

Chemical Sciences Division

Self-Assessment Report

Ergonomic Safety in Chemical Sciences Division Laboratories

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Date

Approved by:

Ali Belkacem, Acting CSD Division Director

Date

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Executive Summary

Chemical Sciences Division's (CSD) Ergonomics Assessment last year (FY2011) focused principally on ergonomic practices and procedures employed by CSD personnel when working in offices. A number of ergonomic injury cases were discussed and analyzed, with emphasis placed on how to proceed in addressing and repairing the ergonomic discomfort. The key point in this past assessment was to establish to what extent ergonomically caused discomforts can be handled by CSD personnel and when it was necessary to call in the Subject Matter Experts (SME) in the EH&S (EHSS) Ergonomics Program to propose solutions.

This year's (FY2012) Ergonomics Self-Assessment focuses almost exclusively on potential and actual ergonomic problems encountered in one multi-faceted CSD group's laboratory efforts. Again, assessment of which procedures or equipment are most effective in addressing identified ergonomic problems in the varied laboratory environments is the principle objective of this assessment. How well do CSD and EHSS personnel collaborate in the discovery process, and in mutual cooperation to effectively implement solutions to actual or potential laboratory based ergo problems? Specific topics included are as follows:

- 1) Search for and testing of special tools to be used with work on high-vacuum chambers and associated pumping equipment and instrumentation. Units are used both in ALS and laboratory environments.
- 2) Development of smaller scale lifting and crane systems which are effectively operated by trained laboratory researchers. These systems are quite effective in relieving potential lifting and manipulation of apparatus problems; a type of problem which have been experienced already by several group members in the past at other workplaces.
- 3) Examination of ergonomic processes encountered in high powered laser setups. Reconstruction of several high-vacuum chamber closures, which are integrated into these laser systems, meant the potential for musculoskeletal injury was greatly diminished.
- 4) Consideration of and development of conceptual designs for auxiliary support equipment to preclude a researcher's often awkward positions from causing back or neck ergo injuries, when working with optical and mechanical elements on a laser table.

Efforts by the group members, as stimulated by discussions in the weekly research group meetings, results in nearly every member participating in the search for better tools, in review and judgment of suggested tools and designs, in development of effective "crane" equipment with unexpected LBNL monitoring system modifications and in exploring ideas about better ways to construct experimental apparatus. In short, the group members became actively engaged in contributing analysis of, control of hazards and improvement of workplace efforts; good ISM. The EHSS Ergo team was equally involved with working with these group members over an extended period (~8 months), giving the benefit of experience for judgment of some group member ideas,

and enthusiastically developing additional resources from discussions with associates and their own investigative literature searches.

Finally a new EHSS training course titled: EHS0056 – Ergo Material Handling & Body Mechanics in Labs was developed in a tripartite arrangement between CSD personnel, Ergo Team members and EHSS training course developer. This online ergo safety course better prepares outside LBNL collaborators, jointly doing experiments with CSD researchers, to become acquainted with good ergonomic workplace practices before their arrival.

Introduction

A multiple tasked work group, doing extensive laboratory work in laboratories in Bldg. 2 and also at the ALS, was frequently observed for approximately eight months during FY 2012. Their diverse tasks include many potentially sensitive ergonomic techniques.

1) Work on experimental vacuum chambers requires extensive use of tools, much of the time in ergonomically awkward positions, to manually tighten or loosen the required numerous bolts holding the equipment together. Revisions and improvements to the apparatus contained in these vacuum chambers also require frequent assembly or disassembly. Hard-to-reach work being done on the internally mounted experimental configurations also generates potential ergonomic problems.

2) Lifting and manipulation of experimental equipment parts constantly exposes the group members to potential ergonomic injuries; most likely back injuries. Identification of and some discussion of this problematic area were done in FY2011 – Ergonomic Safety in Chemical Sciences Division – Self-Assessment Report. In this self-assessment, solutions to the identified problems described within are achieved.

Impetus to examine these worker's laboratory ergonomics was strengthened by the realization that two members of this work group being assessed had already suffered serious ergonomic related injuries. Both persons have existing neck and back problems as a result of not using suitable ergonomic techniques while doing workplace activities previously. One of the group members injured his back, over eight years ago, while he was a post-doctoral student at LBNL. He still experiences the consequences.

Consequently there was a strong motivation by these injured people to ensure other group members would not suffer any similar or other ergonomically deficient fates. Leadership was shown (and continues) at the regularly schedule weekly group meetings. Extensive discussions resulted in fulfilling the goal of group members wrapping their arms around this broad ergonomic area, thereby gaining a satisfactory degree of ergonomic control over their associated work place activities.

Coincidentally, a person arrived at the EHSS Ergo Team in FY2012, who had become very familiar with laboratory workplace ergonomic problems through having worked in solving very

serious ergonomic problems in production-line work at the DOE Joint Genome Institute (JGI). She and the EH&S Ergo Team become actively interested in extending themselves by identifying, exploring and possibly solving ergonomic problems arising in many laboratory workplaces at LBNL. An unexpected large amount of time was spent by this Ergo Team member in working with many of the CSD group members upon topics already described. Additionally, new ergonomically sensitive areas were explored and sometimes developed.

While members of the Ergo Team were certainly more experienced about favorable or unfavorable consequences resulting from any given posture or body position, they were not any better prepared than the group members in proposing and testing new ergonomic friendly tools and procedures for the types of laboratory work encountered. Both parts of the combined team seeking answers to potential ergonomic problems were on equal footing and hence felt comfortable collaborating interactively on the numerous ergonomic problem areas. Active give and take between both groups was observed and certainly contributed to a speedier solution of various existing laboratory ergonomic difficulties.

Current Requirements

According to PUB-3000 Chapter 17, responsibilities for controlling ergonomic hazards are shared by management and workers within the division.

17.3 Responsible Parties

“All LBNL division directors, department heads, group leaders, supervisors, work leads and staff have responsibilities to help ensure a safe and healthful work environment. Commitment and cooperation from all employees, students, and subcontractors at all levels are required to successfully implement this policy.”

17.3.3 Employees

“Employees identified as being at elevated risk for developing work-related musculoskeletal disorders (WRMSDs) based on their work tasks (e.g., an average of 4 or more hours per day at computer or 4 or more hours per day performing repetitive or static office work) or performing repetitive or ergonomically awkward) must complete appropriate training: the classroom-based Ergonomics Awareness for Computer Users (EHS0060), or Remedy Interactive Web-based self-assessment *and training (EHS 0059) and the WorkSmart Ergonomics (EHS0062) training course.*

The JHQ JHA will trigger a brief annual

re-evaluation for all employees. using a computer for an average of 4 or more hours per day.

Employees have the responsibility to:

- Properly utilize tools, equipment, and accessories, and perform work safely.
- Request an ergonomics evaluation to identify and control at-risk conditions.
- With assistance from supervisor, implement evaluation recommendations in a timely manner.
- Promptly notify their supervisors of ergonomics concerns or early signs and symptoms of musculoskeletal discomfort.
- Report to Health Services for medical assistance when indicated.

CSD extends the work tasks covered by ergo evaluation not only for prolonged computer usage but also to include numerous laboratory workplace activities

that involve repetitive motion movements and many potential ergonomically awkward motions and postures.

Example: lifting of components and apparatus has been, and is a major consideration in many CSD research groups. Another example centers on repeated tightening and loosening of bolts on high vacuum chambers.

Assessment Scope

Notice of evaluation of the interactive collaborative efforts between a multiphase CSD experimental group and the ERGO TEAM from EHSS. Work activity areas studied are documented in detailed in the Appendix sections. These areas included work on experimental apparatus used in high vacuum chamber experiments, lifting and manipulating of the equipment and development of a new useful On-the-Job Training (OJT) class. The latter class is an extension of EHS course: *WorkSmart Ergonomics EHS0062*. This new course is concerned with developing good ergonomic practices similar to those covered in EHS0062, but for work outside of the office environment (i.e., work done in the laboratory and experimental areas).

Assessment Results

Findings:

None noted.

Observations and Lessons Learned:

Last year's Chemical Sciences Ergonomic Self-Assessment Report finished with the following observation. "The LBNL Ergo Team did a survey of work practices in this group's laboratories (AMO group). Among the suggestions offered was the advice to obtain special tools to do the bolt and nut manipulations on their vacuum chamber devices. Good suggestion, but no leads (in FY2012) were ever supplied as was promised. Consequently, gathering information on specialized tools has become one of the goals for the group members. They are showing the same refreshing competence in researching and developing this ergonomic task as they did for independently designing and building their "portable laboratory lifting crane unit." Item discussed in FY2011 CSD Ergonomic Self-Assessment.

In this FY2012 CSD Laboratory Ergonomics Self-Assessment report, observation and reporting of further progress by this sizeable and diverse group's efforts are presented primarily in a chronological order as the several ergonomic items under consideration were formulated and put into place.

Appendix A shows initiation of the dialog on October 27, 2012, between the principal AMO group representative (A1) and the then line leadership of EH&S Ergonomic Safety Team. AMO representative, A1, felt that EH&S Ergo Team could and should be able to provide satisfactory solutions to the numerous laboratory ergonomic problems (see **Appendix B**) that group members had formulating in several group meeting sessions devoted to ergonomic lab safety in their labs. A1 was acting under the belief that Subject-Matter-Experts (SME) in the Ergo Team would be much more skilled than he in fixing the group identified ergonomic problems. Similarly, it appeared that the Ergo Team's EH&S line management also entertained this notion. Fortunately for all parties, Melanie Alexandre, who had recently transferred from the Joint Genome Institute (JGI), was assigned the task of interfacing the EHSS Ergo Team with the ergonomic needs of the AMO research group. At the JGI Melanie (Mel) became quite familiar with the realized

possibility of serious laboratory ergonomic conditions as experienced by workers in the genome sequencing production lines.

After several preliminary meetings, a more realistic assessment of how the various AMO group members, Mel and her boss, Ira Janowitz (Ergo Program Manager) would act together with AMO personnel to form an effective ergo program tailored to the AMO requirements. If useful answers are to be found every group member and the EH&S (now EHSS) personnel need to work together, sharing ideas and solutions for the identified ergonomic problems.

Appendix C shows an effective tool for focusing these combined efforts, organized along the lines of treating the AMO group's ergonomic requests as one large project, with many clearly broken out sub-sections. This Project Tracking sheet showed organization of the project along the items listed in Appendix B. Using the periodic Project Tracking Sheet would also serve the purpose of being an on the mark tool for informing AMO senior management and CSD senior management (Deputy Director for Operations) about progress being made.

Delineation of Laboratory Ergonomic Projects in Appendix C are:

- 1) Project **A1 – Online Ergo Training Course**
- 2) Project **A2 – Electric Forklift Training**
- 3) Projects **B1, C1 and D1 – Rigging for Rooms 102, 104 and 333 in Bldg. 2 laboratories.**
- 4) Project **B2 – Hand Tools in Room 102, Bldg. 2**
- 5) Project **B3 – Power Tools for Room 102, Bldg. 2**
- 6) Project **B4 and D2 – Step Ladders (Stools) and Platforms**
- 7) Project **D3 – Reaching Optics – Room 333, Bldg. 2**
- 8) Project **C-333 – High Vacuum Chamber Lids and Lifting Equipment**

Already by **11/15/11**, all affected personnel had, at the very least, formulated action plans for solving their ergo problems. Note Project **A2 – Electric Forklift Training** – was solved already by having three group members take a class from Matt Rice, EHS. Previously, who was the appropriate EH&S (EHSS) contact to get this training from was not known and wasn't readily available in the general EHSS online information resources, at least to A1. Item 8 was not included in this Project Tracking Sheet – Appendix C.

Appendix E contains emails describing the paths forward being developed to address the serious ergo problem for this group's efforts in working on the nuts and bolts of high vacuum chambers fittings. As highlighted, the problems and solutions center on the concept of "safe wrenching in the lab". Interviews of LBNL personnel in other hill locations were done to determine whether they have already created unique tool solutions which could also be adopted by the AMO group. An ALS resource was identified for development of "custom" tools, but the most helpful contact was the Snap-On Tool representative. He pointed to obscure tools in the catalog, which had been overlooked by AMO A1 worker. Several identified obscure items later proved to be useful. The offer by the Snap-On representative to provide a seminar on "safe-wrenching in the lab" has not yet been acted on by either the EHSS Ergo Team or this part of the AMO group.

