



N.C. Department of Labor OSHA 125 Course

- ***29 CFR 1910.1025 Lead Standard***
- ***29 CFR 1926.62 Lead Standard***

Lead Stuff

- We don't eat lead paint chips!
 - We consume lead dust, its easier to swallow
 - Same with children
- Lead interacts with our bodies
 - Word

What Industries?

Battery manufacturing
Chemical industry
Construction workers
Demolition workers
Firing-range instructors
Foundry workers
Gas-station attendants
Gasoline additives
production
Jewelers
Lead miners
Lead smelters and refiners

Pigment manufacturing
Pipe fitters
Plastics industry
Pottery workers
Printers
Radiator repair
Rubber industry
Soldering of lead
products
Solid waste production
Stained-glass makers
Welders

With Pictures!

- Radiator repair shops
- Storage batteries
- Paints, dyes, ceramics
- Foundries
- Manufacturing of ammunition
- Firearm ranges
- Electronics
- Weights



Establishment Size: All sizes
Standard: 19101025

Click the link below to see the industry groups in which the specified standard has been cited by **North Carolina OSHA** during the period October 2004 through September 2005. Penalties shown reflect current rather than initial amounts. For more information, see [definitions](#).

[SIC Division](#) | [2-digit SIC](#) | [3-digit SIC](#) | [4-digit SIC](#)

SIC Industry Nr - 4 digit

#Cited	#Insp	\$Penalty	Industry Classification
16	1	2400	3519/Internal Combustion Engines, Not Elsewhere Classified
14	5	0	7539/Automotive Repair Shops, Not Elsewhere Classified
6	3	220	3672/Printed Circuit Boards
5	1	1500	3356/Rolling, Drawing, and Extruding of Nonferrous Metals, Except Copper and Aluminum
4	2	0	3679/Electronic Components, Not Elsewhere Classified
4	2	0	5084/Industrial Machinery and Equipment
4	2	225	7532/Top, Body, and Upholstery Repair Shops and Paint Shops
3	1	0	3559/Special Industry Machinery, Not Elsewhere Classified
3	1	100	7349/Building Cleaning and Maintenance Services, Not Elsewhere
3	1	0	7382/Security Systems Services
2	1	0	1731/Electrical Work
2	1	0	5941/Sporting Goods Stores and Bicycle Shops
2	1	342	9223/Correctional Institutions
2	1	0	8711/Engineering Services
2	1	0	5719/Miscellaneous home furnishings Stores
2	1	0	3993/Signs and Advertising Specialties
2	1	0	3699/Electrical Machinery, Equipment, and Supplies, Not Elsewhere
2	1	0	3714/Motor Vehicle Parts and Accessories
2	2	0	9221/Police Protection
1	1	0	2542/Office and Store Fixtures, Partitions, Shelving, and Lockers, Except Wood
1	1	0	7381/Detective, Guard, and Armored Car Services
1	1	0	8222/Junior Colleges and Technical Institutes
1	1	0	9111/Executive Offices
1	1	0	3566/Speed Changers, Industrial High-Speed Drives, and Gears

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Lead Standard

29 CFR 1910.1025
29 CFR 1926.62

● Objectives

- To list the general requirements of the lead standard
- To apply the lead standard to data obtained during inspection activity
- To identify the differences between the general industry and construction lead standards
- Gain the tools necessary for an inspection with lead.



Why the Fuss?

- The list below shows many of the key lead-induced health effects.
- Neurological Effects
 - Peripheral neuropathy
 - Fatigue / Irritability
 - Impaired concentration
 - Hearing loss
 - Wrist / Foot drop
 - Seizures
 - Encephalopathy
- Gastrointestinal Effects
 - Nausea
 - Dyspepsia
 - Constipation
 - Colic
 - Lead line on gingival tissue
- Reproductive Effects
 - *Miscarriages/Stillbirths*
 - Reduced sperm count & motility
 - Abnormal sperm
- Heme Synthesis
 - Anemia
 - Erythrocyte protoporphyrin elevation
- Renal Effects
 - Chronic nephropathy with proximal tubular damage
 - Hypertension
- Other
 - Arthralgia
 - Myalgia

Illness

- **Encephalopathy** - means disorder or disease of the brain
- **Dyspepsia** – upset stomach
- **Anemia** – is a condition in which the body does not have enough healthy red blood cells.
- **Nephropathy** – refers to damage to or disease of the kidney.

