

Did You Know that ...

1. Lead occurs naturally as an element in the earth.
2. Lead can be recycled and reused.
3. 90% of lead dust in soil will still be there 70 to 200 years later.
4. Lead can be dangerous to your health.

# LEAD IN INDUSTRY

## A GUIDE FOR EMPLOYERS & EMPLOYEES



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# LEAD IN INDUSTRY

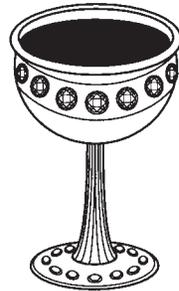
Throughout history, lead has been a very useful metal. In ancient times, lead was just a by-product of silver production.



Because it was corrosion resistant, had a low melting point, and could be easily shaped lead itself came into common use.

Egyptians used lead for:  
Sculpture  
Fishing net sinkers  
Jewelry  
Dishes

Romans used large amounts of lead for:  
Roofs  
Cooking pots  
Ships  
Water supply lines and cisterns  
Weights



And even to sweeten their wines!

A large portion of lead used today is in the automobile industry as:

Storage batteries  
Radiators



Solder for joints  
Gasoline additives



Wash hands and face before eating

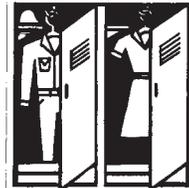


Eat a well-balanced diet  
Fasting **can** increase **lead absorption**  
A proper diet **can** reduce **lead absorption**

## Lead dust on clothes can be carried home and harm children



Shower  
Wash hair  
Change into clean clothes and shoes before leaving the workplace



Store street clothes in a separate locker from work clothes

The Texas Department of Health can provide an evaluation of health hazards in your workplace, including exposure to lead. For FREE consultation services call or write:

Texas Department of State Health Services  
P.O. Box 149347  
Austin, Texas 78714  
512-458-7269  
Toll Free 1-800-588-1248

Reference: Occupational Safety & Health Administration 29 CFR 1910.1025  
ATSDR Toxicological Profiles, 1990

Employees should be trained and provided with adequate facilities and equipment so they can avoid breathing or eating lead dust or fumes.

## WHAT AN EMPLOYEE CAN DO

Avoid, whenever possible, breathing in or eating lead dust or fumes



Use the ventilation systems  
Know how they work and  
Make sure they are working correctly



Use the correct respirator  
Make sure It is clean  
It is in good repair  
It fits properly



Keep work area clean  
Do not use compressed air to remove lead dust  
Use a vacuum with a high efficiency filter or  
wet cleaning methods



Do not eat, drink, or smoke in work areas  
Eat in a properly constructed lunchroom

We use lead paint where corrosion can be a significant problem, as on **ships**.



We also may use lead in:

- |                                 |                       |
|---------------------------------|-----------------------|
| Radiation shields               | Plumbing              |
| Chemical tank linings           | Bullets               |
| Pottery                         | Crystal glassware     |
| Wire                            | Stained glass windows |
| Telephone & power cable conduit |                       |

Lead exposure in the workplace became a problem during the Industrial Revolution. Today it continues to be a problem.

We know a lot about lead and how it affects our health, but exposure is sometimes hard to control.

Lead can enter the body through breathing or eating. Absorbing lead through the skin is rare. Compounds like gasoline additives can be absorbed through the skin.

Most work exposures are from breathing lead dusts and fumes. This fume turns into tiny dust particles that can stay in the air for up to 10 hours. A person can easily breathe in this fine dust. The dust also can contaminate objects.

Lead can be swallowed when employees eat, drink, and smoke on the worksite; or when they carelessly handle contaminated objects.

Lead is a strong poison that serves no known use in the body.  
The body stores lead in the:

BLOOD - **for about a month**  
BODY ORGANS - **for several months**  
BONES - **for decades**

It affects the: Brain and nervous system  
Digestive system  
Reproductive system  
Kidneys  
Ability to make blood

Lead poisoning can occur at:  
**High** exposure levels over a **short time (acute)** OR  
**Low** exposure levels over a **long time (chronic)**

Chronic poisoning is more common in industry.

Small amounts of lead can build up in the body and may cause either temporary or permanent damage.

An elevated blood lead level means lead is building up faster than the body can get rid of it.

Chronic poisoning causes a wide range of symptoms, many of which imitate other diseases.

