

Special Focus Presentation: Reduce Overexposures to Lead in Construction

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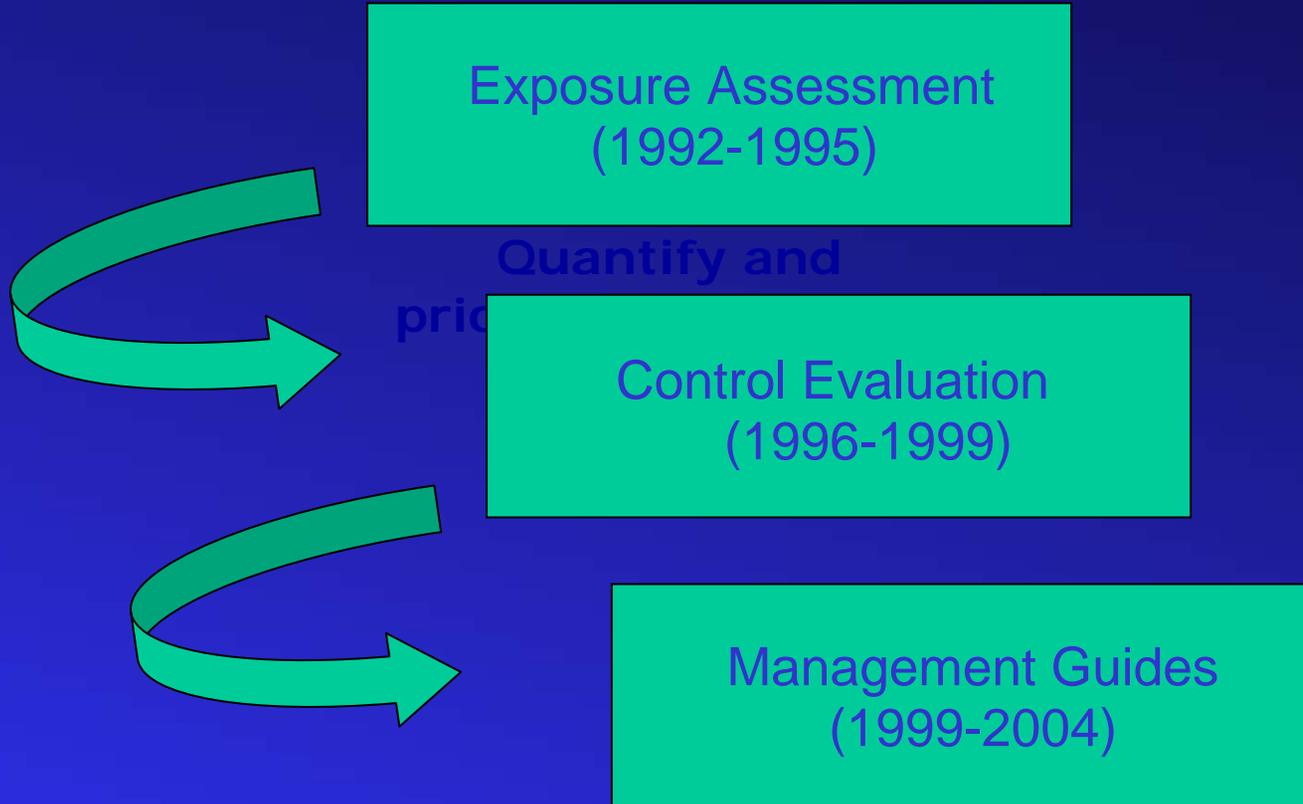
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Reducing Ironworker Lead Exposures

Three Phases of Research



Issues: Lead-Based Paint in Steel Infrastructure Rehabilitation

- LBP covers 5 billion square feet of nonresidential surfaces in US, including 89% of nation's steel bridges
- Beginning in 1991 congress appropriated hundreds of billions for infrastructure repair
- NYC has >2000 steel bridges, severe deterioration of several main bridges noted in 1980s, extensive rehabilitation projects undertaken
- ABLES data suggested prevalence of elevated blood lead levels among construction workers

Issues: Controlling Lead Exposures

- DOTs adopt environmental controls (e.g., containment of structure) to comply with EPA standards
- Interim OSHA Lead-in-Construction standard (1993) leads to contractors using some worker-protection controls
- Communities close to bridge rehab sites become active in issues of environmental lead contamination
- NYC bridge rehab work accelerates, employing large numbers of iron workers, painters and laborers



Issues: Lead Program Management

- Previous research found that control measures are often difficult to implement or sustain successfully
- Lack of expertise and training of construction company personnel in integrating lead exposure control programs into their projects
- Lack of expertise & training in closely managing and supervising these programs
- Lack of expertise & training in assessing the effectiveness of lead exposure control programs

Activities: Lead Exposures

- Monitoring at large, multi-year bridge rehabilitation project
 - ◆ Characterize exposures by worker tasks
 - ◆ Evaluate use of task-based exposures to target controls
 - ◆ Investigate the predictive value of task exposures
 - ◆ Evaluate optimum frequency for testing blood lead
- Staff included IHs, Occupational Physicians, Statisticians
- Lead monitoring: bulk & personal task-specific
- Bi-weekly blood lead monitoring