General Industry

- 1910.1025
- Flip in your books to this section.
- Reviewing the basics of the standard.

Construction

- 1926.62 – Lead
- Flip in your books to this section.
- Reviewing the basics of the standard.

Lots of information

- Good news: 95% is the same
- Bad news: still have to carry two books
- Bad news: still have to know both
- Good news: We have till 5:00 to get it done

Breakdown: 1910.1025

- (a) Scope
- (b) Definitions
- (c) Permissible Exposure Limits (PEL's)
- (d) Exposure Monitoring
- (e) Methods of Compliance
- (f) Respiratory Protection
- (g) Protective Work Clothing

Breakdown: 1910.1025 cont.

- (h) Housekeeping
- (i) Hygiene Facilities and Practices
- (j) Medical Surveillance
- (k) Medical Removal Protection
- (l) Employee Information and Training
- (m) Signs
- (n) Recordkeeping
- (o) Observation and Monitoring

Breakdown: 1926.62

- (a) Scope
- (b) Definitions
- (c) Permissible Exposure Limits (PEL's)
- **(d) Exposure Assessment**
- (e) Methods of Compliance
- (f) Respiratory Protection
- (g) Protective Work Clothing

Breakdown: 1926.62 cont.

- (h) Housekeeping
- (i) Hygiene Facilities and Practices
- (j) Medical Surveillance
- (k) Medical Removal Protection
- (l) Employee Information and Training
- (m) Signs
- (n) Recordkeeping
- (o) Observation and Monitoring

Appendices

- Appendix – A (read I)
- Appendix B – (In a nut shell)
- Appendix C – Medical Surveillance (Pb 101 in the body)



- The Quick look – is it lead?







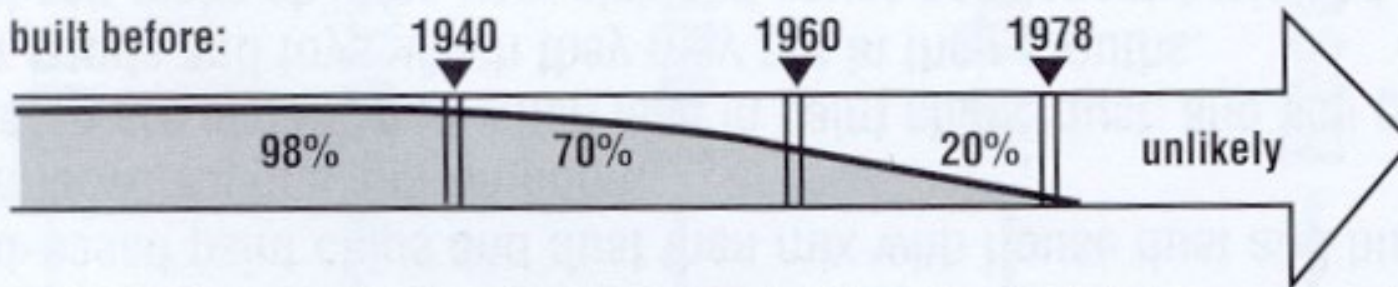




Most Old Homes Contain Lead-Based Paint

- Most homes built before 1978 contain some lead-based paint. Lead-based paint is more common and was used more extensively in homes built before 1950.

Probability of a House Containing Lead



- Homes built before 1950 also used paint that had a higher concentration of lead.

The Scenario

- We will be discussing a scenario throughout the training. Provided 2 case files at the end.
- Pull the information we have learned
- Create a guideline for future inspections
- Questions – ask as we go!

Inspection Time

- You are given an inspection. Employees are removing pain from a water tower.
- Media reports that the project will take approximately 8 weeks in total.
- First thoughts?

Inspection Time

- Lets start with Construction
- What are our questions:
 - 1) has lead been identified?
 - 2) are we generating air borne dust?
 - » *what does this?*
 - » *Why is this important?*
- If both are true what's first?