Appendix F is a "white paper" summary of ergonomic research and work, prepared by the AMO representative A1, which covers in great detail those problems discussed in this self-assessment report. Lists and photos of many items of hardware which were considered and/or adopted are shown. For example, the special tools from Snap-On, which were ordered, are listed beginning on

page 23, of this **Appendix F – “Laboratory Ergonomics in 2-102, 104, 106 (Lab Ergo Report)”**. This Appendix also contains details on hardware considered for solving ergonomic problems encountered in nearly all of the other B, C and D projects. Pages 24-25 and 27-33 contain information on Projects **B1, C1 and D1 – Rigging for Rooms 102, 104 and 333 in Bldg. 2 laboratories, B1, C1 and D1 – Rigging for Rooms 102, 104 and 333 in Bldg. 2 laboratories, B3 – Power Tools for Room 102, Bldg. 2 and B4 and D2 – Step Ladders (Stools) and Platforms**. Decisions are clearly indicated whether to pursue acquisition of a particular identified item in sections of **Appendix F – Lab-Ergo Report**.

Appendix D, a later **Progress Tracking Sheet – 1/12/2012** – is a two months progress report. The enthusiasm in this report, as compared to **Project Tracking Sheet – 11/15/11** is tempered. Realization that quickly completing solution of identified group ergonomic deficiencies doesn't happen. As an example note the new entry for project **A2**, which in the previous report was assessed already solved. In this report **A2** was still mired in obtaining the essential On-the-Job Training (OJT) component which fulfills authorization to use the equipment. Progress was going forward in all the tasks, just at a somewhat slower pace than was originally expected.

Appendix G – Lifting problem details problems encountered in addressing how and when purchase, assembly and testing of small laboratory assisted lifting equipment would be certified and use of authorized. Noted in Appendix G – Feb. 14, are the following criticisms:

“We tackled the next lifting problem in our lab and ran into the same trouble we had before: Nobody at LBNL is allowed to order shackles, chains, slings or other lifting gear besides the contractor from Crane America (Lou Pandolfo).

While we may be able to find alternative slings and shackles on the hill, which would help us temporarily, we have one crucial part which is a special custom design and is not available outside LBNL. We overdesigned and built it and we are sure it would hold the weight but, as I understand it, we are not allowed to use it before it is load tested. This load test is as well backed up by 2 months and we are cornered:

- we already delayed our science by 2 months
- we already spent time on thinking about and finding alternative lifting gear
- with the latter we technically could proceed but we would need to use our not yet certified custom part. It would be good for our backs but it would be against the law and thus we cannot do it.
- we can lift the old way using just our bear hands like before but we would risk hurting us. I want to avoid this.

This problem is a repetition of what happened before.

However, we believe that LBNL has to think about a way to improve this situation on the management side and provide him with the necessary assistance.

With an improving safety culture throughout LBNL we think that more and more people will look for ergonomically safe ways to lift equipment and thus the demand for lifting gear and professional assistance will be even increasing. We believe that a way to cut down the waiting time for parts and help is important to work safe at LBNL.” Other included information in Appendix G shows the interactions between the AMO group, EHSS Ergo group and Facilities' efforts in an attempt to clarify and establish procedures for handling certification and authorizations for lifting equipment. Finally on May 12, 2012, the AMO group received a signed LIFT Certification authorization notice. Apparently Crane America, the former outside lift authorizing contractor, was replaced by Crane Tech, another non-LBNL outside contractor.

A subsequent report from AMO representative, A1, indicates this contractor change has resulted in a much speedier and proactive attitude towards helping the customer.

Appendix H – Successful Approved Lift, May 24, 2012, has numerous photos showing the various steps involved in lifting and flipping an essential part of experimental equipment in 2-104. Picture and design of the custom apparatus used in this operation and other lifting devices fabricated by the AMO group are found in **Appendix. F – “Laboratory Ergonomics in 2-102, 104, 106 (Lab Ergo Report)”** pages 14-19. At last the lifting system is in place and helps to ensure reduce ergonomic back and upper torso injuries.

Appendix I – Laser Table Ergo Resources – contents show the initial inspiration for a solution to the ergonomic problem of bending over laser tables to adjust optical elements located more towards the center of a laser table, not on the laser table edge. It was thought by AMO-A1 person that by providing an overhead strap to provide support while leaning forward, thereby much reducing back strain. Ergo Team went along with developing this idea. – **Dec. 16, 2011.**

Appendix J – Laser Ergo: Laser Table - registers the complaint from the laser lab workers that the one-arm strap idea isn’t workable. Adjusting or aligning optical elements requires a researcher to use two hands, arms, etc. Hanging from a strap just was unworkable in the researchers’ estimation. An alternative idea was offered by one of the AMO laser group graduate student. This Ergo Leaning frame design was sketched and was offered up for criticism. Concerns were forthcoming from the Ergo Team member, Mel and from AMO rep A1, **March 7, 2012.**

Appendix L – Laser Ergo Stand – was fabricated as a possible alternative leaning frame design. **May 16, 2012.**

Lab testing was begun on May 17, 2012, with no conclusive evaluations being offered. Optical element adjustments and alignments were not needed as the well-tuned laser setup was working very well. It is still an open question whether leaning frame designs, as constructed, would be useful to alleviate ergonomic back strains.

Late developing test of laser ergo stand was received from personnel involved in the BELLA project. They have borrowed and adapted this stand for use in the clean-room setup of lasers and optical components in this major project. Email states the design and prototype are working quite well.

Appendix K – Ergo Review of Bldg.2-room 333 laser lab –March 22, 2012 - is constructed similarly to **Appendix F –Lab Ergo Report**. Results detailed in **Appendix K** addressed the topics of leaning frame use and substitution of lighter weight plastic materials in place of lids fabricated from either aluminum or stainless steel. Conclusions reached indicated: 1) leaning frame probably wasn’t necessary at the time for use in this laser lab setup and 2) replacement of high vacuum chamber lids with non-metallic plastics would significant reduce back and upper torso strain resulting from the frequent manipulation of these lids in adjusting the experimental setups.

Appendix M – Lid Dimensions –May 10, 2012 – details the dimensions and calculated weights for the six high-vacuum chamber lids associated with the laser system in bldg.. 2-room 333.

Table 1 – High Vacuum Chamber Lids weights when constructed from metal or plastic

Lid – Quantity - Dimensions	Made from Aluminum or Stainless, lbs	Made from Lexan or Acrylic
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#1, 2 lids, (0.75" x 17" x 29") = 6.063x10 ³ cm ³	36.1 lbs. - Aluminum	16.1 lbs.
#2, 2 lids, (14" diam. x 1") = 2.524x10 ³ cm ³	44.7 lbs. - Stainless Steel	6.7 lbs.
#3, 1 lid, (0.75" x 28" x 28") = 9.636x10 ³ cm ³	57.4 lbs. - Aluminum	25.5 lbs.
#4, 1 lid, (1.25" x 28" diam.) = 1.262x10 ⁴ cm ³	75.1 lbs. - Aluminum	33.4 lbs.

Constructing lids using plastics is quite acceptable if a high vacuum level of 10⁻⁶ to 10⁻⁷ torr is satisfactory. These materials would not however be acceptable for ultra-high vacuum work. The significant reduction in weights offered by using plastic lids means, in most cases, only one researcher is needed to manipulate these awkward but essential vacuum chamber components. An alternative lid design was developed for the vacuum chambers used in a new laser system installed in **July, 2012**. In this construction the lid was divided into smaller segments, which were supported by flush mounted cross –beam structures installed on the chamber body. This meant the weight of any lid was reduced to the range associated with the plastic lids in the other AMO laser laboratory. Again a researcher would likely be able to handle these lids at shoulder heights.

Appendix N – EHS0056 – feedback – March 16, 2012 – is a record of criticisms offered on viewing a beta version of the new online ergonomic training class entitled: EHS0056 “Ergo Material Handling & Body Mechanics in Labs”.

Appendix O – EHS0056 – Naming – April 19, 2012 – contains discussion of naming of this ergonomic training course centered on dealing with ergonomics in the laboratory workplace. EHS0056 will complement with a companion course: EHS0062 – Worksmart Ergonomics, which is more concerned with ergonomics in the office environment. An advantage of EHS0056 is that the course is online and can be taken 24/7. Preparing outside of LBNL collaborators can complete this training before arriving at LBNL.

Final Observations -

It is gratifying to observe a group taking charge of their own workplace to produce a safe ergo correct work environment. It is even better to realize this group provides a model for other Chemical Sciences groups on how to generate a “ground-up” safety culture. Integrated Safety Management (ISM) is being practiced by personnel in the “trenches” on their own initiative, not by directive from line management. This is the desirable goal of safety integration in ISM. Don’t want to take the I out of ISM so the process becomes simply Safety Management.

Conclusions

Chemical Sciences Division personnel can recognize ergonomic needs in the laboratory workplace. In cooperation with EHSS Ergo Team members the two parties can work together, as equals, to develop effective solutions to laboratory ergonomic problems. In a period of 7-8 months of concerted effort the original ergonomic problem list developed by discussions among the group members were addressed and mitigated. The schedule that was first envisioned was not always the schedule that eventually developed, but the corrective ergonomic actions were nonetheless completed in a remarkable fashion.

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Appendixes

Appendix A – Assignment of EHSS Collaborator

Thorsten Weber tweber@lbl.gov

10/27/11

to Ali, Champak, Daniel, Felix, Hidehito, Irina, Bishwanath, Travis, RRakowski, me

Dear all,

After talking to Richard DeBusk about some ongoing ergonomic issues in the lab he offered to assign an EHS representative (Melanie Alexandre) to help solving these problems.

This is a one-time opportunity and our chance to make our workplace safer and get long-term problems solved or start solving new problems.

The foundation of this process is a list of issues we have. Please find attached the list I came up with so far. Please feel free to come up with more wishes or issues. Reply by email or just swing by – the sooner the better.

I will present this list to Melanie next Thursday and she will help us to get things going.

Best wishes,

- Thorsten

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Appendix B – Laboratory Ergonomic Issues List

Oct. 27, 2011

Lab Ergonomics Issue List

A.) General: contact Person = Thorsten Weber, x5588, TWeber@lbl.gov

A.1.) Online (10 to 20mins) lab ergonomics training (video) needed to educate short time guest workers (< 4weeks). Supplement to EHS0062.

B.1.) Want to be able to use the electric forklift in the building 2 loading dock.
Got the run around (Gill Torres => Mike Wisnerhop => Matt Rice => Wayne Greenway => Gill Torres)

B.) 2-102: contact Person = Thorsten Weber, x5588, TWeber@lbl.gov

Information, guidance and help needed with:

B.1.) rigging accessories:

- a.) flat wire rope (~23 and 32in) + shackles + chains
- b.) swivel eye bolts (3/8) + shackles + chains

B.2.) ergonomic tools:

Wrenches with different (handle bar) lengths and thickness
Special shaped wrenches

B.3.) power tools:

Impact wrenches (compressed air and electric)
Torque wrenches

B.4.) light, portable, adjustable, transparent foldable work platforms, stepstools, pedestals that hopefully do not require scaffold or ladder training

C.) 2-333: contact Person = Champak Khurmi, x5613, CKhurmi@lbl.gov

Information, guidance and help needed with:

C.1.) lifting lids of up to 3 vacuum chambers:

- a.) concepts and equipment needed (cranes or telescopic arms ?)
- b.) rigging accessories (slings + shackles + chains)

C.2.) light, portable, adjustable, transparent foldable work platforms, stepstools, pedestals that hopefully do not require scaffold or ladder training

C.3.) how to reach and adjust some optics in the middle of the laser table ?

Appendix C – Report to AMO Contact- 11/15/2011

Project Tracking Sheet as of 11/15/11

Project #/Title	Progress Report	Actions	Status	Comments from Thorsten
A1 Online Ergo Training Course	Have created strawman of content and Thorsten provided comments. Have spoken with James Basore for support and assistance.	<ol style="list-style-type: none"> Mel to partner with James to create video clips/ graphics/ media to make the course more engaging Mel to partner with James to obtain course # 	In Progress	Looks very good already – it's clearly getting to something very useful. As soon as it shows up I will link it to my specific JHA for guests.
A2 Electric Forklift Training	Three employees took class on 11/15	<ol style="list-style-type: none"> Thorsten determine if additional employees need to take the class. If so, notify Matt Rice 	In Progress	We are on our way. No more input from Mel needed.
B1, C1, D1 Rigging for Rooms 102, 104 & 333	Rigging accessories for crane in 102 (B1) have been provided by (B1): Lou	<ol style="list-style-type: none"> Thorsten, et al try out rigging accessories and provide feedback Lou to confirm rigging accessories will be safe Determine rigging needs for 104 and 333 	In Progress	We know what we want for 102. Waiting for Lou's green light on the safety issue – then we just need some more shackles.
B2 B2 room 102 Hand Tools	Snap- On Tools contact Gary Kramer 707-321-4044 Mel has contacted Mech Engineering to determine if they can provide assistance if needed for custom tool design and fabrication	<ol style="list-style-type: none"> Thorsten contact Gary and report back if able to provide assistance or not Explore these options for possible solution for improving functioning of existing tools: Possible options for changing tool grips/padding: 	In Progress	We will order the mold and the tape from McMasters and give it a try. Tool grip and

	Options for padding tool grip provided for Thorsten to consider	<p>Tool grip: http://www.mcmaster.com/#tool-grips/=exlo0b</p> <p>Plastic dip: http://www.plastidip.com/home_solutions/Plasti_Dip</p> <p>Rubber gripping: http://www.customrubbercorp.com/l_grips.htm http://www.maddak.com/closedcell-foam-tubing-assorted-color-p-28100.html</p> <p>3. Rob Duarte @ X7229 from Small Projects Engineering may be a good starting point if we need assistance with creating custom tools</p>		<p>Plastic dip link don't seem to help us.</p> <p>I got the link to the snap-on catalog from Gary Kramer. I found a couple of items which may be helpful. We will discuss within the group what we like and then order it.</p> <p>Keep us updated if you come across any other vendor who may sell some ergonomically shaped tools.</p>
B3 B2 room 102 Power Tools	Truitt and White http://www.truittandwhite.com/ in Berkeley 1800-600-7644	1. Thorsten contact Truitt and White to visit showroom	In Progress	Thinking about going there with some group members.
B4 & D2 Step Ladder Platform Solutions	Matt Rice is exploring options	1. Mike Rice will continue to communicate options to Thorsten	In Progress	I sent Mike an email with the pedestal dimensions we like.

