The New Lead Standards

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Occupational Lead Poisoning Prevention Program

California Department of Public Health
Learning objectives

• Discuss the health effects of lead
• Identify best practices for preventing exposure
• Recognize the challenges in occupational blood lead surveillance
• Describe Cal/OSHA lead standards proposed updates
Occupational Lead Poisoning Prevention Program (OLPPP)

- Established in 1991
- Manage the California Occupational Blood Lead Registry
- Investigate work-related lead poisoning cases
- Provide information and technical assistance
- Conduct projects and training
- Not enforcement, refer some cases to Cal/OSHA
- Health effects
- Routes of exposure
- Take-home lead
Changing Blood Lead Level Goals

*micrograms per deciliter

**BLL 40***

General Industry Standard 1978

**BLL 25***

California BLL Reporting Threshold 1987

**BLL 10***

Lead in Construction Standard 1993

**BLL 5***

CDC BLL of Concern 2009 - 2015

1970’s 1980’s 1990’s 2000’s
Lead poisoning symptoms

Symptoms are often not felt

- Cardiovascular - high blood pressure
- Neurological - headache, dizziness, mood changes, difficulty concentrating, coordination problems
- GI - stomachache, nausea, constipation
- Reproductive - decreased sex drive, infertility. Miscarriage in women.
- Muscular - muscle or joint aches.
### Chronic exposure at low levels: 5-10 μg/dL

<table>
<thead>
<tr>
<th>Type of effect</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Neurological</strong></td>
<td>Increased incidence of essential tremor</td>
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<tr>
<td></td>
<td>Psychiatric effects, decrease in hearing, and cognitive function (limited evidence)</td>
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<tr>
<td><strong>Cardiovascular</strong></td>
<td>Increased blood pressure, and risk of hypertension</td>
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<tr>
<td></td>
<td>Increased cardiovascular related mortality and ECG abnormalities (limited evidence)</td>
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<tr>
<td><strong>Renal</strong></td>
<td>Decreased kidney function</td>
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<tr>
<td><strong>Reproductive &amp; Developmental</strong></td>
<td>Decreased fetal growth in pregnant women</td>
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<tr>
<td></td>
<td>Increase of spontaneous abortion &amp; preterm birth</td>
</tr>
<tr>
<td></td>
<td>Decreased fertility (limited evidence)</td>
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</tbody>
</table>
Routes of exposure

Inhalation

Ingestion
Take-home lead exposure

Children, pregnant and breast feeding women are most vulnerable
Polling question

What is the best way to avoid take-home lead exposure?

A. Wash hands and face before leaving work
B. Leave your work shoes at the jobsite
C. Take a shower at the end of your shift and leave your work clothes and shoes at the jobsite
D. Take your clothes off as soon as get home and take a shower
Who is exposed?

Exposure in general industry and construction.
In pairs: Who is exposed to lead on the job?

Discuss with your neighbor and write down
• Three industries with lead exposure
• Three construction jobs or tasks with lead exposure
Lead exposure in general industry

- Battery manufacturing and recycling
- Lead recovery from scrap metal or electronics
- Manufacturing of
  - plumbing fixtures
  - metal valves
  - aircraft & aircraft parts
- Ship building or repair
- Shooting ranges & other ammunition-related industries
- Radiator repair
- Foundries (brass, bronze, lead)
Lead in construction

- Residential renovation, remodeling or demolition (built before 1978)
- Sanding, scraping, burning, or disturbing lead paint
- Welding or torch cutting lead-painted metal
- Welding on metal structures
- Abrasive blasting
- Construction or repair of bridges, water towers, tanks, roofing
- Lead abatement
Surveillance

Current surveillance data and challenges
More than 6,000 California workers were poisoned by lead on the job between 2012 and 2014.

Many workers exposed to lead at work are never tested.