Lead – 1926.62

- Exposure Assessment:
 - 1926.62(d)
- The A's and the B's
- Make a note! (d) – is where it all begins.

Inspection

- After interviewing our Contractor we know:
 - Sandblasting occurred on the legs and shell
 - 3 people inside,
 - » *All three with a hood*
 - » *All 3 wear a half mask respirator when exiting the containment*
- Based on our activities what do we expect to see?
- Where do we begin?

Exposure Assessment

- Tasks?
- Respirators?
- Blasting employee needs what?
- Clean up employees need what?
- So many questions!

Methods of Compliance??

- For construction you have to review section 62.d first, and is mostly where you will cite.
- For industry you have to review 62.e, and is mostly where you will cite.
- The rest of the standard supports these two areas.

1926.62(v) – The project

- A – respirators (f)
- B – PPE (g)
- C – Change areas (i2)
- D – Hand washing (i5)
- E – Biological Monitoring (j)(1)(ii)
- F – training (l)(1)(i)



But we are sampling right now!

- Now that we have that covered – lets move on to the rest of the standard!
- Following our (d)(2)(v)
 - PPE





Lead PPE 1926.62(g)

- Full body work clothing 
- Protect the rest 
- So what did our workers have?
 - Full body work suits
 - Respirators
 - Gloves
 - Shoes (work boots)
- Contamination?

Hygiene Concerns

- Potable water?
- Wash station, shower?
- No eating, drinking, no tobacco (including chew!!) or cosmetics
 - Cosmetics?



Water?



Hygiene Continued

1926.62(i)

- Change Areas
- Showers
 - Shower facilities actually no garden hose for you!
 - Where feasible?
 - Supply cleaning agents and towels!
- Clorox wipes a good idea?

Washing Hands

- A whole slide on washing hands?
- The other lead case!
- Wash your hands.
- Remember Routes of Entry





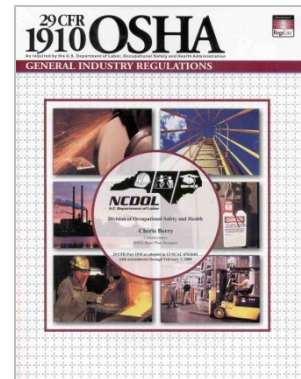
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Lead Standard

- All medical exams and procedures provided at no cost to employees at a reasonable time and place.
- Basics of medical Surveillance
 - Read the details
 - » *What's the difference between (1)(i) and (1)(ii)*
 - J(2) – That's specific
 - » *Need records, dates, work history*



Medical Surveillance 1926.62(j)

- Not your vitals, your lead and zinc protoporphyrin levels!
- Biological monitoring
 - Blood Pb sampling and analysis
 - » Every 6 mo. when over the AL 30 days/year
 - » Every 2 mo. when blood Pb is 40 $\mu\text{g}/100\text{g}$
 - » Every month when on removal for blood Pb

ZPP at a glance

- **Why Get Tested?**

- To screen for and monitor chronic exposure to lead; to detect iron deficiency in children

- **When to Get Tested?**

- When you have been chronically exposed to lead, as part of a program to monitor lead exposure, and/or when your doctor suspects lead poisoning; as part of a screening program for iron deficiency in children and adolescents

- **Sample Required?**

- A blood sample drawn from a vein in your arm or from a fingerstick

Lead Standard -Medical

- Follow-up blood sampling tests when the criterion for removal is reached 50 μg for construction (60 μg once or 50 μg as 6 month average for General Industry)
- Employee notification



Lead Standard -Medical

- Medical exams prior to a Pb assignment
- Medical exams will include detailed work and medical histories and a thorough physical examination.



Lead Standard -Medical

- Multiple physician review allowed
- Information about the job (airborne levels, PPE, employee duties) and blood Pb levels must be provided to the physician



Lead Standard -Medical

- The physician must provide a written medical opinion for the employee.
- Chelation is permitted only in a clinical setting with physician supervision.