Appendix D – Report to AMO Contact – 1_12_2012

Project Tracking Sheet as of 1/12/12

Project #/Title	Progress Report	Actions	Status	Comments from Thorsten
A1 Online Ergo Training Course	Story board completed. Planning for photo shoot scheduled for 1/19. Photo shoot scheduled for 1/24. Irina will be 'short term guest' featured in the course.	<ol style="list-style-type: none"> 3. Take needed pictures 4. Create course (James Basore) 5. Beta test course with visiting scientists coming in March 2012 	In Progress	
A2 Electric Forklift Training	Three employees took class on 11/15. Need to complete OJT. Monroe Thomas is the custodian and can provide OJT.	<ol style="list-style-type: none"> 2. Thorsten contact Monroe or Matt to complete OJT 	In Progress	
B1, C1, D1 Rigging for Rooms 102, 104 & 333	<p>Rigging for crane in 102 (B1) is completed.</p> <p>Ideas have been generated for 104 (C1) by Dan. Dan will work with Lou. Parts have been ordered to create a rotating part rack.</p> <p>333 staff did not proceed with obtaining rigging (D1)</p>	<ol style="list-style-type: none"> 4. Ball is in 333 (D1) employees hands and they will notify Lou when further assistance is needed 5. Dan Slaughter can notify Lou for rigging assistance. Mel can be contacted regarding any further assistance needed for creation of rotating rack. 	<p>B1 Completed</p> <p>C1 In Progress</p> <p>D1 No actions taken/ needed at this time</p>	
B2 B2 room 102 Hand Tools	Several Snap-on tools have been ordered. Handle molding and tape has also been ordered.	<ol style="list-style-type: none"> 4. Mel to provide any additional vendors who sell ergo shaped hand tools 5. Thorsten will provide feedback about the success of the options selected to determine if further actions are needed 	Completed, but ongoing exploration for additional tool options	

	 <p>Torque magnifiers were not pursued as an option due to the torque magnifiers being designed for greater torque than required.</p>			
B3 B2 room 102 Power Tools	<p>Purchased impact wrench</p> 	2. Thorsten will provide feedback about the success of the impact wrench to determine if further actions are needed	Completed	
B4 & D2 Step Ladder Platform Solutions	<p>Order placed for 8020, but not received yet. They will try to make custom platforms as a first step. Already have kneeling pad solutions.</p>	2. Thorsten will communicate if further resources or support is needed to address B4 and D2	In Progress	
D3 Room 333 Reaching Optics	<p>Plan to pursue options for an overhead handle/bar for support while leaning forward and doing some tasks kneeling may reduce forward bending with low back. Awaiting guidance from Jerry Bucher regarding what can safely be used to secure overhead handle/bar</p>	1. Explore options for using overhead 'handle bar' for support while leaning forward	In Progress	

Appendix E – Gary Kramer – Snap-On Tools – Lecture Offer

From: Thorsten Weber [mailto:tweber@lbl.gov]
Sent: Thursday, February 09, 2012 1:50 PM
To: 'Melanie Alexandre'; 'Jerome Bucher'
Cc: Kramer, Gary A; 'Ira Janowitz'
Subject: ergo tools

Thorsten Weber tweber@lbl.gov
to Melanie, me, Gary, Ira

Hi Melanie and Jerry,

Today we had Gary Kramer from Snap On Tools over here and we talked about ergonomic tools and oddly shaped and special tools which can make a big difference in reaching hard to access nuts and bolts. In addition to what we already ordered from Snap On we singled out some more tools I have overlooked so far and I will select some, order, and try them out.

Like me Gary hurt himself in the past and is now a passionate advocate for “save wrenching in the lab”. He mentioned that he is available for a seminar to share his experience and point out good tools and behaviors to avoid injuries – not so much to promote Snap On but to instill awareness in the young people and keep them safe.

Ergonomics is the main injury source for the lab (80percent or so) and ergo problems are not restricted to office work but play an important role in the labs as well (this is where I got hurt). You may want to think about getting in contact with Gary and take him up on his offer...

Best wishes,
- Thorsten

Dr. Thorsten Weber
Lawrence Berkeley National Laboratory
Chemical Sciences Division
One Cyclotron Road
Berkeley, CA-94720, USA
Tel: [1 510 486 5588](tel:15104865588)
Fax: [1 510 486 5494](tel:15104865494)
Mailstop: 2R-0100, Building 2, Room 118
Web: <http://amo-csd.lbl.gov/>

Ira Janowitz iljanowitz@lbl.gov

Feb 9

to **Richard, Mike, Dennis, Robert**, Thorsten, Melanie, me, Gary

Sounds like a very good idea -- thanks for passing that on. We'll get in touch with Gary and come up with a good way to get the word out at LBNL.

Regards,
Ira

Direct tel: [510-486-6071](tel:510-486-6071)
Mobile: [510-501-9840](tel:510-501-9840)

Kramer, Gary A Gary.A.Kramer@snapon.com Feb 10

to Thorsten, Melanie, me, Ira

Hi Thorsten,

Thank you for taking the time to mention our ergo/safety discussion today for hand tools in the lab.

I know, I could benefit UCLBL, Safety/Ergo Programs for tools and equipment in the Labs & the Shops with my 27 years for tool, ergo & safety experience.

Appreciate the consideration.

Gary Kramer

Snap-On Industrial

(707) 321-4044 Cell

(707) 838-4601 Fax

Appendix F - LABORATORY **ERGONOMICS IN 2-102, -104, and -106**

Thorsten Weber tweber@lbl.gov Feb 28

to Melanie, me, Ken

Dear Melanie,

Please go ahead and distribute our findings to whoever you have in mind. The more people profit from this the better.

Please use the updated file attached. Yesterday evening I came across another nice lifting device alternative and took a picture. I included it in the document – it's on page 19.

Unfortunately the original WORD file is 27MB and thus quite large for emailing. I tried to compress it but got it down by 2% only.

If you are interested in the original file with all its pictures to modify or expand it you are welcome to stop by with a USB stick.

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: Melanie Alexandre [mailto:mmalexandre@lbl.gov]

Sent: Tuesday, February 28, 2012 7:30 AM

To: Ken Barat

Cc: Thorsten Weber; Jerome Bucher

Subject: Re: lab ergo of 2-333 and summary

 **LabErgoEquipment.pdf**
8171K [View](#) [Download](#)

LABORATORY ERGONOMICS IN 2-102, 104, 106

Contacts:

Thorsten Weber
Lawrence Berkeley National
Laboratory Chemical Sciences
Division – AMOS Building 2, room 118,
x5588

TWeber@lbl.gov

Melanie Alexandre
Lawrence Berkeley National Laboratory
Environmental, Health and Safety
Division Building 100, room 151, x2553

MMAlexandre@lbl.gov

Ergo Problems in the Lab:

Some Examples

Working in tight spots/confined spaces:



Many nuts and bolts are hard to access on the vacuum chamber. Sometimes they have to be assembled almost blind and the employee is forced to work with a bad posture. Special, ergonomically shaped tools (wrenches, pliers etc.) of different lengths are needed to help tightening these flanges in an easier way.

Sometimes a load of torque needs to be applied to tighten these flanges. Slim power tools are highly desirable to help the worker. **Working with parts and objects that are hard to reach:**



The flanges are hard to reach since the chamber is tall or located in the middle of a laser table. The employee has to tip-toe on the step stool, work with stretched out arms, or overhead. (Foldable) platforms and pedestals are needed to get the worker closer to the object. Longer tools (wrenches, pliers etc.) would help as well.

The scaffolds and platforms need to be removable fast and easy since the worker needs good access to the lower part of the setup too.

Working with heavy loads at hard to reach places:



Portable cranes or crane carts are of high interest as well to help with the load of the parts which need to be attached (the turbo pump weighs about 30lbs; with stretched out arms it can hurt your back quickly).

Trying to tackle these issues we ordered the following equipment

Special Tools:

Snap On:

Gary Kramer, PO Box 9004, 3011 E. Route 176, Crystal Lake, IL 60039, cell: 707 321 4044, Fax: 707 838 4601, email: gary.a.a.kramer@snapon.com

Part Number	Description	Quantity	Unit	Price (\$)
OEXLM10B	Long handle wrench	1	Each	18.59
OEXLM13B	Long handle wrench	1	Each	20.15
OEXLM17B	Long handle wrench	1	Each	28.73
OEXL16B	Long handle wrench	1	Each	18.85
OEXL18B	Long handle wrench	1	Each	20.93
CXM1012	Half moon wrench	1	Each	18.59
CXM1113	Half moon wrench	1	Each	19.63
CXM1417	Half moon wrench	1	Each	22.62
CX1416	Half moon wrench	1	Each	19.63
CX1820	Half moon wrench	1	Each	22.62
SBXM1012	S shaped wrench	1	Each	19.73
SBXM1113	S shaped wrench	1	Each	22.75
SBXM1719	S shaped wrench	1	Each	31.98
SBX1012	S shaped wrench	1	Each	19.73
SBX1416	S shaped wrench	1	Each	20.02
SBX1820	S shaped wrench	1	Each	23.14
FHOF80	Offset flex handle ratchet	1	Each	66.04
912AEP	Pliers Pistol Grip	1	Each	31.17
612AEP	Pliers Pistol Grip	1	Each	32.50
VSM5210B	Four Way Angle Head	1	Each	14.17
VSM5213B	Four Way Angle Head	1	Each	17.13
VSM5215B	Four Way Angle Head	1	Each	17.81
VS14B	Four Way Angle Head	1	Each	14.43
VS16B	Four Way Angle Head	1	Each	15.21
VS18B	Four Way Angle Head	1	Each	16.90

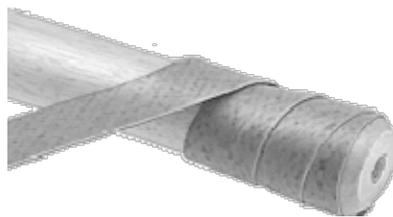
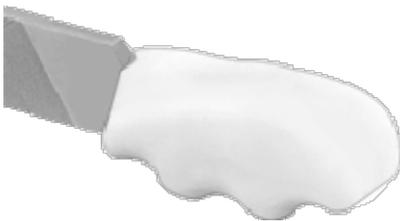
VS20B	Four Way Angle Head	1	Each	18.59
FHOM10B	Flex Combination	1	Each	24.83
FHOM13B	Flex Combination	1	Each	25.09
FHOM15B	Flex Combination	1	Each	31.85
FHO14B	Flex Combination	1	Each	23.40
FHO16B	Flex Combination	1	Each	23.66
FHO18B	Flex Combination	1	Each	28.08
FHO20B	Flex Combination	1	Each	33.54
SGDMRCE44	5 Position Screwdriver	3	Each	42.80
SDM213B	Flat Tip	3	Each	1.33
SDM222IRB	Phillips	3	Each	1.33
86EP	Pistol Grip Cutter	1	Each	25.09



* product(s) acquired

McMasters:

Tool grip: <http://www.mcmaster.com/#tool-grips/=exlo0b>



* product(s) acquired

S & S: Power tool: Makita LCT300W

Compact Lithium Ion 3 Piece Kit Consisting of an Impact Tool, Drill, and four position Flashlight

Part# SS2605980

Price: \$ 348.72 ea



* product(s) acquired

Overhead Straps at the Laser table:

Pictures of ceiling in B2 Room 333

Goal: Explore feasibility of using a loop strap or handle (similar to something seen on a bus or train) on the overhead support beam to provide some support while scientists are leaning forward to work on laser table.

