Commonwealth of Massachusetts
Executive Office of Labor and Workforce Development

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Industrial Hygiene Supervisor
On-Site Consultation Program

Charlie Baker, Governor
Rosalin Acosta, Secretary

- Massachusetts Department of Labor Standards
- On-Site Consultation

- United States Department of Labor
- Occupational Safety and Health Administration (OSHA)

MA On-Site Consultation Program

- FREE!! CONFIDENTIAL!!
- Most of funding from OSHA, but firewall between us

6 Safety Professionals
4 Industrial Hygienists

Offices in Westborough, Taunton, & Lawrence

What we do:

- On-Site Surveys
- Technical information via phone/email
- Training for employers/employees
- Provide model written safety and health programs
- Help to evaluate, develop, or maintain an effective overall Safety and Health Program

What we DON'T do:

- Issue citations or penalties
- Tell OSHA where we go, what we see, who we talk with, etc.
- Guarantee workplaces will "pass" an OSHA inspection

What happens during a Consultation visit?

- Opening conference
- Program / recordkeeping review
- Walkthrough (air, noise monitoring)
- Closing conference
- Follow-up regarding abatement

What do Consultants look for?

- Health:
- Chemical hazards
- PPE / Respiratory Protection
- Bloodborne Pathogens
- Noise
- Ergonomics
- Permit-required confined spaces
- Recordkeeping

What do Consultants look for?

- Safety:
- Fall protection / scaffolding
- Electrical hazards
- Machine guarding
- Fork trucks
- Hoists and cranes
- Fire protection / egress routes
- Recordkeeping

29 CFR 1926.62

OSHA's Lead in Construction Standard

(NOT RRP!!)

Where do we find lead?

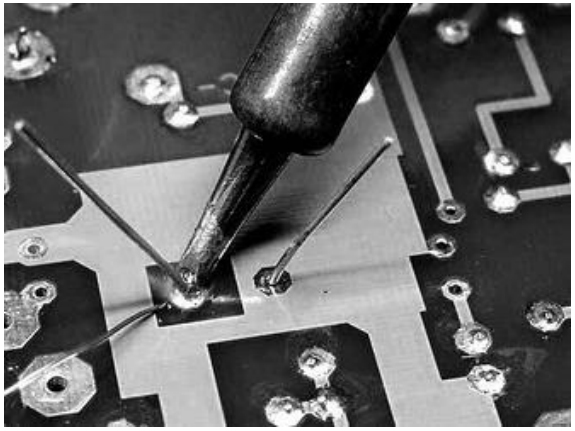
- Paint pigments
- Cosmetics
- Solder and other metal alloys
- Plastics
- Pottery glazes
- Ammunition and fishing tackle

Occupationally:

- Painting & remodeling
- Auto body repair
- Ceramics
- Stained Glass
- Foundries
- Electronics

Recreationally:

- Shooting
- Fishing
- Arts & Crafts
- Home electronics
- Home renovation



Why do we care about lead?

- CNS damage
- Anemia
- Reproductive effects **(men <u>&</u> women)**
- Liver and kidney damage
- Probable carcinogen
- Heme system damage
- Storage in body
- Effects in children at <u>very</u> low levels

Health effects

- The National Toxicology Program [NTP 2012], and the American Academy of Pediatrics [AAP 2016] have concluded that there is sufficient evidence for adverse health effects in children and adults at blood lead levels (BLLs) <5 micrograms per deciliter (µg/dL).

- "There is no identified threshold or safe level of lead in blood" [AAP 2016].

Working safely with lead?

- Engineering controls:
  - ~ Enclosure
  - ~ Exhaust ventilation/water

Work practices:

- ~ Cleanup/decon
- ~ Personal hygiene
- ~ Respiratory protection
- ~ PPE

OSHA's Lead Standard

- Applies anywhere workers are potentially exposed to lead
- Permissible Exposure Limit (PEL)
- 50 ug/m^3 as 8-hour average
- or
- 400 ug/m3 ÷ hours worked (>8)
- Action Level (AL) 30 ug/m^3

Exposure Determination:

- Is any employee exposed at or above the Action Level? Above the PEL?

- How? Evidence of exposure, air monitoring, (current or prior) employee symptoms, etc.