Lead Standard -Medical

- Temporary medical removal from jobs over the AL for:
 - Construction EE at 50 $\mu\text{g}/\text{dl}$
 - Employees with blood Pb at 60 $\mu\text{g}/\text{dl}$
 - Employees with 6 month average blood Pb at 50 $\mu\text{g}/\text{dl}$.
- Temporary medical removal from jobs over the AL due to medical determination.



Lead Standard -Medical

- Return to former job when:
 - Two consecutive blood Pb are below 40 $\mu\text{g}/\text{dl}$ (for both standards)
 - With physician determination of improved health



Lead Standard -Medical

- Removal benefits are specified
- Follow up medicals specified
- Worker compensation applies



Training

1926.62(I)

- Have to train each employee who is subject to exposure to lead at or above the AL
- Has to be provided prior to employment
- And annually to all employees who are subject to lead exposure at or above the AL on any day.
- Example of an employee that would not be trained?

Training Cont.

- Training Programmed spelled out:
 - 1926.62(l)(2)
- What does 1926.62(l)(3)(ii) mean?

Training cont

- All employees exposed to Pb to be trained on Appendices A and B
 - **Appendix A**
 - » Substance data sheet for occupational exposure to lead
 - **Appendix B**
 - » Employee standard summary



Lead Standard

- All employees exposed over the AL to have in depth training on an annual basis and prior to initial assignment
 - Contents of standard and appendices
 - Jobs with exposures over the AL
 - Medical surveillance
 - Engineering and other controls
 - Compliance plan



Signs

1926.62(m)

- Your right, not part of the list
- But – it goes along with training
- 1926.62(m)(2)(i)
 - That's the sign.
- Check out 2(ii) – Illuminated and Cleaned!

The sign

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

Recordkeeping

1926.62(n)

- This is in that list.. Where else are you going to find all that information?
- What does (1)(i) say?
- How long to keep?
 - 1926.62(n)(1)(iii)

Hint- 1910.1020(d)

A Note

- Objective Data and Previously monitored in 12 months!
- Be extra critical, be extra cautious.
- 1926.62(d)(4) – Positive initial monitoring
- 1926.62(d)(5) – Negative initial determination

Air Monitoring Data Review



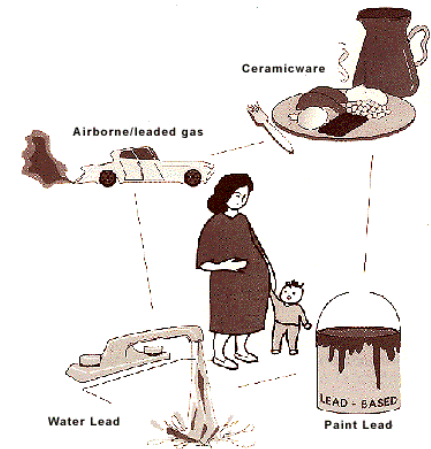
Are we done?

- Nope, but ½ way I think – onto the evaluation of their controls.
- We are BACK to that pesky (e)!
 - The down and dirty.
- Methods of Compliance.. Its all spelled out.

Lead Standard

Still at e

- Engineering and work practice control requirements:
 - Over PEL 31 or more days, reduce exposure to below the PEL OR as low as feasible and use **APPROPRIATE** respirators.
 - Over PEL 30 or fewer days, reduce exposure to $200 \mu\text{g}/\text{m}^3$ and use respirators to maintain exposures to below the PEL



What respirator?

- At minimum what should you expect an employee to be wearing?
 - Table 1 (1910.134)
- Cartridges?
- What about the respirator standard?
- One more list to follow!

Lead Standard

Still at e

- When engineering and work practices controls do not reduce exposure below the PEL, use respirators per paragraph (f)
- Establish / implement a written plan to comply with PEL
 - Revise every 6 months
- Seriously! Take a look.
 - A through I



This is mostly identical in both standards

- Describe each operation
- Describe specific means of compliance
- Report the technology considered
- Document emission sources with IH data
- Detail time schedule for implementation
- List work practices required in (g), (h), (i)
- Describe administrative control schedules
- Document other relevant information



Guess where?