Example of bus strap:



This would be possible locations
where we would attach a strap

* idea not yet pursued

Step Stools:

http://www.labsafety.com/dixie-step-stands_24550550/?searchterm=step%2bstools



* product(s) not yet acquired

<http://www.harborfreight.com/step-stool-working-platform-66911.html>



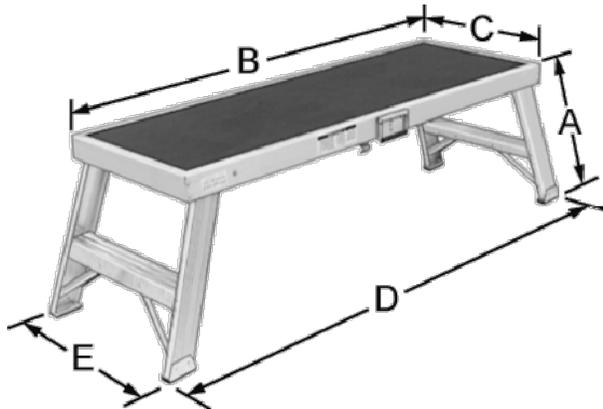
* product(s) not yet acquired

<http://www.stepstooluniverse.com/category-s/7070.htm>



* product(s) not yet acquired

<http://www.mcmaster.com/#step-stools/=f1dfbp>



* product(s) not yet acquired

http://www.productsforindustry.com/eCommerce/eComm?template=product&tran_id=19&ship_no=-1&prod_id=78355&search_criteria=7025501&parent_id=0



* idea not yet pursued

use standard stepstools:



* product(s) acquired

Platforms:

<http://www.strombergcarlson.com/store/products.php?categoryParentName=RV+Steps+%26+Step+Accessories&categoryName=Platform+Step>



* product(s) not yet acquired

http://www.productsforindustry.com/ecommerce/eComm?template=iCatalog/0513&user_id=&cust_no=&ship_no=-1



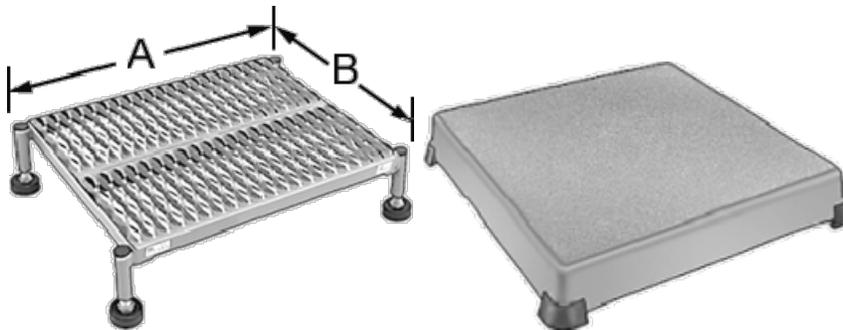
* idea not yet pursued

<http://www.pplmotorhomes.com/parts/rv-steps/rv-step-platform-acar.htm?source=google&qclid=CI6px-KXyawCFSkZQgodAX4wqg>



* idea not yet pursued

<http://www.mcmaster.com/#work-platforms/=f1uytv> got to “adjustable height steel work platforms” and “fixed height fiberglass work platform”



* idea not yet pursued

8020 custom made Platforms:

2 platforms: 18Dx24Wx7.5in and 18Dx36Wx16Hin

Part Number	Description	Quantity	Unit	Price (\$)
4442	15S SQ Tricorner	8		17.955
3018	LHSCS 15S	24		0.567
4332	15S 2 Hole I.C.G.	20		3.87
3320	5/16-18 X 0.678" FBHSCS & Econ T-nut	40		0.54
1515-Lite	1.5"x1.5" Lite Extrusion 2@21"	42	inch	0.405
1515-Lite	1.5"x1.5" Lite Extrusion 2@33"	66	inch	0.405
1515-Lite	1.5"x1.5" Lite Extrusion 6@15"	90	inch	0.405
1515-Lite	1.5"x1.5" Lite Extrusion 4@5" w/7060 on both ends	20	inch	0.405
1515-Lite	1.5"x1.5" Lite Extrusion 4@13" w/7060 on both ends	52	inch	0.405
7010	Cut to length for 1515-Lite	18		1.755
7060	5/16-18 tap charge 1515	16		1.755

Plus 0.5in thick PVC boards (18x24in and 18x36in) from McMaster



* product(s) acquired

Alternative Platform option (diamond stainless steel plate): B77 at LBNL



* idea not yet pursued

Pallet Jack Tray to transport mid-weight items:

Custom made at B77 of LBNL

Aluminum Pallet Jack Tray for transporting 3 heavy car jacks at once (72Lx25Wx4inH of 0.125in Aluminum)



* product(s) acquired

Car Jacks, Stands and Carts for lifting and positioning heavy Objects:

Snap On:

Gary Kramer, PO Box 9004, 3011 E. Route 176, Crystal Lake, IL 60039, cell: 707 321 4044, Fax: 707 838 4601, email: gary.a.a.kramer@snapon.com

Part Number	Description	Quantity	Unit	Price
YA1642A	Jack, Hydraulic Service 2-ton (20" max. lift)	3	ea	153.31
				459.93

McMasters:

<http://www.mcmaster.com/#scissor-jacks/=gfnfnt>

<http://www.mcmaster.com/#ball-transfer-plates/=gfng11>

<http://www.mcmaster.com/#equipment-movers/=gfngs9> the go to "steel dollies" and "multidirectional tripod dollies"



* product(s) acquired

Crane Cart to lift midsize Equipment:

SYCLONE ATTCO SERVICE, P.O. BOX 458, EMMETT, ID 83617
 CORPORATE: 8395 W. IDAHO BLVD, LETHA, ID 83636
 TEL (208) 365-5770, FAX (208) 365-5771
www.skyhookmfr.com

QTY	PART#	DESCRIPTION	UNIT PRICE (List price)
1	8570-C-21.3T-98-RSSSSSS-98M-130LB	'Custom' Model 8570 Sky Hook w/Mobile Base Modifications: (see approval drawing) - 98" overall height - 98" length of lift - Rotated hand wheel - 85.7" Hand wheel height - Load limit: 130 lbs - (4) Swivel Casters w/Brake ** Counterweight required; customer to provide or sold as a separate item. ** Counterweight must be at least 125% of load being lifted or 163 lbs for maximum load capacity (130 lb load limit)	\$2,017.44 ea
4	CW1-8570	Individual Cast Iron Counterweight for loads less than 500 lbs, each counterweight weighs 42 lbs (counterweights require mounting hardware for installation, sold separately)	\$100.00 ea
1	CW-HARDWARE-2	Mounting Hardware Kit for up to 7 Cast Iron Counterweights (use with CW1-8570 Individual Cast Iron Counterweights)	\$45.00 ea
1	CERTIFICATION	Certificate of Conformance	\$0.00 ea
1	HANDLING	Handling Charge (billed separately if customer bills freight charges to their UPS or other freight carrier's account#)	\$5.00



* product(s) acquired

Rigging Material:

Via Lou Pandolfo, contact person of CraneAmerica at LBNL (building 76, room 123, x7667, LAPandolfo@lbl.gov)

Shackles and Slings:

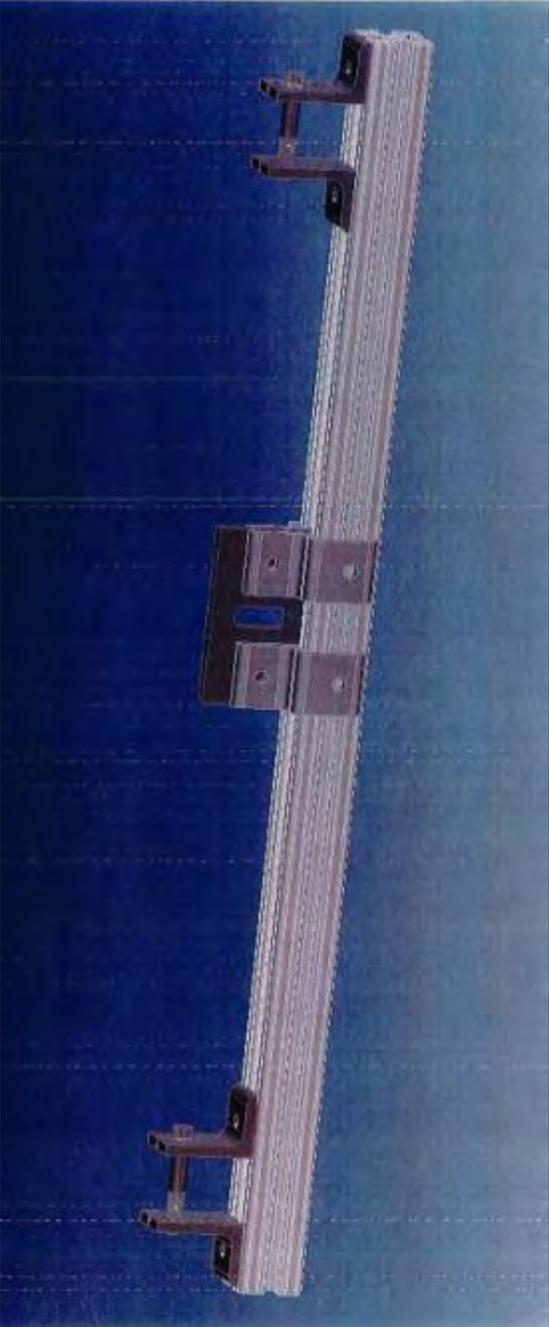
- 2x anchor shackles made of 316 steel rated for 1650kg 7/16 thickness of the material.
- 8x 1/4" anchor shackles
- 2x 12.0" lengths of chain or cable
- 2x 6.5" lengths of chain or cable
- 2x 2ft 1900lbs Nylon Choker from Lift-It
- 2x 6ft 2400lbs Nylon Choker from Lift-It
- 1x 7ft 2400lbs Nylon Choker from Lift-It
- 2x 8ft 1900lbs Nylon Choker from Lift-It



* product(s) acquired

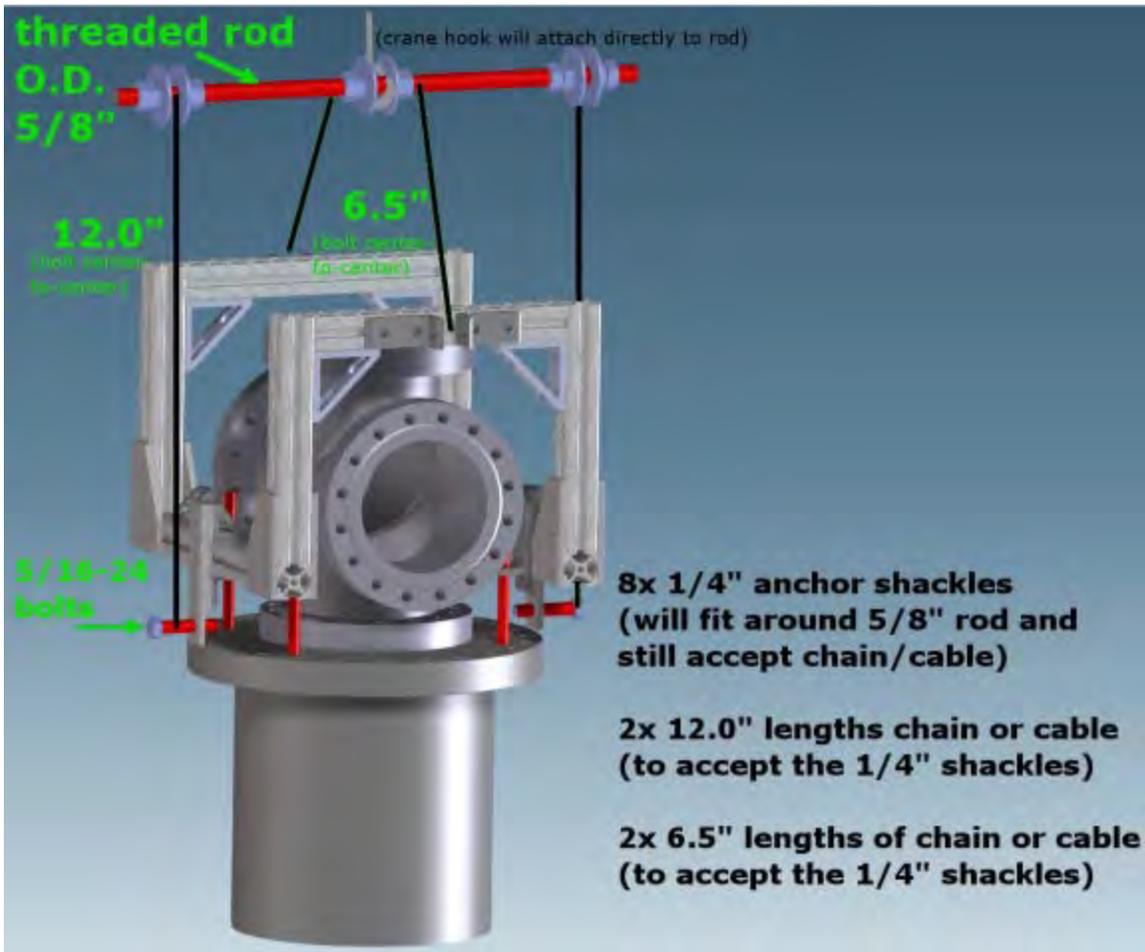
Custom Made Spreader bar:

LBNL approved custom made spreader bar for 250lbs made from 8020



* product(s) acquired

Custom made rigging frame:



* product(s) acquired

8020 parts:

Quantity	Part Number	Description	Price (\$)	Extended Price (\$)
4	4108	80/20 4108 10S 2 HOLE I.C.B. 1/8"	2.475	9.90
2	4509	80/20 4509 10S TO 15S 2 HOLE TRANS. I.C.B.	2.475	4.95
8	4176	80/20 4176 10S 3 HOLE I.C.B.	3.465	27.72
8	4250	80/20 4250 10S 3 HOLE SLOTTED I.C.B	4.05	32.40
8	4136	80/20 4136 10S 4 HOLE I. C. G. C. B.	5.085	40.68
10	4132	80/20 4132 10S 2 HOLES I.C.G	3.555	35.55
8	4150	80/20 4150 10S 4 HOLE PLATE	4.59	36.72
4	4118	80/20 4118 10S 3 HOLES JOINING PLATE	3.87	15.48
4	4117	80/20 4117 10S 4 HOLE STRIP	4.32	17.28
50	3675	80/20 3675 SS ECON TNUT 1/4-20	0.549	27.45
50	3280	80/20 3280 10S 1/4-20 DBL. ECON T NUT	0.621	31.05
20	2015	80/20 2015 1010 END CAP BLACK W/PUSH INS	0.945	18.90
				\$298.08

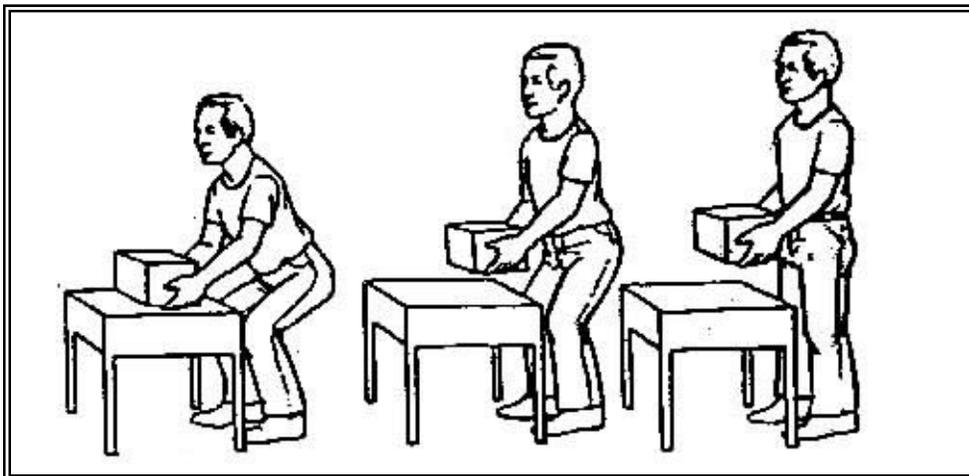
Crane Alternative:

Custom made lifting arm with counterweight



* idea not yet pursued

Also: Put together new Online Course (EHS0061) about preventing lift injuries for short term guests



* work in progress

Appendix G - Lifting problem

Thorsten Weber tweber@lbl.gov Feb 14

to Glen, Melanie, Daniel, me

Hi Glen,

We tackled the next lifting problem in our lab and ran into the same trouble we had before:

Nobody at LBNL is allowed to order shackles, chains, slings or other lifting gear besides the contractor from Crane America (Lou Pandolfo).

Lou is a very nice guy, very knowledgeable and helpful. But unfortunately, as it turns out, one person cannot serve the entire population on the hill, This is why we are again backed up with our order and request for assistance by 2 months.

While we may be able to find alternative slings and shackles on the hill, which would help us temporarily, we have one crucial part which is a special custom design and is not available outside LBNL. We overdesigned and built it and we are sure it would hold the weight but, as I understand it, we are not allowed to use it before it is load tested. This load test is as well backed up by 2 months and we are cornered:

- we already delayed our science by 2 months
- we already spent time on thinking about and finding alternative lifting gear
- with the later we technically could proceed but we would need to use our not yet certified custom part. It would be good for our backs but it would be against the law and thus we cannot do it.
- we can lift the old way using just our bear hands like before but we would risk hurting us. I want to avoid this.

This problem is a repetition of what happened before. Please note that the intention of this email is not to complain about Lou. He is doing a great job which comes with a lot of responsibility and there is no room for rushing things. We fully understand and support this. However, we believe that LBNL has to think about a way to improve this situation on the management side and provide him with the necessary assistance.

With an improving safety culture throughout LBNL we think that more and more people will look for ergonomically safe ways to lift equipment and thus the demand for lifting gear and professional assistance will be even increasing. We believe that a way to cut down the waiting time for parts and help is important to work safe at LBNL.

Please let us know what you think. We are open for any ideas and discussions. In case of any queries please do not hesitate to contact me.

Thanks a lot for all your efforts in advance.

Best wishes,

- Thorsten

Dr. Thorsten Weber
Lawrence Berkeley National Laboratory
Chemical Sciences Division
One Cyclotron Road
Berkeley, CA-94720, USA

Tel: [1 510 486 5588](tel:15104865588)

Fax: [1 510 486 5494](tel:15104865494)

Mailstop: 2R-0100, Building 2, Room 118

Web: <http://amo-csd.lbl.gov/>

Glen Langstaff glangstaff@lbl.gov

Feb 14

to Gregory, James, Thorsten, Melanie, Daniel, me

Thorsten,

Let me run this by a couple of people and see how we can help. When I last toured your lab you pointed out some special items ordered that had just come in. Are the special items referenced now different or something new?

Thanks,

Glen Langstaff

Facilities MRO, Design & Construction Group, Utilities Dept. Head

Lawrence Berkeley National Lab

Tel: [\(510\) 495-2664](tel:5104952664)

E-mail: glangstaff@lbl.gov

Thorsten Weber tweber@lbl.gov Feb 14

to Glen, Melanie, Daniel, me, Gregory, James

Hi Glen,

These were the items (lifting gear) ordered for our first project.

The second project needs very similar items however they differ in size and quantity. The custom made item on the other hand is unique and thus needs special attention, i.e. load testing.

Thanks a lot for all your efforts in advance.

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: Glen Langstaff [<mailto:glangstaff@lbl.gov>]

Sent: Tuesday, February 14, 2012 4:35 PM

To: Thorsten Weber

Cc: Melanie Alexandre; Daniel Slaughter; Jerome Bucher; Gregory Nauman; James Murphy

Subject: Re: Lifting problem

Glen Langstaff glangstaff@lbl.gov Feb 15

to Thorsten, Melanie, Daniel, me, Gregory, James

Good morning Thorsten,

Thank you for the info. We'll find some way to assist you. More to follow.

V/R

From: Glen Langstaff [<mailto:glangstaff@lbl.gov>]

Sent: Friday, February 17, 2012 2:00 PM

To: Thorsten Weber

Cc: Daniel Slaughter; James Murphy

Subject: Re: Lifting problem

Hi Thorsten,

Jim Murphy will come speak with you in the coming days to identify the part of the process that is creating this problem. Jim is responsible for the riggers at the lab and is aware of the constraints. Our goal is to help ID the process that you can follow going forward to prevent these delays. If we can help with this current situation, we will do that as well.

For the remainder of the lab, whatever we learn from this investigation will be socialized by our Zone Managers with Building Managers and Business Managers who in turn can get the word out to other researchers.

Best regards,

Glen Langstaff
Facilities MRO, Design & Construction Group, Utilities Dept. Head
Lawrence Berkeley National Lab
Tel: [\(510\) 495-2664](tel:(510)495-2664)
E-mail: glangstaff@lbl.gov

On Wed, Feb 15, 2012 at 1:52 PM, Glen Langstaff <glangstaff@lbl.gov> wrote:

Thorsten,

Agreed. I have a meeting with someone on Friday to understand the root causes to see if a systemic correction can be made since you are probably not the only one impacted like this.

V/R

Glen Langstaff
Facilities MRO, Design & Construction Group, Utilities Dept. Head
Lawrence Berkeley National Lab
Tel: [\(510\) 495-2664](tel:(510)495-2664)
E-mail: glangstaff@lbl.gov

On Wed, Feb 15, 2012 at 12:13 PM, Thorsten Weber <tweber@lbl.gov> wrote:

Hi Glen,

We are hoping to improve the LBNL system with this feedback – so it's not about asking for a one time solution; we want to solve this problem at the root so that other groups can profit from this as well.

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

Thorsten Weber tweber@lbl.gov Apr 18

to Glen, Daniel, me

Hi Glen,

Weeks and months went by and the progress with our second lifting project is slow but moving forward – Dan jumps through all the hoops which pop up while talking to the engineers.

However, no progress is made talking about the root cause, i.e. LBNL's inability to deal with lifts below 1000 or 500lbs. I emailed Jim Murphy a couple of time but he was not able to schedule a meeting. I lost faith in him and wonder if you can think of another person who would be interested and capable of improving this situation for LBNL.

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

Appendix H- Successful Approved Lift

May 24

Thorsten Weber tweber@lbl.gov

to Daniel, me

Hi Dan,

Find attached the pictures of the first lift.

Overall it worked very nicely.

Our findings together with Derek were:

- a.) the two bolts which define the rotation axis can be shortened to avoid bumping into the coils (you can do it yourself)
- b.) a shackle for the boom-rod would be nice so that the crane can be connected more easily (Monroe Thomas can help you out)
- c.) less sturdy come-along straps would be nice to make the rotation of the setup more precise (they don't need to take much load – Derek can approve even uncertified straps)

Best wishes,

- Thorsten

Dr. Thorsten Weber
Lawrence Berkeley National Laboratory
Chemical Sciences Division
One Cyclotron Road
Berkeley, CA-94720, USA

Tel: [1 510 486 5588](tel:15104865588)

Fax: [1 510 486 5494](tel:15104865494)