(We can do air monitoring for free)

Exposure (air) monitoring:

- Full shift (at least 7 hours)
- At least one sample per shift / job category / work area
- Representative of employees' normal daily lead exposure

If the monitoring shows:

- All employees under Action Level, you're done
- Exposures over Action Level but under PEL, repeat monitoring at least every six months
- Exposures over PEL, repeat quarterly

Additional monitoring:

- Must be performed for any new operation, process, personnel change, or other factor that might increase potential exposure to lead.
- Monitoring results good for 12 months for *similar* tasks

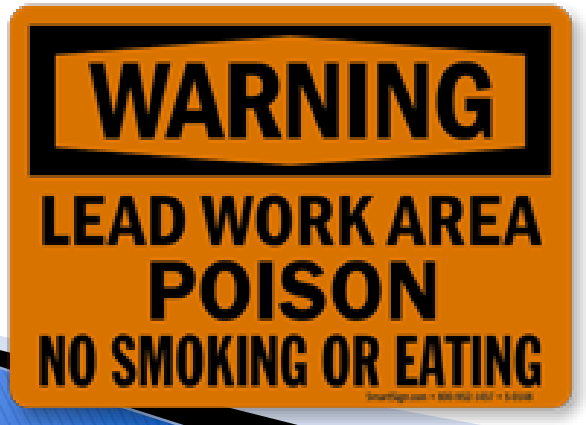
Employee notification:

- Employees must receive information about their exposures, in writing, within five (5) working days of receipt of results.

- If exposures over PEL, information must include corrective actions designed to reduce exposures.

If exposures above PEL:

- Must implement engineering and work practice controls
- Warning signs at jobsite
- Respirators are secondary controls!!



DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

However…

- Until you have the monitoring results back, you have to protect employees as though they were exposed to lead at levels up to 10 X the PEL.

“Trigger tasks”

- Manual demolition
- Manual scraping
- Manual sanding
- Using a heat gun
- Power tool cleaning <u>with</u> dust collection

What does that mean?

- Respiratory protection
- PPE (Tyvek suit w/hood & booties)
- Hand washing facilities
- Clean change area
- Biological monitoring (blood lead/ZPP)
- Training

What does that mean?

- Contaminated PPE disposal in closed container
- Container warning labels
- Housekeeping (preferably HEPA vacuum)
- Clean eating area
- Hand/face wash before eating, drinking, smoking, etc.

Biological monitoring:

- Written results to employee within 5 days of receipt.
- Medical removal at 50 ug/dl or greater, notice of medical removal at 40 ug/dl.
- Return to work after 2 consecutive tests show levels below 40 ug/dl.

Biological monitoring:

- Initial blood lead/ZPP
- If exposures over the Action Level for 30 days in a 12-month period, then every 2 months for the next 6 months, then every six months.
- If BLL > 40 ug/dl, then every 2 months

Biological monitoring:

Blood lead level vs ZPP- helps to determine if exposure was recent or chronic

- Elevated BLL and Normal FEP/ZPP: Recent exposure: ~ 2-6 weeks.
- Elevated BLL and Elevated FEP/ZPP: Chronic/ongoing exposure.

Written compliance program:

Site specific, must contain:

- Description of the process / job / etc.
- Details of how exposures will be reduced
- Air monitoring data (historical OK)

Written compliance program:

- Implementation schedule
- Work practice controls
- Administrative controls
- Any other relevant information
- Reviewed / updated annually

Respirators:

- Must be appropriate for exposure
- Written respirator program–medical evaluation/fit testing
- When employee asks for one
- PAPR if employee asks for one

PPE:

- If over the PEL, coveralls or equivalent
- Gloves, head, shoe covers
- Weekly if under 200 ug/m^3, daily if over
- Laundering / disposal

Housekeeping:

- Surfaces as lead-free as practicable
- HEPA vacuum, do not dry sweep
- NO compressed air cleaning

Hygiene facilities/ practices:

- No eating, drinking/smoking/etc. in work area
- Clean change area
- No work clothes in eating area
- Wash hands & face before eating/drinking/smoking

AVOID TAKE-HOME LEAD!!!

Training:

- Contents of the Standard
- Operations with lead exposure
- Respirators
- Medical surveillance
- Lead compliance plan

Recordkeeping:

- Exposure data
- Respirators
- Employee info
- Medical surveillance info
- Keep forever!!!

Questions?

Isocyanates

Isocyanates

- Highly reactive compounds
- Form hard, tight chemical bonds
- Paints, elastomers, rigid and flexible foams
- Automotive, building materials, etc.

Isocyanate Health Effects:

- Irritation of eyes, skin, pulmonary system
- Respiratory sensitization (asthma)
- Dermal sensitization
- Hypersensitivity pneumonitis

Safety Data Sheet
RAPID-SET POLYURETHANE ADHESIVE

H320 Causes eye irritation.

H315 Causes skin irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317 May cause an allergic skin reaction.

H350 May cause cancer.