Activities: Control Effectiveness

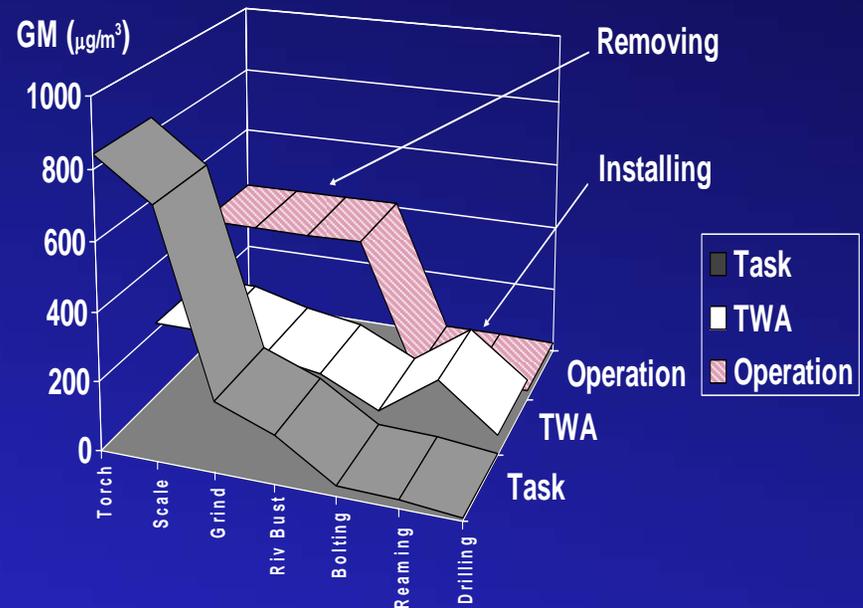
- Evaluate iron worker exposures and effectiveness of engineering and work practice controls during structural steel rehabilitation at two bridge sites and two railway transportation hubs
- Compare exposures with and without controls
- Monthly blood lead screenings at all sites
- Focus on controls for two high exposure tasks identified in surveillance research
 - torch cutting (removal of paint prior to cutting)
 - rivet removal (paint encapsulation)
- Measure effectiveness of OSHA Lead-in-Construction Standard

Activities: Develop Blueprint Guide for Lead Program Management

- Establish stakeholder participation, including contractors, owners, unions, local and federal government agencies
- Conduct on-going exposure assessment, blood lead monitoring and control evaluation at 6 sites
- Employer and employee input through focus groups and structured and unstructured interviews
- Development of individual Guides through iterative review process with stakeholders
- Implementation and assessment of individual guides and guide sections

Outputs: Identify High Exposure Tasks

- Highest measured exposures: torch cutting, scaling and grinding
- Task-based exposure more accurately reflects peaks and need for controls



Outputs: Characterizing Exposures

- Publications on ironworker exposures:
4 papers, 6 presentations, 1 newspaper article, 1 trade magazine article, 1 brochure
- Take-home lead: family screening, focusing on the blood lead levels of children
- Used XRF instrument to measure lead in bone of iron workers
- Presentation at Annual Meeting of NY/NJ NIOSH Educational Research Center

Torch cutting



Grinding



10 19'93

Outputs: Control Effectiveness

- Found encapsulant for rivet removal successfully controlled lead exposures at two of three sites
- Found grinding prior to torch cutting ineffective at sites assessed
- Identified two major problems: technical & managerial
- Published: 2 papers, 4 presentations, 1 booklet
- Research presented to large audiences of owners, contractors, unions, community organizations in conference jointly sponsored by research team and NYC Infrastructure Institute at Cooper Union (1995)

Rivet Removal with Encapsulant



Output: Management Guides

- Key Characteristics of Management Guide Identified
 - Guide, or “Blueprint”, includes examples of best practices to link health hazard controls with planning and everyday management of construction activities
 - Emphasizes worker participation and the importance of management leadership
 - Employs multiple exposure control strategies -- engineering controls, work practices, & respiratory protection
- Publications: 10 presentations, 1 web site, 1 CDROM, 1 Blueprint Guides loose leaf, electronic versions for web distribution



Intermediate Outcomes: Exposures

- Iron workers' union adopts materials containing research exposure findings for use in their training
- Lead training program established by Iron worker local unions 40 and 130 (over 300 workers trained)
- After training, ironworkers assume positions as lead competent persons (appointed by contractors)
- Local contractor's association conducts lead training for its members using materials
- Contributed to growing acceptance of task-based exposure assessment methods (TBEAM) in the industrial hygiene community

Intermediate Outcomes: Controls

- Research findings incorporated into New York State and NYC DOT lead specifications and those developed with CPWR
- Mount Sinai appointed technical experts by the NYCDOT; provide liaison between the DOT and the community on the Williamsburg Bridge Rehabilitation Project
- Training on engineering controls adopted by Ironworkers union
- Materials widely disseminated through CPWR website

Intermediate Outcomes: Intervention

- OSHA, Region 2, held 3 region-wide all-day seminars which featured the Blueprint Guides
- OSHA compliance officers distribute the Guides to contractors
- NYCDOHMH held seminar with bridge and other structure owners and contractors that featured the Guides
- Guides distributed by NYCDOHMH
- Contractors/owners in NYC area and nationally use the Guides
- Laborers International Union uses the Guides in their training of contractors, and distributes them
- 173/month (2007) from CPWR/NIOSH site www.eLCOSH.org