Mailstop: 2R-0100, Building 2, Room 118

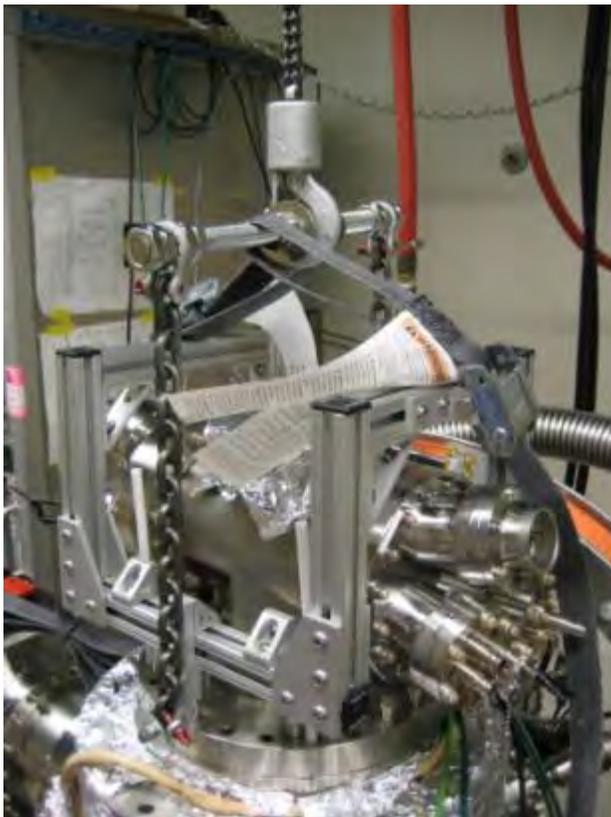
Web: <http://amo-csd.lbl.gov/>



Picture 1



Picture 3



Picture 2



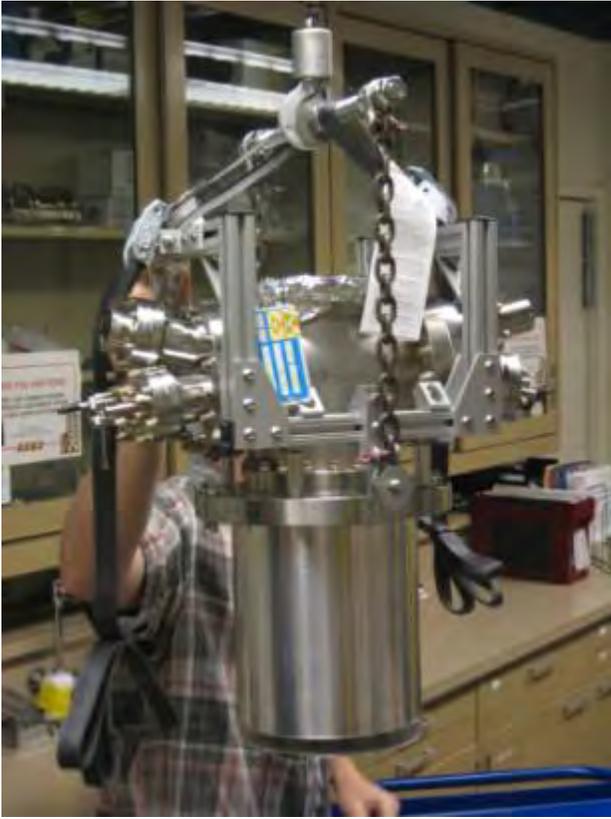
Picture 4



Picture 5



Picture 7



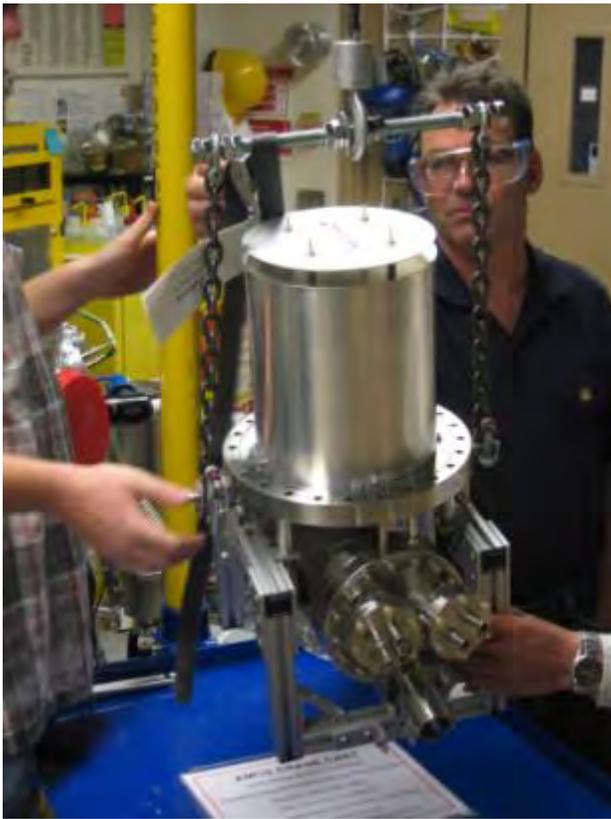
Picture 6



Picture 8



Picture 9



Picture 11



Picture 10



Picture 12



Picture 13



Picture 15



Picture 14

SUCCESS

Appendix I – Laser Table Ergo Resources
overhead strap to provide support during extreme forward leaning

Melanie Alexandre mmalexandre@lbl.gov 12/16/11

to me, Thorsten, Ken

Jerry,

We are exploring the option of attaching a strap (like a bus/ train) on the support beams in Building 2 Room 333 to provide support to the scientists while doing leaning forward/ reaching tasks on the laser table.

Before we go too far I need your assistance. Can you please point me in the right direction regarding who would make the determination if it is even safe to attach a strap on the overhead beams?

I attached some pictures to further help clarify what I have described above as well as pictures of the ceiling in room 333.

Regards,
Mel

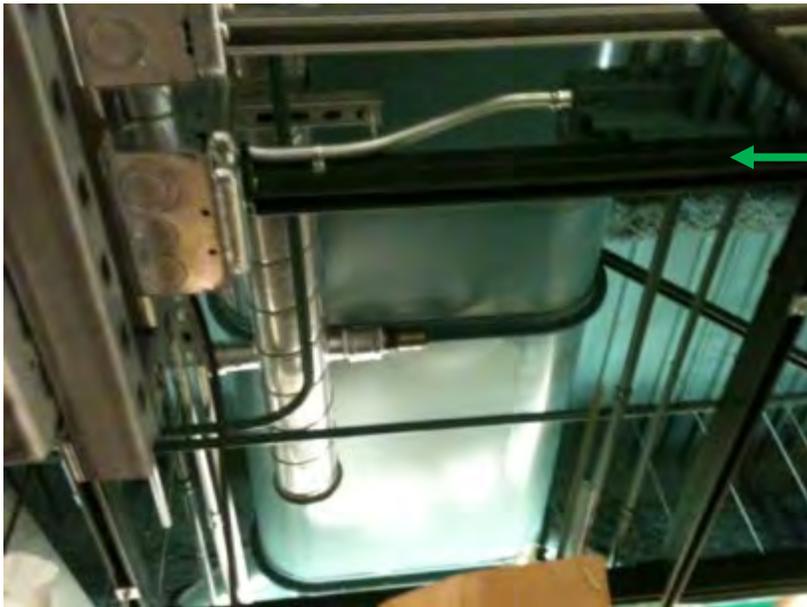
Pictures of ceiling in B2 Room 333

Goal: Explore feasibility of using a loop strap or handle (similar to something seen on a bus or train) on the overhead support beam to provide some support while scientists are leaning forward to work on laser table.



NP88813815 [RM] © www.visualphotos.com

Example of bus strap:



This would be possible locations where we would attach a strap



This would be possible locations where we would attach a strap



This would be possible locations where we would attach a strap

Measurements:
Support bar to table top 69 inches
Support strap would need to be ~24 inches long
Support beam is 4 inches long

Appendix J - Lab Ergo: Laser table

Thorsten Weber tweber@lbl.gov Mar 7

to Melanie, Champak, elio, me, Ira

Dear Melanie,
We gave up the strap idea for the laser table and are now thinking of developing a moveable “leaning frame” made out of 8020: see sketch attached...
So it’s in some sense similar to Ira’s microscope chair. We hope it will be a bit lighter in the end since we make it out of Aluminum.
Elio started designing and we will keep you updated.
In case you have comments, concerns or ideas just let us know.
Best wishes,

- Thorsten

Dr. Thorsten Weber
Lawrence Berkeley National Laboratory
Chemical Sciences Division
One Cyclotron Road
Berkeley, CA-94720, USA

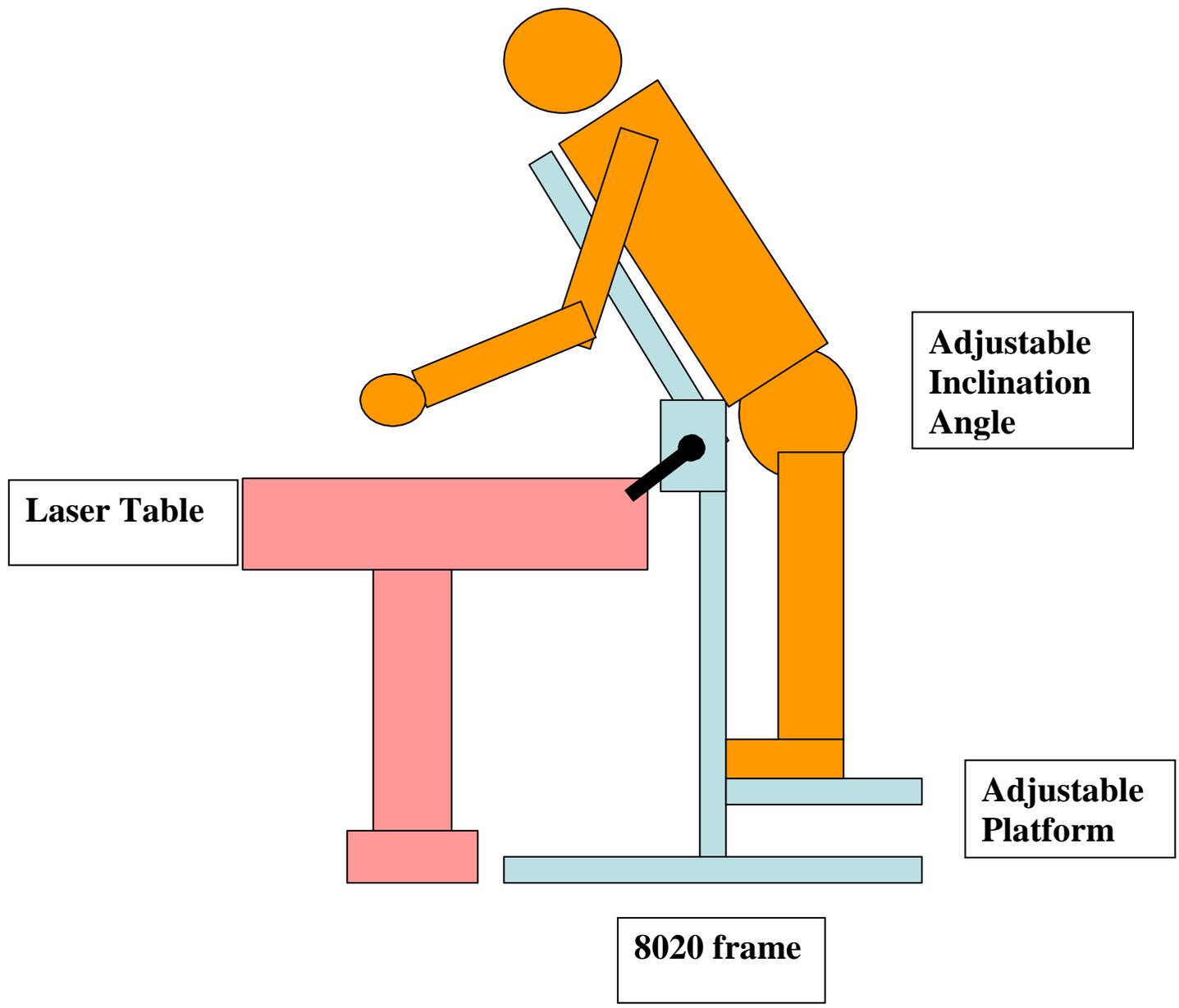
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Web: <http://amo-csd.lbl.gov/>



Ergo Leaning Frame.pdf

12K [View](#) [Download](#)

Ergo Leaning Frame



Melanie Alexandre mmalexandre@lbl.gov Mar 9

to Thorsten, Champak, elio, me, Ira

Thorsten,

My only concern about this design is there will still be a high amount of force and pressure on the low back since the forward leaning posture will occur with the legs straight.

I checked various ergo guideline resources for recommendations for forward leaning work, but could not find any specific recommendations. They basically indicate to avoid sustained forward leaning.

I have a wacky idea: what about using the design principles currently utilized in seated chair massage tables:

<http://www.bestmassage.com/eco-bodychoice-chair.html> Of course you would not need the face rest, but this design may be advantageous because the knee bending posture will take some additional pressure off the back. This design also includes a lot of adjustability in terms of the chest and knee support.

Other possibilities may include:

Ab Stool http://www.neutralposture.com/imgs/lit/spec-sheets/AbChair_SpecSheet.pdf

Bambach chair: <http://www.bambach.co.uk/>

I will continue to search for ideas for standing forward work support options.

Regards,

Mel

Thorsten Weber tweber@lbl.gov Mar 9

to Melanie, Champak, elio, me, Ira

Dear Melanie,

your concerns are very valid and the entire idea of the chairs, frames or straps is to take away strain on the lower back and give the students better access to their mirrors on the table. The laser table however represents a challenge: it is higher than a normal table and thicker. That means the person needs to sit or stand higher and the chances for getting the knees or legs under the table are very small.

- the massage chair as it is is too bulky, heavy, not high enough, and the face rest (in my mind) is not really needed
- the neutral posture chair is very very close to what we need. It supports the abdomen and the upper body. It comes in different heights. The big question marks here are:

a) would the knees collide with the laser table, i.e. would they still go under it ? ,

b) would the thick padding collide with the laser equipment on the table ?

Champak and Elio: We need your input here!

In case the knees have to stay in front of the laser table I don't think people will get enough access to the parts they want to reach unless they are standing. That's why our frame looks the way it looks right now but you are definitely right with your concerns.

A good idea is needed here. Unfortunately I don't have one right now.

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory
Appendix K - Ergo Review of B2 Lab 333

Mar 23

Melanie Alexandre <mmalexandre@lbl.gov>

to Champak, Ali, me, Travis, Elio, Ira, Thorsten

Please utilize this revised version with some additional edits.