- 1926.62(e)(2)(ii)(H) – for all the multi-contractor sites.
- Check out 1926.62(e)(2)(iii)
 - Required!
- Moving right along.... Jumping around...

Lead Standard

- Mechanical ventilation
 - Effectiveness checks required every 3 months and after any change in process that might alter employee exposures.
 - Any recirculated air must be HEPA filtered and monitored.
 - » Pb in the return air must cause automatic bypass of the system



Lead Standard

- Administrative control documentation for employee rotation
 - Name or ID number of each affected employee
 - Duration and exposure levels at each job
 - Any information useful for assessing that these controls reliably reduce employee exposure



Lead Standard

- Respirators must be worn when necessary to install and/or implement engineering/ work practice controls or when those controls are not sufficient to reduce exposures to below PEL.
- The employer must implement a respiratory protection program in accordance with 29 CFR 1910.134.



Lead Standard

29 CFR 1910.1025



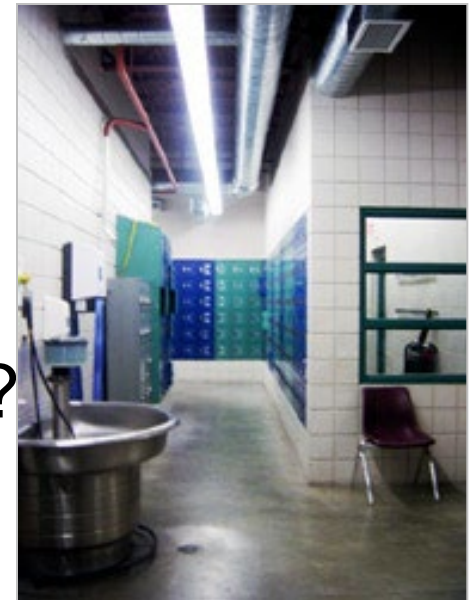
Lead Standard

- The employer provides for cleaning or disposal of protective clothing and equipment
- The employer is to repair and replace equipment as needed



Lead Standard

- Back to General industry:
- Can you eat in your lead clothes?
- Placed in closed container to prevent spread of lead dust.
- Remember the Indoor lead case?





Lead Standard

- Notify the laundry in writing re: Pb contamination and potential health effects.
- Containers must be labeled.
- Shaking or blowing off with compressed air to clean PPE is prohibited.



Lead Standard

- Surfaces free of Pb accumulations.
 - Use 200 $\mu\text{g}/\text{ft}^2$ per CPL 2-2.58 (1926.62)
- Do not use compressed air to clean floors. Shoveling and dry sweeping to be used only where vacuuming not effective.
 - Vacuums to be used and emptied to keep recontamination to a minimum.





Lead Standard

29 CFR 1910.1025



Lead Standard

29 CFR 1910.1025



Lead Standard

29 CFR 1910.1025



Lead Standard

29 CFR 1910.1025



Lead Standard

29 CFR 1910.1025



Lead Standard

29 CFR 1910.1025



Lead Standard

- Shower facilities (per 1910.141(d)(3)) provided with Pb over PEL. Must shower at end of shift, can't leave wearing Pb contaminated work clothes.



Lead Standard

- Lunchrooms provided when over PEL
 - Must have a temperature controlled, positive pressure, filtered air supply.
 - Must wash prior to eating, drinking, smoking.
 - Must remove surface dust from PPE by vacuum or downdraft booth.

- Restrooms must be provided per 29 CFR 1910.141



Lead Standard

- Employees can observe monitoring
- Effective date – March 1, 1979
- Appendices to supplement standard



Back to our Job

- Handout of 1A
- Lets do the inspection:
- You lead the questions!

Show Case Pictures

- Gun Manufacturing - GI
 - Review case pictures
 - Review case file
- Water Tank – Con.
 - Review case pictures
 - Review case file

What Else but CPL's

- CPL 2-2.46 – Medical Records review
- CPL 2-2.33 – OSHA Access to Employee Medical records
- CPL 2-2.58 Lead In Construction
- CPL 2-2.67 lead Brass & Bronze Ingot Manufacturing
- CPL 03-00-009 NEP Lead

Thank You For Attending!

Final Questions?