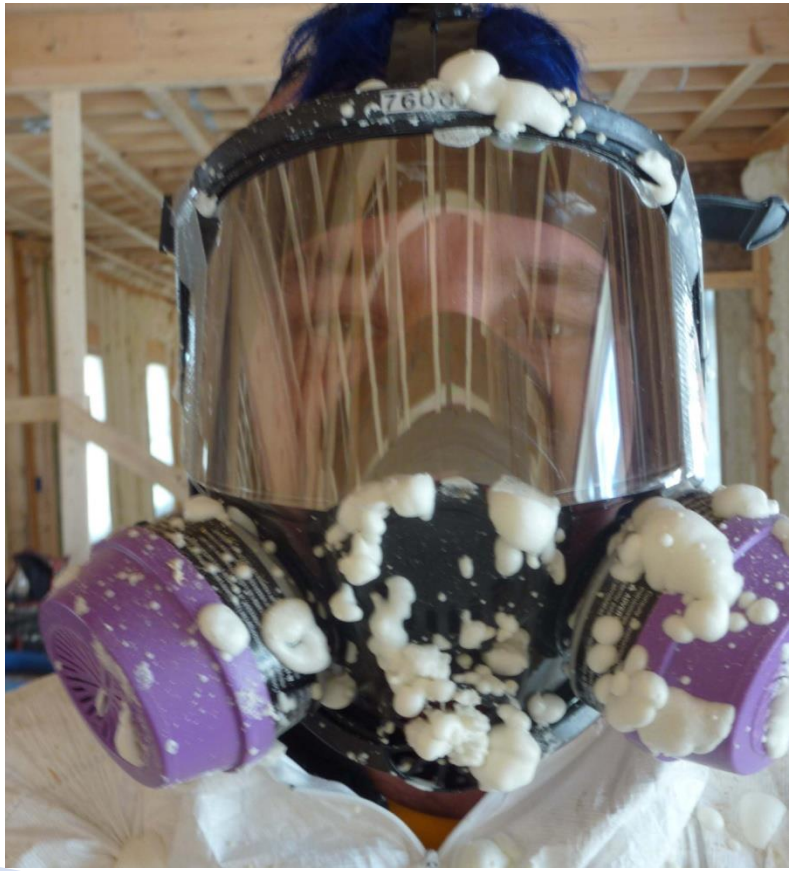
H373 May cause damage to organs (Olfactory organs) through prolonged or repeated exposure (inhalation).

“A” drums on right, “B” on left

REACTOR E-30
PLURAL COMPONENT PROPORTIONER
REACTOR
Kimberly-Clark
50603

Routes of exposure:

- Inhalation (vapor and particulate)
- Dermal
- Ingestion (unlikely)



Typical jobsite hazards:

- No HazCom training (non-English-speaking employees)
- Inconsistent PPE use
- Ladder safety issues
- Trip and fall hazards
- Other trades working in space

Respiratory hazards:

- No respirator program
- No medical evaluation
- No training
- Beards
- No cartridge change out schedule
- Removing respirators inside while working
- Air supplied respirators should be used for spraying, APRs *probably* OK for trimming (with <u>daily</u> cartridge change out)

Exposure Limits:

- OSHA PEL: 20 ppb (ceiling) for MDI monomer
- No dermal exposure limits
- No mixed isocyanate exposure limits except for UK-HSE

Monitored exposures:

- Spraying: 3X PEL
- Trimming: 1.5X PEL
- Me sampling: 0.1X PEL
- Variables: enclosure, distance, ventilation, work practices, etc.

Reentry after spraying:

A Proposed Methodology for Development of Building Re-Occupancy Guidelines Following Installation of Spray Polyurethane Foam Insulation

Brian F. Karlovich, Carl Thompson, Jim Lambach
Bayer MaterialScience
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Pittsb

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CONCLUSIONS & RECOMMENDATIONS

Based on the data developed through this work, the following re-occupancy times are prescribed for both Bayseal OC and Bayseal CC foams:

- 12 hours following the end of spraying for trades workers,
- 24 hours following the end of spraying for all others (e.g., residents, tenants, etc.)

The justification for these recommendations is as follows. At approximately 12 hours, the predicted airborne levels of all identified compounds were significantly less than the applicable OELs. At approximately 24 hours, the predicted airborne levels of all identified compounds were less than the CREL or 1/100 of the OEL. The only exception to this was for one amine catalyst

Fire safety?

All organic foam insulations, regardless of whether they contain fire retardants, should be considered combustible and handled accordingly.

Certain precautions must be taken to minimize any potential for fire through accidental ignition in handling, storage, and use.

Alliance for the Polyurethanes Industry (API)

Trades performing hot work should comply with the National Fire Protection Association document, NFPA 51 B, as described by OSHA Standard 29 CFR 1910.252.

Trades performing hot work are required to observe the following restrictions:

- No open flames, cutting and welding torches, ***high intensity heat sources***, and smoking materials are permitted in storage and application areas.

No halogen lights! LEDs OK

From Safety Data Sheet:

Do not mix liquid waste components together for disposal convenience. Mixed “A” and “B” components can create pressure within closed containers causing rupture or explosion.

Conditions also could exist for spontaneous combustion by improperly mixing “A” and “B” components.

Questions? Additional assistance? Request a consultation visit?

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On-Site Consultation Program

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