Excellence Award

Bechtel, Waste Treatment & Immobilization Plant Project
Richland, WA
February 24, 2012
Bechtel is the world's largest engineering, construction, and project management company

- BSII - Government Contracts, Environmental Cleanup Projects
- Civil - Airports and Seaports, Roads and Rail Systems
- Mining & Metals - Mines and Smelters
- Oil, Gas, Chemicals - Refineries and Petrochemical Facilities, Pipelines
- Power - Fossil and Nuclear Power Plants,
- Communications – Communications Networks
Hanford Waste Treatment Plant

BNII Waste Treatment & Immobilization Plant (WTP)

- Hanford Site one of the homes of the Manhattan Project
- World’s largest radioactive waste treatment plant
- 56 million gallons of radioactive and chemical waste
- 3200 BNI URS & Subcontractor Employees
  - 1100 Employees in the Hearing Conservation Program
Hearing Conservation Team

(Back row left to right)
- Jacob Bailey, *Industrial Hygiene Technician*
- Jacob Lukins, *Industrial Hygiene Intern*
- Scott Nickerson, CSP, *Lead Field Industrial Hygienists*

(Front row Left to right)
- Teresa Morgan, *Senior Industrial Hygienists*
- Rachel D'Amico, *Industrial Hygienist*
- Chris Bruni, MPH, CIH, CSP
  *Lead, Program Industrial Hygienist*
Hearing Conservation Initiative

Fully assess noise exposures at large construction site and communicate the exposure hazards to workers and management for implementing controls to address the challenges of:

- Continuous changing exposure parameters
  - Trades/Crafts
  - Environment
  - Tasks
  - Tools

- Large number of subcontractors
Initiative Elements

- Determine Regulatory Requirements
- Qualitative Noise Assessment
  (Inventory of noise sources)
- Monitoring & Exposure/Environment Assessment
- Communicating Hazards & Control Methods
- Implement Controls
- Medical Evaluation
- Periodic Program Self-Assessment
Regulatory Requirements

• DOE Owned Facility – 10 CFR 851
  – OSHA – 29 CFR 1910
  – OSHA – 29 CFR 1926
  – ACGIH/NIOSH (85 dB TWA, 3 dB exchange rate)
Qualitative Noise Assessment

Inventory of Noise Sources

- Tools
- Stationary Equipment
- Mobile Equipment
Inventory of Noise Sources

Tool Sound Level Database

- Manufacturer’s Data
- NIOSH Power Tool database
- Sound Level Measurements

http://wwwn.cdc.gov/niosh-sound-vibration/
Monitoring & Hazard Assessment

- Exposure Assessment by Craft
- Exposure Assessment by Task/Equipment
- Exposure Assessment by Environment
  (Worst possible exposure potential)
Monitoring & Hazard Assessment

- Extensive Monitoring is required for assessment
  - Personal Dosimetry
    - Job
    - Task
    - Environment
    - High Noise Task/Equipment

<table>
<thead>
<tr>
<th>IH Overall Progress</th>
<th>Totals for 2008</th>
<th>Totals for 2009</th>
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<th>Totals for 2011</th>
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<td><strong>Exposure Evaluations</strong></td>
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<td>Sound Level Surveys/Octave Band (SLSF-SA-YR-XXXX) (SAIH-002)</td>
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<td><strong>Equipment Calibration Records</strong></td>
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<td>Safety Assurance Calibration/Maintenance Tracking Sheet (CVR-SA-YR-XXXX) (SAIH-003)</td>
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<td>Qualitative Exposure Assessment (BEAP-SA-YR-XXXX Rev XXX) (SAIH-001)</td>
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<td>Exposure Control Plans (BEAP-SA-YR-XXXX Rev XXX) (SAIH-001)</td>
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</table>
Monitoring & Hazard Assessment

Sound Level Measurements

– Tools

– Barriers – Adjacent Work Areas

– Posting Requirements
Communicate Hazards

• Inform workers what tools, tasks and environments produce hazardous noise levels