Regards,

Mel

Ergo Review of B2 Lab 333

3/22/12

Attendees:

Ali Belkacem, Champak Khurmi, Jerry Bucher, Elio, Champenois, Travis Wright, Ira Janowitz, and Melanie Alexandre

Summary:

We reviewed the tasks currently performed to test the laser/mirror alignment. The task typically takes 5 minutes, but can last up to 10 minutes/ day. Employees must use both hands during this task. We discussed various options for devices to provide support during forward leaning, including a design created by Elio. We determined none of these are needed at this time.

Recommendations:

No ergo recommendations due to the short duration of task.

Considerations:

When setting up new laser tables consider ergonomics, especially trying to avoid the need to reach to the middle of the table for extended periods of time

We also reviewed the recent modification to a chamber lid from metal to plastic. This was a really good ergo solution and has reduced the weight of the lid so significantly that this task can now be performed by one person versus the metal lid requiring two people. We discussed ways to continue to improve the techniques used to remove/ replace the lid

Recommendations:

Remove lid from a position that does not require twisting and will allow the lid to be slid vs lifted. Ali suggested during a time the laser is down for maintenance to reorient the part of the equipment that is raised, forming an obstruction, in order to improve the ease of handling the lid

Continue with plan of creating lip along edge of lid so the lid can be tilted and slid off the chamber.

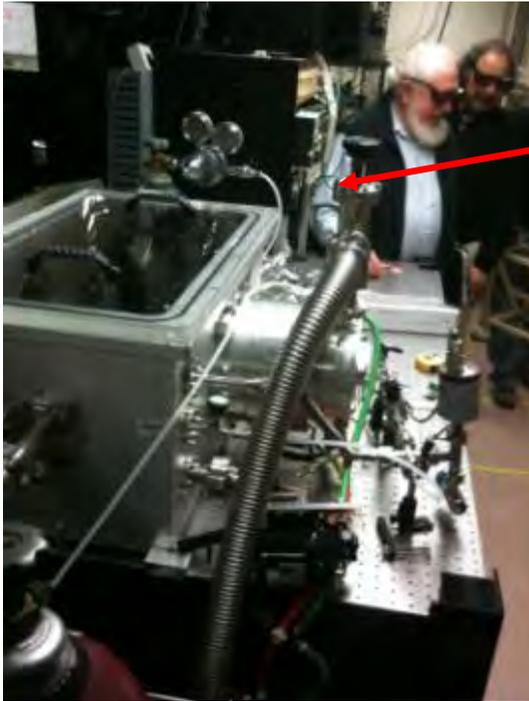
See below pictures for further details



New plastic see thru lid



Heavy old lid



Part Ali suggested reorienting so it will not stick up and block access to lid



Twisted posture when accessing lid from side.





Better technique of accessing lid directly in front, sliding it, laying it on side to get it close to the body, then lifting the lid off the table.

This technique will be further improved once the lip is installed so the lid will not need to be lifted

Appendix L - Laser Ergo Stand

Thorsten Weber tweber@lbl.gov May 16

to Melanie, Ira, me, Ken

Hi Melanie and Ira,

I put together a prototype of an upper body support stand for extended work at the center of a laser table using your back rests (they work quiet well).

Please find a photograph attached.

The 8020 parts I used are on our ergo list (page 8): <http://amo-csd.lbl.gov/downloads/LabErgoEquipment.pdf>

It's not perfect but worth a field test now.

You are welcome to stop by and play with it.

Best wishes,

- Thorsten

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Mailstop: 2R-0100, Building 2, Room 118
Web: <http://amo-csd.lbl.gov/>

IMG_1085.JPG

1187K [View](#) [Download](#)



May 16

Ira Janowitz iljanowitz@lbl.gov

to Thorsten, Melanie, me, Ken
You're a genius -- it looks great!
We will have to take hip and knee angles into account as we test it.
If the implied (by the design) flexed hip and straight knee
combination is OK for most users, (people without pinched nerves or
tight hamstrings), this could work out very well.

Regards,
Ira

Direct tel: [510-486-6071](tel:510-486-6071)
Mobile: [510-501-9840](tel:510-501-9840)

Melanie Alexandre mmalexandre@lbl.gov May 17

to Thorsten, Ira, me, Ken
Kudos to you Thorsten. Can Ira and I stop by on Monday sometime between 2:30-3:30 to check it out?
Regards,

Mel

Ken Barat kbarat@lbl.gov May 17

to Melanie, Thorsten, Ira, me

All sounds great, I will be offsite this Monday, but I will stop by
later in the week.
Great job.

Thorsten Weber tweber@lbl.gov May 17

to Melanie, Ira, me, Ken

Hi Melanie and Ira,
The chair went up to the laser lab 2-333 for field testing. The guys will have to find the right position and adjust the stand
to their bodies. If this doesn't work well we may have to modify it or consider another solution.
Although the body is not straight the upper body support helps to take away load off your lower back. It felt quiet
comfortable when I tried it out.
Feel free to swing by.
Contact info: Champak Khurmi: CKhurmi@lbl.gov, x 5613, Travis Wright: TWWright@lbl.gov, x4137
Best wishes,
- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road,
Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web:
<http://amo-csd.lbl.gov/>

From: Melanie Alexandre [mailto:mmalexandre@lbl.gov]

Sent: Thursday, May 17, 2012 7:32 AM

To: Thorsten Weber

Cc: Ira Janowitz; Jerome Bucher; Ken Barat

Subject: Re: Laser Ergo Stand

Ira Janowitz iljanowitz@lbl.gov May 17

to Thorsten, Melanie, me, Ken

Thanks for this great info -- Mel and I do plan to stop by at 2:30 on Monday if we won't be in the way. there were many good stoops and ladders in the document you sent. I did attach a note re: one possibly dangerous stool that was the subject of a pretty convincing Lessons Learned from another Lab in our area.

Note re- problem stool.docx

2314K [View](#)

Note from Ira J.:



This type of stool caused significant problems at another National Lab (I think LLNL)-- Specifically, trip and fall hazards that were written up in a pretty convincing Lessons Learned. It seems the curved shape above the lower step resulted in people who were stepping upward catching their toe underneath the areas indicated by the vertical arrows I added to this photo. The other small ladders and stools you showed in this document were much safer.

Thorsten Weber tweber@lbl.gov

May 18

to Ira, Melanie, me, Ken

Hi Ira,

Thanks a lot for the warning about the little stepstool. I know what you mean: the opening between the steps is rather small and you can get tangled in there (especially if you have big feet). However, it's not so bad. We mostly use it as a leg rest when we have to work under one of our chambers while working on our back - it has an ideal height for this purpose and eases our position.

I agree, the other step stools are better for climbing up and down and we mostly use these anyways.

We will keep the small plastic step stool since we need it for working under the chamber but I will put on some warning label.

Thorsten Weber **Sep 21**, 2012

to Ken, me

-----Original Message-----

From: Daniel-Steve Fournier [mailto:dsfournier@lbl.gov]

Sent: Thursday, September 20, 2012 10:32 PM

To: tweber@lbl.gov

Subject: Stand

Hi Thorsten

The stand is working well so far, little use so far but we modified it for clean room operations and we are thinking of adding wheels to help move it around.

Thanks again for your great idea! You're welcome to come by check it out.

Steve F





Appendix M - Lid dimensions

Champak Khurmi ckhurmi@lbl.gov May 10

Dear Jerry,

We have following lids:

- 1. Quantity 2, Dimensions 0.75" (thickness) x 17" x 29" (Aluminum, already replaced with plastic lids)
- 2. Quantity 2, 14" (diameter) x 1" (thickness, stainless steel)
- 3. Quantity 1, 0.75" x 28" x 28" (Aluminum)

I will send you the dimensions for Experimental end station tomorrow morning.

Best,
Champak

Lid dimensions

Champak Khurmi ckhurmi@lbl.gov May 11

Hi Jerry,

- 4. The lid dimensions (Experimental end station, called Magnus chamber) are 1.25" (thickness) x 28" (diameter), material (Aluminum).

Best,
Champak

Lid – Quantity - Dimensions	Made from Aluminum or Stainless, lbs	Made from Lexan or Acrylic
#1, 2 lids, (0.75 x17 x29) = 6.063x10 ³ cm ³	36.1 lbs. - Aluminum	16.1 lbs.
#2, 2 lids, (14" diam. x 1") = 2.524x10 ³ cm ³	44.7 lbs. – Stainless Steel	6.7 lbs.
#3, 1 lid, (0.75 x28 x28) = 9.636x10 ³ cm ³	57.4 lbs. - Aluminum	25.5 lbs.
#4, 1 lid, (1.25 x28 diam.) = 1.262x10 ⁴ cm ³	75.1 lbs. - Aluminum	33.4 lbs.

Table 1 – High Vacuum Chamber Lids weights when constructed from metal or plastic

Appendix N - EHS0056 - feedback

Thorsten Weber tweber@lbl.gov Mar 16

to mmalexandre, James, me, Ira

Dear Melanie and James,

Here is what I got:

--->

PROs:

a) Right timing: Not too long – not too short. It is entertaining but still serious.

b) I had some good advice that I have not seen in other EH&S courses on lifting. I actually learned something which is pretty rare for EH&S online courses.

- c) The section on how to lift and move heavy objects using leverage (Jane loads the box onto a cart) was excellent. I have never seen this in any ergo course before.
- d) The advice on using stands, even kludged-together stands, is excellent. This is something that I have not seen before (and would not really have thought about).
- e) I like the "write your own ideas/answers" approach which I think encourages us to really analyze the situation compared to pure multiple choice.

CONS:

- f) One thing that I thought was missing is showing how Jane lifts the pump out of the box and places it on the stand. That would have been nice for completeness.
- g) I am not sure the video of Jane walking down the hall was necessary, but the next video of Jane interacting with the people in the lab was useful.
- h) The audio track in the first part of the video should be muted to remove the lab door alarm sound.
- i) Slide 14 has a list of experienced personnel, but the list is in a strange format, with brackets around each item. This should probably be: Supervisor or Work Lead; Division Safety Coordinator; etc. , instead of (Supervisor or Work Lead), (Division Safety Coordinator), etc.-----

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Web: <http://amo-csd.lbl.gov/>

Donate bone marrow and save life: www.marrows.org

Help the kids - become a partner in hope: www.partnersinhope.org

Melanie Alexandre mmalexandre@lbl.gov Mar 17

to Thorsten, James, me, Ira

Thorsten- Thanks a bunch.

James- I scheduled time on our calendars for Tuesday so we can review the comments and decide how to integrate the feedback/suggestions.

Regards,

Mel

Thorsten Weber tweber@lbl.gov Mar 17

to Melanie, James, me, Ira

Dear Melanie and James,

I think issue h) and i) can be fixed rather easily.

I think g) cannot be corrected. What we should have done is to let Irina (Jane) close an open door which sticks out into the hallway while she is going to the lab. That would show how she clears the path for her load.

For issue f) I suggest to show the other tools for transporting heavy loads (pallet jacks, ...) right after slide 13 and before the movie.

Then comes the movie. Show slide 17 ("how to lift safely with your body") right after it. This will connect the freeze frames in the movies with tips for safe lifting.

After this show the two remaining slides with further tips (i.e. "more tools and PPE" and "how to strap together a makeshift load support"; I think that's slide 15 and 16).

This may do the job.....

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:5104865588), Fax. [1 510 486 5494](tel:5104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: Melanie Alexandre [mailto:mmalexandre@lbl.gov]

Sent: Saturday, March 17, 2012 7:20 PM

To: Thorsten Weber; James Basore

Cc: Jerome Bucher; Ira Janowitz

Subject: Re: EHS0056 - feedback

Melanie Alexandre mmalexandre@lbl.gov Mar 20

to Thorsten, James, me, Ira

Thorsten,

James and I met today to review the feedback. See below for our suggestions with how to incorporate the feedback. We can discuss in person on Thursday.

Regards,
Mel

On Sat, Mar 17, 2012 at 8:09 PM, Thorsten Weber <tweber@lbl.gov> wrote:

Dear Melanie and James,

I think issue h) and i) can be fixed rather easily.

James will remove the sound when the door alarm sounds.

We already fixed Slide 14.

I think g) cannot be corrected. What we should have done is to let Irina (Jane) close an open door which sticks out into the hallway while she is going to the lab. That would show how she clears the path for her load.

We agree, but for now we can just leave it since it is only a short part of the class and it shows the entire results of the pre-planning.