Source: California Department of Public Health, Occupational Lead Poisoning Prevention Program, 2017
California Workers Tested, 2012-2014

38,440 workers tested
14,002 tested at least twice
2,782 had at least two results ≥ 5 µg/dL
1,363 had at least two results ≥ 10 µg/dL
Workers with BLLs ≥ 10 µg/dL by industry sector

2012-2014

Manufacturing 60%

Construction 14%

Arts, Entertainment, and Recreation 6%

Unknown 2%

Other 11%

Wholesale trade 7%
Cal/OSHA Standards

CDPH health-based recommendations

Occupational Lead Poisoning Prevention Program
Controls – what would you do?

- Read the scenario
- Two minutes to write your suggested controls on post-its and post on your pyramid
- One writer per group
- One person to report back
- Pens down when we call time

Diagram:
- Elimination or substitution
- Engineering controls
- Administrative controls
- PPE
Scenario

Carlos is starting his first day on the jobsite. He will be removing paint from an old Victorian home in San Francisco.

The foreman is on a coffee-run, but Carlos is eager to get started. In the clothes he wore to work, he climbs the ladder to meet his coworkers on the scaffolding and begin his shift.

What controls can you put in place to protect Carlos from lead exposure?
Cal/OSHA lead standards

Scope

• **General Industry**: all except construction and agricultural operations
• **Construction**: including alteration and/or repair, painting and decorating
• Elemental lead, all inorganic lead compounds, lead soaps.

Out of scope

• Other organic lead compounds
CDPH recommendations

2010-2011: CDPH recommendations to Cal/OSHA for revising both the General Industry and Construction Lead Standards

• Require BL testing for all lead-exposed workers regardless of air monitoring results because
  • Hazardous exposures can occur even where air lead levels are low (through ingestion)
  • Many employers never do air monitoring
CDPH health-based PEL recommendation, 2013

• Prevent BLLs 5 – 10 µg/dL over 40 years worked

• PEL = 8-hr TWA of 0.5 – 2.1 µg/m³

• At 0.5 µg/m³
  • 95% of workers’ BLLs stay under 5 µg/dL

• At 2.1 µg/m³
  • 95% of workers’ BLLs stay under 10 µg/dL
  • 57% stay under 5 µg/dL
Discussion draft highlights

- Trigger for BLL testing not solely dependent on air monitoring
- More frequent BLL testing
- Lower medical removal protection level
  - $2 \text{ BLL} \geq 20 \mu g/dL$ or $1 \text{ BLL} \geq 30 \mu g/dL$
  - currently 50-60
- CAL/OSHA draft $\text{PEL} = 10 \mu g/m^3$ TWA
  - currently 50
- CAL/OSHA draft action level = 2 $\mu g/m^3$ TWA
  - currently 30
Cal/OSHA’s 20 steps to develop an OH standard (simplified)

1. Research to prepare text for new or updated standard
2. Pre-rulemaking package to OSHA Standards Board
3. Administrative reviews
4. Notice of proposed rulemaking
5. Standards Board holds public hearing, 45 days for public comments, standard may be revised
6. Standards Board votes on the standard
Lead in Construction and General Industry. Cal/OSHA submitted a standardized regulatory impact analysis (SRIA) to the Department of Finance (DOF). After DOF approves the SRIA, Cal/OSHA and Director’s Office staff will revise the Initial Statement of Reasons (ISOR) accordingly. Cal/OSHA anticipates submitting a draft rulemaking package to Standards Board staff in late 2019.

Next steps

Collaborate with OLPPP
What you can do

• Respond to the OSH Standards Board during public comment period
• At public meeting
• In writing

Work with OLPPP to develop & disseminate tools for compliance

Cal/OSHA standards board, proposed regulations: https://www.dir.ca.gov/oshsb/proposedregulations.html
Outreach & education

Develop or update training and education for employers, workers, & physicians

Partner with stakeholders to assess needs
Interested in lead?
Come work with us!

Current CDPH-OLPPP Vacancies
• Industrial hygienist
• OLPPP Chief
Occupational Health Watch

• Monthly e-newsletter
• Latest news and resources that promote worker health safety


• Lead Poisoning Prevention Week
• Manual materials handling - Preventing Injuries from Moving Heavy Materials
• Preventing Valley Fever in Construction Workers
• Workplace Emergency Plans
• Cannabis: Workplace Health and Safety
Thank You

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