• Communicate Controls
  – Equipment Database
  – Job Hazard Analysis (JHA)
  – Training
Communication of Jobsite Controls

• Barricades and postings
• Interaction/Coordination with other workers
• Noise suppression curtains
• Areas where use of PPE is required
Controls

Engineering

- Stationary equipment
- Workshops
- Portable noise absorbing curtains
Controls

Administrative

– Coordinating scheduling of jobs
– Set-up of noise field barriers
– Posting of sound levels and barrier distance
Controls

Administrative
– Hearing Protection Required Posting
– Task rotation/time limitation
– IH Job Site Technical Assistance
Controls

PPE

- Large selection
- Minimum NRR required
- Designated single hearing protection dB range
- Designated double hearing protection dB range
- Designated double hearing protection & time limitation dB range

**Hearing Protection Device**

<table>
<thead>
<tr>
<th>Approved Hearing Protection Devices</th>
<th>Foam Ear Plugs minimum NRR of 25</th>
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<tr>
<th>Ear Plugs with Mechanical Aid, Stem, or No touch minimum NRR of 25</th>
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<tbody>
<tr>
<td>E-A-R UltiFit (NRR 25)</td>
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<td>E-A-R UltiFit 29 (NRR 29)</td>
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<td>E-A-R Pull-In Plugs (NRR 26)</td>
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<thead>
<tr>
<th>Banded Hearing Protectors Caps and Supra-aural minimum NRR of 22</th>
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<tr>
<td>E-A-R Hearing Band Ultra-Fit (NRR 22)</td>
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<tr>
<td>Howard Light Hearing Band QC2 (NRR 23)</td>
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<thead>
<tr>
<th>Hard Hat Mounted Ear Muffs minimum NRR of 22</th>
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<tbody>
<tr>
<td>E-A-R Lightning LIP Helmet Mounted (NRR 25)</td>
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<tr>
<td>Howard Light Helmet Mounted (NRR 25)</td>
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<td>New Product Coming Soon</td>
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<tr>
<th>Ear Muffs minimum NRR of 22</th>
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<td>Howard Light Lightning LIP Bolts the Neck (NRR 25)</td>
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<td>Howard Light Lightning LIP Bolts the Neck (NRR 25)</td>
</tr>
<tr>
<td>Fellow Optima 95 Ear Cup Series Bolts the Neck (NRR 25)</td>
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<tr>
<td>Oets for ear cup Muffs for Transfer Application</td>
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<thead>
<tr>
<th>Hard Hat Mounted Ear Muffs - No Longer Available</th>
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<tbody>
<tr>
<td>Fellow Optima 95 Helmet Mounted (NRR 22)</td>
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<tr>
<td>Bungee Thunder TIR (NRR 20)</td>
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</table>

*If your hearing protection device is not on this list, please contact Safety Assurance for evaluation.*
Medical Evaluation

• Initial Base Line
• Past Medical Records
• Yearly Audiograms
• All STS Investigated, Standard Investigation Form
• If not temporary, audiologist evaluates
• Exit Audiograms
Program Assessment

- Yearly Self Assessment
- DOE Program, Assessment
- Continuous Improvement
- Findings & corrective actions documented
Program Assessment

Employee Threshold Shifts/Hearing Loss

Present Program Implemented in 2009

- 2007 2 Recordable Employee Hearing Losses
- 2008 1 Recordable Employee Hearing Loss
- 2009 No Recordable Employee Hearing Loss
- 2010 No Recordable Employee Hearing Loss
- 2011 No Recordable Employee Hearing Loss
Lessons Learned

- Much of the WTP program has been adopted by other divisions of Bechtel
- Program elements can be incorporated with relatively low cost
- Benefits are derived beyond the Hearing Conservation Program
Future Directions

• Develop criteria for procurement procedures to evaluate tools and equipment for the noise level reduction

• Research additional engineering controls to further reduce noise:
  – Hand power, pneumatic and powder actuated tools
  – Abrasive basting equipment
  – Mobile construction equipment

• Review cost and benefits provided by fit testing of hearing protection devices
Contact Information

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