### Early Signs and Symptoms

|                       |                |
|-----------------------|----------------|
| Fatigue               | Uneasy stomach |
| Sleeplessness         | Poor appetite  |
| Metallic taste        | Headache       |
| Numbness              | Irritability   |
| Reproductive problems | Nervousness    |

### PROVIDE MEDICAL SCREENING

### PROVIDE MEDICAL REMOVAL

### EATING AND CHANGING

**Provide** worker training on:

- The OSHA Lead Standard
- How to handle lead correctly
- How lead affects your health
- Ways to protect yourself
- Use of:
  - Effective worker respiratory protection
  - Equipment
  - Clothing

**Provide** for workers:

- Medical surveillance, including blood sampling for lead and zinc protoporphyrin levels  
Blood lead levels should be below 40 micrograms per 100 milliliters of blood.
- Medical exams and consultations if worker
  - Has elevated blood lead level
  - Has symptoms of lead poisoning
  - Has difficulty in using respirator
  - Is on medical removal program
  - Is exposed to airborne lead at OSHA Action Level
- Medical removal protection when worker has very high blood lead levels

**Provide** medical removal protection in cases of overexposure.

**Provide** lunchrooms, showers, and clean change rooms.

**WHEN air monitoring shows lead above PEL:**

- **Post** a warning sign in each work area where lead exposure exceeds PEL
- **Install** local exhaust ventilation or other engineering or work practice measures so worker exposure does not exceed PEL

**Provide:**

- Air monitoring every 3 months
- Worker training annually
- Medical surveillance
- Medical exams and consultations
- Medical removal protection
- Showers
- Clean changing rooms
- Separate storage for street clothes from soiled work clothes
- **Be sure** that workers shower and change before leaving worksite

**Provide & Train** worker on use of:

- Effective worker respiratory protection
- Equipment
- Clothing, including
  - coveralls
  - gloves
  - goggles
  - shoes
- **Be sure** they use it
- **Provide** lunchroom with conditioned air and positive pressure
- **Be sure** workers wash before eating, drinking, or smoking
- **Do Not Permit** eating, drinking, or smoking in work areas

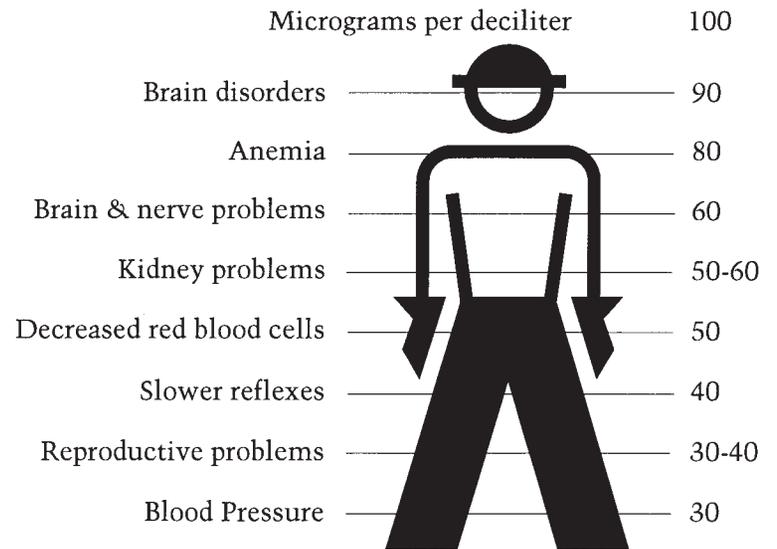
**Later Signs and Symptoms**

Memory problems  
 Stomach aches or pains  
 Nausea  
 Weight loss  
 Constipation

Kidney problems  
 Premature loss of teeth  
 Muscle and joint pains  
 Weak wrists or ankles  
 Decreased life span

Extreme cases of lead poisoning can result in convulsions, coma, or death.

**Health Effects in Adults**



Health effects begin at approximately these levels, but not everyone experiences them.

## SAFETY REGULATIONS- THE LEAD STANDARD

Many work activities can cause exposure to lead. The Occupational Safety and Health Administration (OSHA) Lead Standard requires employers to make the workplace safe.

The Lead Standard lists what an employer must do based on the amount of lead found in the workplace air. It:

- Sets a limit on lead in the air – the Permissible Exposure Limit or PEL
- Provides ways for reducing exposure
- Requires medical surveillance of employees to see if their bodies are absorbing excessive lead
- Requires medical removal protection in cases of over exposure

Even in work areas where airborne lead is below the PEL, eating lead dust can cause a problem. It is very important to keep the workplace clean.

Take-home lead on the clothing and body of a worker also can harm the worker and his family. The standard requires:

- Showers
- Clean change rooms
- Lunchrooms for employees

Chelation treatment to reduce the amount of lead in the body is to be done only under the supervision of a physician. It is not to be used routinely to keep blood lead at acceptable levels.

You must comply with ALL the Standard. This is only a summary of the requirements.

## WHAT AN EMPLOYER MUST DO

### LIMIT EXPOSURE

The lead PEL for workers may not be greater than 50 micrograms per cubic meter of air over an 8-hour period.

### MONITOR

MONITOR for lead concentrations in the air in:

- EACH Work area
- EACH Shift
- EACH Job classification

**WHEN air monitoring:**  
**Reaches OSHA Action Limit**  
**(Above 30 micrograms per cubic meter)**  
**BUT**  
**Below OSHA Exposure Limit or PEL**  
**(50 micrograms per cubic meter)**

### Provide:

- Air monitoring every 6 months
- Worker training annually
- Medical surveillance
- Medical exams and consultations
- Medical removal protection