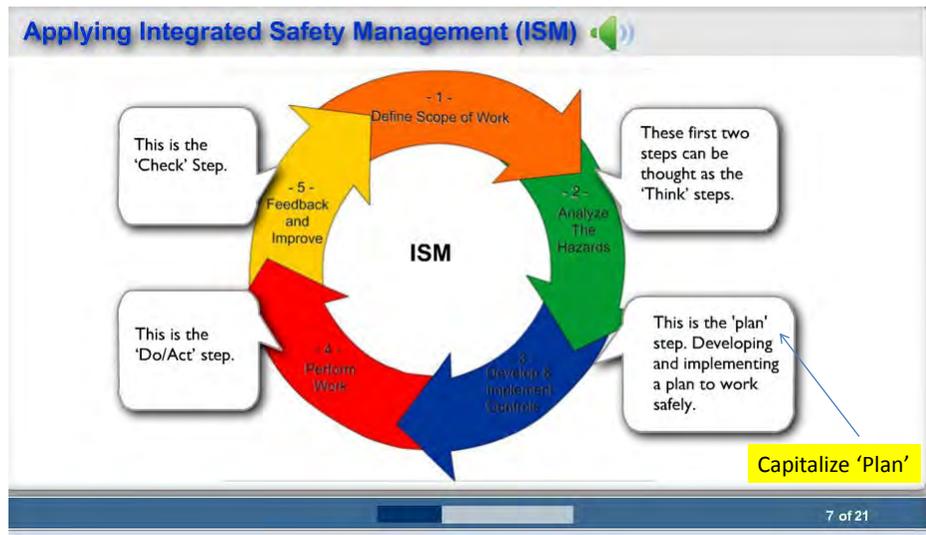
For issue f) I suggest to show the other tools for transporting heavy loads (pallet jacks, ...) right after slide 13 and before the movie.

Then comes the movie. Show slide 17 (“how to lift safely with your body”) right after it. This will connect the freeze frames in the movies with tips for safe lifting.

After this show the two remaining slides with further tips (i.e. “more tools and PPE” and “how to strap together a makeshift load support”; I think that’s slide 15 and 16).

We thought it would be best to shoot two still photos of Irene bending down properly to pick up the box and then holding it close to her body before loading it onto the stand. We can blend these photos into the video.

We also moved the Body Mechanics Tips to fall directly after the video. We also talked about creating a transition slide after the video to make the flow from the scenario to general tips that can be integrated into any lifting, carrying, etc..



I would suggest making text in ISM wheel better contrast. It is hard to read #3 in the blue especially

EHS 0061 Basic Ergonomic Lab Training for Short-term Affiliates

U.S. DEPARTMENT OF ENERGY

Help Menu Take Notes Resources

What else could Jane ask herself to

- test
- test 2
- test 3

Please Try Again

Please type in one question that Jane should ask herself before she starts to perform this work?

Please Try Again

8 of 21

I had the same issue as Thorsten, I got stuck here after I left the fields blank, then entered answers

EHS 0061 Basic Ergonomic Lab Training for Short-term Affiliates

Help Menu Take Notes Resources

Now Jane is ready to perform the Work

With your help, Jane has effectively applied ISM:

- **Step 1)** She defined the scope of work which is to lift, move and install the part.
- **Step 2)** She successfully analyzed the hazards by performing a walk through, and by identifying if it was safe to lift the part.
- **Step 3)** She chose and implemented effective safe work controls. (She lifted the box safely, and chose to use a cart).
- **Step 4)** Jane is now ready to perform the work.

Continue

13 of 21

Same comment as slide 1 about ISM Wheel contrast
Also, I was not sure if I was supposed to hear any sound... I did not hear anything

Body Mechanics & Lifting Techniques

Click on each of the options below to learn about proper body mechanics and lifting techniques.

Keep it close

Keep neutral

Think with your gut

Keep your head up



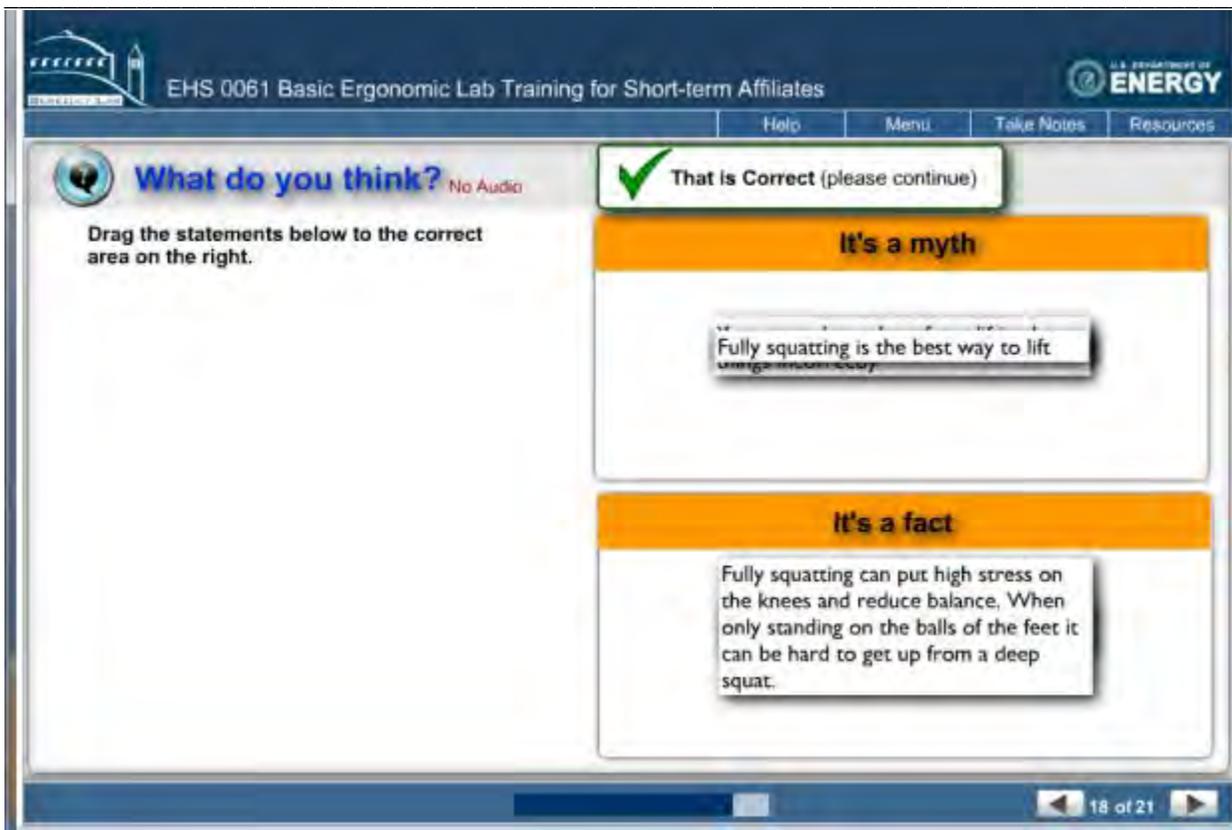
Keep it neutral:

- Ears over shoulders,
- shoulders over hips,
- hips over knees.
- Do not bend, rotate or twist with the load in hands !

[Mel's comment: after reviewing this slide I felt it needs rewording since normally I use these slides during a class that allows me to further explain and illustrate. I also added green lines to show 'neutral' positions]

Keep it neutral:

- Ears over shoulders, shoulders over hips + hips over knees can provide a cue if you are using your body in a balanced or 'neutral' way
- Keeping things within a close reach helps keep you in a neutral position



EHS 0061 Basic Ergonomic Lab Training for Short-term Affiliates

U.S. DEPARTMENT OF ENERGY

Help Menu Take Notes Resources

What do you think? No Audio

Drag the statements below to the correct area on the right.

That is Correct (please continue)

It's a myth

Fully squatting is the best way to lift

It's a fact

Fully squatting can put high stress on the knees and reduce balance. When only standing on the balls of the feet it can be hard to get up from a deep squat.

18 of 21

After I finished all of the them I still see 'That is Correct' (please continue), I am not sure if that will confuse folks or not...

Appendix O – EHS0056 - Naming

Apr 19

Thorsten Weber tweber@lbl.gov

to me

...after 5 years it's finally done:

EHS0056 "Ergo material handling & body mechanics in labs"

<http://www.lbl.gov/ehs/training/webcourses/EHS0056/>

Yippee....

Feel free to pass on the news – I hope many people will find this useful. I will write Jim and Doug...

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:5104865588), Fax. [1 510 486 5494](tel:5104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: James Basore [<mailto:jdbasore@lbl.gov>]

Sent: Thursday, April 19, 2012 11:36 AM

To: Thorsten Weber

Cc: 'Melanie Alexandre'

Subject: Re: ergo training course for affiliates

The new title is "Ergo material handling & body mechanics in labs"

Thanks for all of the good ideas!

I also added a syllabus to the website.

James

James D. Basore

EHS Training Manager

Environment, Health, and Safety

Lawrence Berkeley National Laboratory

jdbasore@lbl.gov

ph: [510.486.7524](tel:5104867524)

EHS0056 ~ Ergo Material Handling & Body Mechanics in Labs

Course Syllabus

Subject Category: Ergonomics **Course Prerequisite:** None

Course Length: 15 minutes **Medical Approval:** None

Delivery Mode: Web-based Training

Schedule: Available 24/7

Course Purpose: Course provides a structure for applying ISM in work that involves handling and lifting heavy materials used in

laboratory and mechanical settings. The training is based on a scenario that entails safely moving and installing a machine part onto a

piece of scientific equipment. Video is used to demonstrate safe lifting techniques, and the planning process. The purpose of the course

is also to provide awareness of safe lifting techniques, and the resources and equipment available to plan perform work that involves

moving and lifting heavy equipment in lab settings.

Course Objectives: After completing this training, the successful learner will be able to:

Identify equipment, tools and resources used to safely move and lift equipment.

Use ISM to effectively evaluate the hazards, implement safe work controls, perform work within controls and provide feedback.

Identify basic safe lifting techniques

Course Instructional Materials:

Web-based training that includes video demonstration, problem solving activities and explanations.

Instructors: Web-based

Subject Matter Expert: Mellanie Alexander, LBNL Ergonomics Group

Training Compliance Requirements: None

Course Handouts:

Downloadable tip sheet to use as reference material.

Participant Evaluation: End of course evaluation allowing students to provide feedback on effectiveness of instruction.

Written Exam: none

Practical Exam: none

Retraining/Recertification: none

WEB Resource: EH&S Training Program web page @ <http://www.lbl.gov/ehs/html/training.htm>.

On 4/19/2012 11:18 AM, Thorsten Weber wrote:

I like Mel's second suggestion (Ergo material handling/ body mechanics in labs) a lot but I leave this up to the native speakers ;-

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: Melanie Alexandre [<mailto:mmalexandre@lbl.gov>]

Sent: Thursday, April 19, 2012 8:47 AM

To: James Basore

Cc: Thorsten Weber

Subject: Re: ergo training course for affiliates

I would suggest:

Body mechanics and material handling in labs

or

Ergo material handling/ body mechanics in labs

or

Safe Material Handling/ Body Mechanics in Labs

Since the focus is not just on lifting.

Regards

Mel

_ Melanie Alexandre

Ergonomist

Lawrence Berkeley National Lab/ Joint Genome Institute

[925-927-2553](tel:925-927-2553)

mmalexandre@lbl.gov

On Wed, Apr 18, 2012 at 1:13 PM, James Basore <jdbasore@lbl.gov> wrote:

Mel,

I am wondering if there could be a more suitable title for this training.

Currently it is titled "Ergonomics Lab Training for short-term Affiliates"

The training focuses on lifting safely, and the planning process. I also don't want to narrow it to short-term Affiliates.
Suggestions:

- 1) Ergonomics of Lifting heavy objects (lab focus)
- 2) Lifting heavy objects (lab setting)

Can you think of something that better describes the training and doesn't narrow the focus to Affiliates.

Thanks,
james

On 4/18/2012 12:32 PM, Melanie Alexandre wrote:

Great minds think alike. We sent the same request at the same time!

Mel

On Wed, Apr 18, 2012 at 12:30 PM, Thorsten Weber <tweber@lbl.gov> wrote:

Hi James,

One more wish. Is it possible to put add this course to this page where all the online courses reside:

<http://www.lbl.gov/ehs/training/courses.shtml>

Best wishes,

- Thorsten

Dr. Thorsten Weber, Lawrence Berkeley National Laboratory, Chemical Sciences Division, One Cyclotron Road, Berkeley, CA-94720, USA, Tel. [1 510 486 5588](tel:15104865588), Fax. [1 510 486 5494](tel:15104865494), Mailstop: 2R-0100, Building: 2, Room: 118, Web: <http://amo-csd.lbl.gov/>

From: James Basore [mailto:jdbasore@lbl.gov]

Sent: Monday, April 16, 2012 9:34 AM

To: Melanie Alexandre

Cc: Thorsten Weber

Subject: Re: ergo training course for affiliates

Hello,

The ergo training is finished, and available at the following URL:

Go Here: <http://www.lbl.gov/ehs/training/webcourses/EHS0056/>

Thank you,
James

On 4/12/2012 7:13 AM, Melanie Alexandre wrote:

James,

Did you get a chance to make the final edits/ additions of photos to the course?

Regards,

Mel