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**OSHA**

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# Lead Exposure During Bridge Demolition

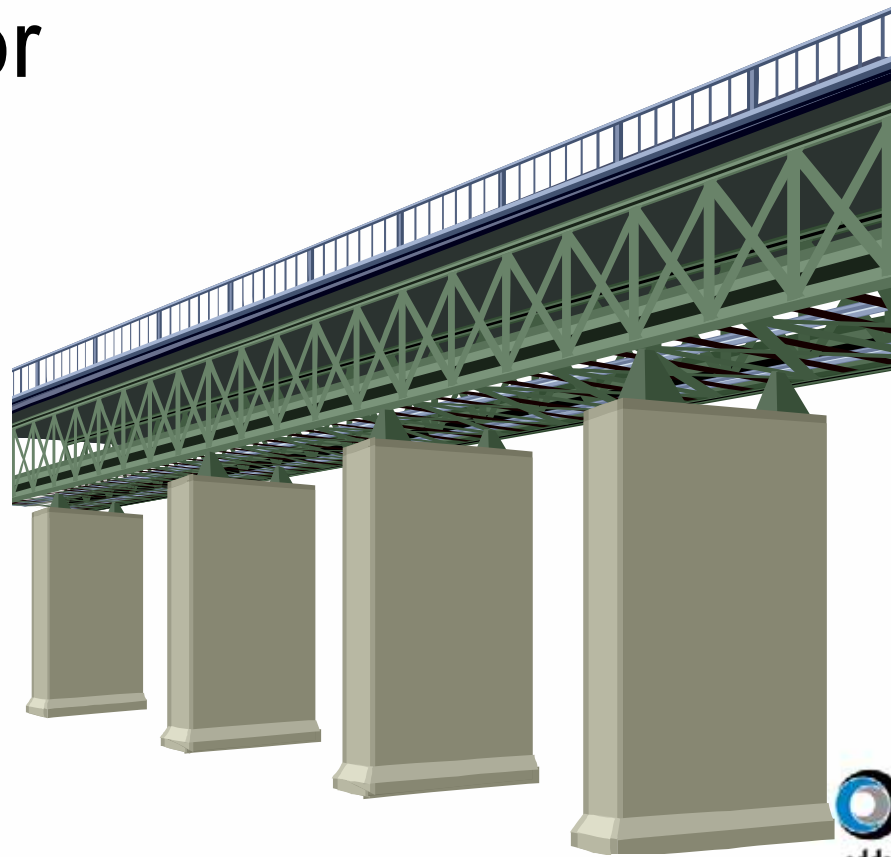
Presented by Kim Morton

19<sup>th</sup> Annual Construction Safety Conference

2/18/09

# Company Background

Bridge contractor



# The Effects of Lead on the Body

- Lead can enter your body in two ways:
  - Breathing in lead dust, mist, or fumes.
  - Swallowing lead dust if it gets on your hands or face or if it gets in your food, drinks, or tobacco.
- Some of the early symptoms of lead poisoning or overexposure may include:
  - Irritability
  - muscle or joint pains
  - stomach aches and cramps
  - trouble concentrating
  - tiredness

# Reason for OSHA Inspections

- Initial inspection was July 2006
- In response to a Road Construction LEP and Lead NEP
- Inspected as a result of torch cutting a bridge containing lead
- Bulk samples obtained were 34% and 36% lead



# Worksite: One Year Later

- Follow-up March 2007: Bridge permits were provided to OSHA from the DNR
- Demolition of a three span bridge which involved two piers stretching across a river (approximately 35' in length)
- This project involved removing structural steel from below the bridge
- The removal of old beams was accomplished by cutting through them with an oxyacetylene torch







# Exposure Summary

- CSHO selected one laborer performing torch cutting
- Work was performed without containment
- Monitoring conducted for 3 ½ hours, timeframe of the assigned task
- Bulk samples collected at representative locations of the torch cut areas measured up to 55% lead
- The results of air sampling measured 3872  $\mu\text{g}/\text{m}^3$  for lead:
  - 77 times PEL (TWA) of 50  $\mu\text{g}/\text{m}^3$
  - 184 X PEL actual time sampled



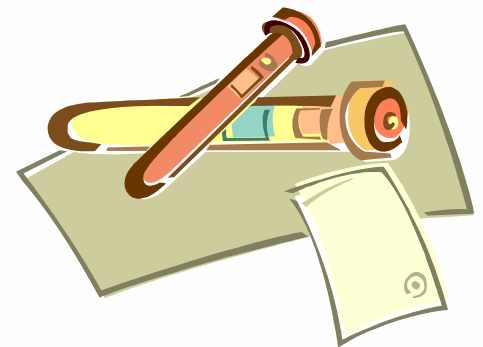
# Exposure Summary Continued

- Other sampling performed included:
  - Arsenic results were 1.1 times the PEL
  - Hexavalent chromium results were 0.28 times the PEL



# Blood Lead Summary

- As a result of the exposures the employee's blood lead levels were significantly elevated
- The lead level prior to sampling in March 2007 was 14 ug/dl
- Following the exposure, the employee's blood lead rose to 40 ug/dl documented in May 2007
- Employee complained of a "gut ache"



# Reasons Why Employees Exposed to the Hazards

- Neither engineering controls nor work practice controls were utilized to reduce employee exposures to airborne lead concentrations
- The employee was assigned an inadequate PAPR welder's respirator that offered an assigned protection factor of 25



# Citation Summary

- The serious violations included arsenic exposure, lead training, competent person, laundered protective clothing, shower facilities, sign requirements.
- The willful violations included engineering and work practice controls while torch cutting and exposures for lead exceeded the PEL and Lead Compliance Program.
- The repeat violations included respiratory protection program, protective clothing for lead exposures, change areas, hand and face washing facilities.

# Lessons Learned

- Engineering controls
  - fans, longer torches
- Administrative controls
  - job rotation
- Work practices and PPE
  - Showers, change areas, full-body protective clothing



# Lead Wipe

- **Hand Cleaner**
  - Hand Cleaner has been laboratory certified to be effective in the removal of lead and other toxic metals from all surfaces including the skin. Designed to be used at the workbench or any location where operators' hands become soiled.





Questions?

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