crystal tableware, cookware, folk remedies, pica, mine tailings, beauty products (eye make up, certain hair dyes).



Ways in which lead enters the body



- Inhalation ~ Breathing lead fumes or dust. This is the most common route of entry in the workplace.



- Ingestion ~ Swallowing lead dust via food, cigarettes etc.

Health Effects

- Lead which is inhaled or ingested gets into the bloodstream.
- Can be circulated throughout your body.
- Some is excreted while some remains in organs and body tissues.
- If exposure continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting.

Health Effects

During prolonged chronic exposure, many body systems can be affected by lead, including:

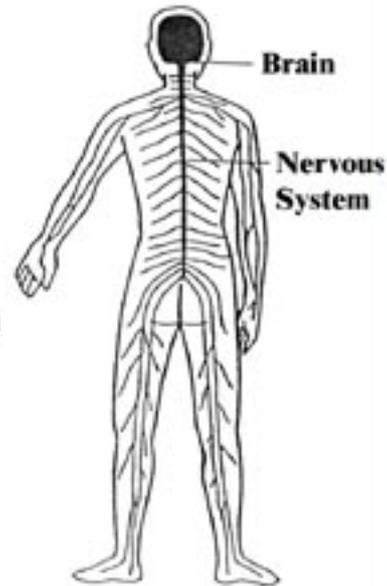
- brain, kidneys
- muscles, bones
- blood forming & reproductive systems

Reported acute health effects include flu-like illness, encephalopathy, coma and death.

Health Effects

Nervous System and Brain

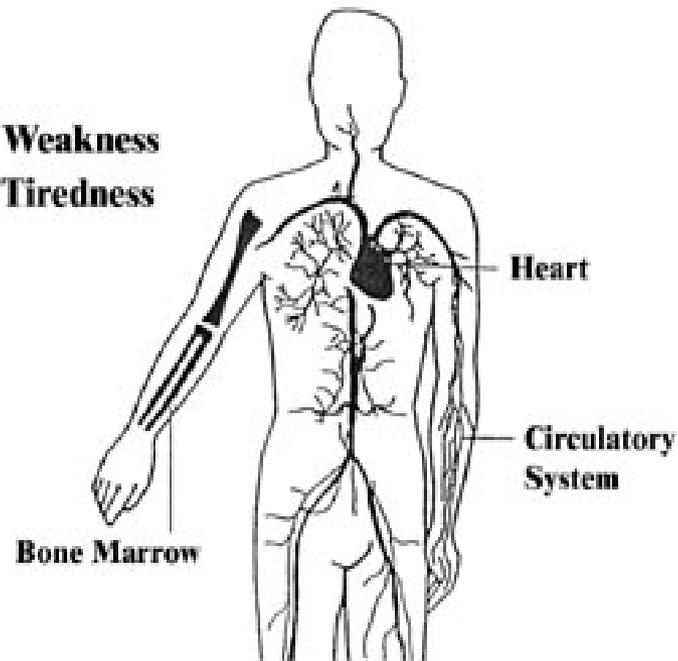
- **Headaches**
- **Tired all the time**
- **Irritability**
- **Moodiness**
- **Poor concentration**
- **Memory loss**
- **Shakiness**
- **Weakness in arms and legs**



