Laboratory Ergonomics: Six Keys To Implementing An Effective Program

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Introduction – Paula Lewis, M.S., CPE

▪ Principal Consultant with EORM
▪ Over 17 years of general EH&S experience
  – Primary focus area is Ergonomics and Safety Program Management / Compliance
▪ Graduate of San Jose State University
  – B.S. Environmental Science
  – M.S. Human Factors / Ergonomics Engineering
▪ Accomplished Speaker
  – Schedule to speaker at Applied Ergo March 2012
    » Ergonomics and Sustainability
    » Participatory Ergonomics
Objectives

- Understand ergonomic risk factors in lab environment
- Keys to managing an effective lab ergonomic programs
- See “real world” examples of solutions
- Discuss barriers and ideas for overcoming them
Ergonomic Risk Factors in the Lab
Ergonomic Risk Factors

- Force
- Repetition
- Awkward Postures
- Static Postures
- Vibration

Overall Risk

- Duration
- Frequency
- Intensity
Force

- Opening vials
- Opening caps
- Pipetting
  - Ejecting tips
  - Adjusting volume
  - Viscous materials
- Sealing / Unsealing plates
- Squeeze bottles
- Wide grip on flasks
- Vivarium activities
- Lifting
- Contact stress
Repetition

- Capping / Uncapping
- Pipetting activities
- Vivarium activities
- Pouring
- Gripping / Grasping
Awkward Postures

- Shoulder postures
  - Reaching
  - Hood work
- Wrist postures
  - Pouring
  - Pipetting
- Back postures
  - Leaning forward
  - Lack of support
  - Twisting
- Neck postures
- Hand postures
Static Postures

- Looking down at samples
- Microscope use
- Sitting
- Standing
- Hood work
- Reaching
- Gripping
Vibration

- Vortexers
Six Keys to Implementing an Effective Ergonomic Programs
Six Keys to an Effective Program

1. Gather & Analyze Data
2. Implement Effective Solutions
3. Manage Implementation
4. Customer Service
5. Peer Support
6. Measure Outcomes
1. Understanding the Problem

Gather & Analyze Data

- Start with injury logs
  - Type of injury
  - Location
  - Task

- Lab setup checklists
  - Check for basic equipment

- Conduct ergonomic risk assessments
  - Use quantitative measures
  - Consider technology
Leverage Technology

- Remedy interactive product - Cartevia
- Tracks evaluation process
- Automates reports
2. Implement Effective Solutions

- Reduces ergonomic risk
- Improves productivity
- Improves morale
- Sustainable
2. Implement Effective Solutions

- Engineering Solutions
  - Reduce ergonomic risk
  - Improve productivity
  - Improve morale
  - Sustainable

- Administrative Practices

- Work Practices
Interesting Solutions

- Alternative shape pipettes
Interesting Solutions

- Task specific pipettes
  - Electronic tip ejection
  - Aspirating
  - Dispensing
  - Electronic
Interesting Solutions

- Small simple robots
Interesting Solutions

- Fluid transfer
Interesting Solutions

- Elbow / forearm supports
Interesting Solutions

- Turntables / Bench top organizers
Interesting Solutions

- Capping and Uncapping
Interesting Solutions

- Hand Tools

$0 $500 $1,000 $1,500 +$2,000
Interesting Solutions

Reduce awkward shoulder postures

- Shorty pipette tips
- Drummond Pipet-Aid
  - Lower position of controls
- Waste containers
Interesting Solutions

- Chairs
Interesting Solutions

- Microscope accessories
Interesting Solutions

- Miscellaneous
3. Manage Implementation

- Tackle highest risk issues first
- Assign owners and create deadlines
- Hold team accountable
- Implement regularly scheduled check in meetings

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<th>Action Item</th>
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<th>Assigned To</th>
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<td>2/28/12</td>
<td>Mary</td>
<td></td>
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<tr>
<td>Inventory current tools available</td>
<td>1/4/12</td>
<td>Joe</td>
<td>Red</td>
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<td>Complete risk assessment for Biology</td>
<td>1/10/12</td>
<td>Jane</td>
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4. Customer Service

- JAMA Study – Positive correlation between quality of patient service & health outcomes
  - Patient service includes:
    » Reduced wait times
    » Communication

- Apply this to employees
  - Quick turn around on evaluation requests & help obtaining equipment
  - Communication on status, check ins
  - Make employees feel like they are important and you care
5. Peer Support

- Create a task force or ergonomic committee
  - Senior management representative
  - Members from all departments
  - Ergonomic coaches
  - Train ergo champions
5. Peer Support

- Advantages
  - Peers tell peers more about what is really happening
  - Peer teaching has been shown to be more effective in lab settings (University of Vermont)
  - Employees see wide variety of tasks and start to seek out solutions
  - Deeper understanding of the processes and ability to identify more effective solutions
6. Measure Outcomes

- Injury and illness records
  - Injuries
  - Cost per injury
  - Days away, restricted or transferred
- Time away from work (absenteeism)
- Employee discomfort
- Are engineering controls being used?
- Turn around time (response to employee requests)
- Number of requests / trainings
- Risk impact
Barriers to Adopting Ergonomic Solutions

- Perception that it’ll take longer
  - “I don’t have time”
- “Manual pipettes are more accurate”
- Don’t know how to obtain the right equipment
- Don’t know about different practices or equipment
- “This is the way I’ve always done it and am more comfortable”
Barriers to Adopting Ergonomic Solutions

- New employees
- Pressure to perform and produce
- It’s not convenient
- Validation
- It costs too much
What can be done?

- Prioritize your solutions
- Find the right solution
- Follow up with your researchers
- Peer Support
- Document it in their procedures
What can be done?

- Make your process as transparent and easy
- Encourage cross pollination – to share best practices and ideas
- Get your pipette manufacture involved
- Understand your validation process
- Incorporate safety into their performance review
What can be done?

- Incorporate ergonomic orientation during the onboarding process of new employees
  - Review automation
  - Reviewing ergonomic equipment
- Cultural shift
Summary

- Evaluate risks and prioritize action
- Track completion and establish accountability
- Treat employees well and pay attention to their concerns
- Establish task force / Train ergo champions
- Invest in engineering solutions
- Measure results
Questions

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Download the Q&A Responses at
http://www.eorm.com/docs/Lab_Ergo_Responses_021412.pdf

If you have additional questions or comments, you can email Paula Lewis directly at lewisp@eorm.com