Health Effects

Blood-Forming System

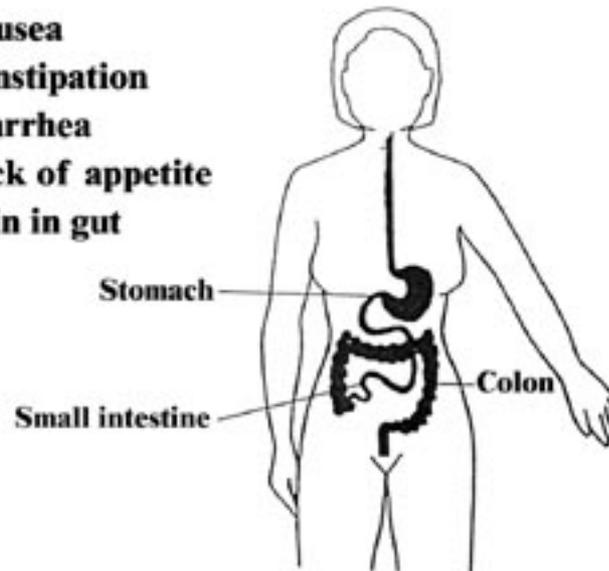
- Weakness
- Tiredness



Health Effects

Digestive System

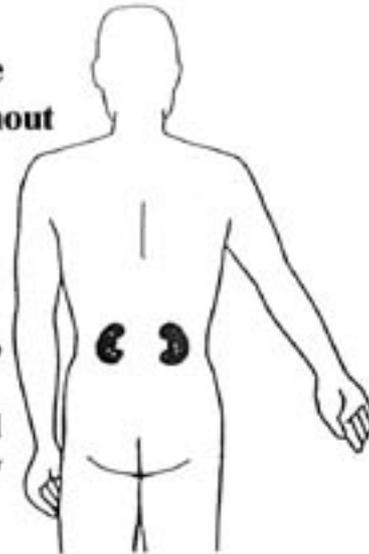
- Nausea
- Constipation
- Diarrhea
- Lack of appetite
- Pain in gut



Health Effects

Kidneys/Reproductive System

- **High blood pressure**
- **Damage occurs without knowing it**
- **Kidney failure can cause death**
- **Men – Impotence, decreased sex drive, sterility**
- **Women – decreased sex drive, infertility**



How is lead exposure measured?

- PEL: You are allowed to be exposed up to the **P**ermissible **E**xposure **L**imit established by OSHA of $50 \mu\text{g}/\text{m}^3$ based on an 8-hour time weighted average.
- Action Level: OSHA established an Action Level of $30 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter of air) based on an 8 hour time weighted average.



Exposure Monitoring

- Initial air monitoring & determination include employee complaints of symptoms which may be attributable to exposure to lead.
- If action level has been exceeded, then an air monitoring program is required.
- If exposed to lead, you must be notified in writing of the air monitoring results.
- If PEL is exceeded, you will be informed in writing of air monitoring results and a description of corrective actions to be taken.
- If exposure is between the AL and PEL, then exposure is checked every six months.
- If over the PEL, air monitoring is conducted every three months.

Medical Surveillance Program

Workers exposed to lead **above** the action level must be in a Medical Surveillance Program.

This includes:

- Blood tests for lead: Blood Lead Level (BBL) and Zinc Protoporphyrin (ZPP). Does not include tissues or organ information.
- Medical examinations
- Removal from lead exposure if worker health is at risk (Medical Removal Protection)
- Chelation: Use of certain drugs to remove lead from the body. Used only in severe cases of lead poisoning and only by a qualified MD.

Medical Removal Protection (MRP)

- MRP protects you when engineering & administrative controls, work practices and respirators have failed to provide protection.
- Temporary removal from regular job to a different job with significantly lower exposure.
- No loss of earnings, seniority, rights or benefits.
- Maximum 18 month period.
- Allows your body to naturally excrete the lead.
- Includes blood lead level criteria/schedules.

Engineering Controls



- Shrouded tools provide exhaust ventilation at the point where the dust is generated.
- High Efficiency Particulate Air (HEPA) filters on vacuums are capable of capturing very small dust particles with a 99.97% efficiency.

Respiratory Protection



- Used when other types of controls are not sufficient to reduce lead exposure to below PEL.



- Additional training is required to wear a respirator.

PPE (Personal Protective Equipment)



- Used to keep lead dust off your body and clothes

Housekeeping/Work Practices

- Use exhaust ventilation to capture dust/fumes whenever possible;
- HEPA vacuum dust covered work surfaces; **dry sweeping or compressed air is prohibited**; wet methods may be used;
- Do not eat, drink, smoke or apply cosmetics in areas where lead is present;
- Wash hands and face after lead work;
- Wear protective clothing to avoid getting dust on your clothes and then bringing it home to spouse and children.

Other stuff

- Signage: Signs shall be posted if above the PEL

WARNING

LEAD WORK AREA

POISON

NO SMOKING OR EATING

- Record keeping:

- Exposure Monitoring: records must be maintained for 40 years or for duration of employment plus 20 years.
- Medical Surveillance: same as exposure monitoring
- Medical Removals: duration of employment