THE UNIVERSITY OF TENNESSEE KNOXVILLE

Laboratory Safety Committee
Meeting Minutes
September 12th, 2024
MCT 1215/1216

Attendance (in person):

Member	Department	Pres.	Abs.	Member	Department	Pres.	Abs.
Doug Aaron	MABE	☐	☒	John Kobza	ISE	☒	☐
Michael Allen	TCE	☐	☒	Mariano Labrador	BCMB	☒	☐
Pamela Andrews	KRSS	☐	☒	Bryan Lord	Facilities	☐	☒
Chris Baker	EHS (Lab)	☒	☐	Grace Loy	IAMM	☐	☒
Michael Blum	A&S	☐	☒	Elysia Mann	Art (2D)	☐	☒
James Cantu	EHS (OHSS)	☐	☒	Bob Martin	EECS	☐	☒
Carolina D. Carter	EHS (Lab)	☒	☐	Kristen Massey	ORIED	☐	☒
Christine Cheney	Physics & Astronomy	☒	☐	Larry McKay	**Vice-Chair:** A&S	☒	☐
Matthew Cooper	Psychology	☒	☐	Natalie Metzger	EHS (Lab)	☒	☐
Steve Crouch	UTIA Safety	☐	☒	Sarah Mobley	**Chair** - CEE	☒	☐
Paul Dalhaimer	CBE	☒	☐	Katie Morgan	Nursing	☐	☒
Ampofo Darko	Chem	☐	☒	Chris Morris	IAMM	☒	☐
Brad Day	ORIED	☐	☒	Scott Moser	EHS (Lab)	☒	☐
Mark Denavit	CEE	☐	☒	Allan Patchen	EPS	☐	☒
Taylor Do	EHS (Lab)	☐	☒	Brian Payne	EHS (AD)	☒	☐
Bill Dunne	Tickle COE	☐	☒	Jacob Payne	UTIA Safety	☐	☒
Gerald Egeland	MSE	☒	☐	Brian Ranger	EHS/Lab	☒	☐
Scott Emert	Nuclear Eng.	☒	☐	Michael Ratliff	NucEng.	☐	☒
Jennifer Ferris	GSM	☐	☒	Darcy Rathjen	ORE	☐	☒
Jason Fogarty	Theatre	☐	☒	Tim Rials	UTIA	☐	☒
Billy Garner	EHS (Lab)	☒	☐	Anujit Sarkar	Nursing	☐	☒
Adrian Gonzalez	CEE	☐	☒	Ryan Setzer	EHS (IWS)	☒	☐
Linda Hamilton	EHS (Lab)	☒	☐	Marsha Smith	EHS (Rad)	☒	☐
Terry Hazen	CEE/EPS/Micro	☐	☒	Timothy Sparer	Microbio	☐	☒
Sally Horn	Geography	☐	☒	Daniel Thomas	EHS (Lab)	☒	☐
Randy Huelsman	Facilities	☐	☒	Joseph Williams	EEB	☐	☒
Anneke Janzen	Anthropology	☐	☒	Ling Zhao	Nutrition	☐	☒
Daleniece Jones	Public Health	☐	☒	Alanah A. Garner	EHS/Guest	☒	☐
Jennifer Kirkpatrick	Art (3D)	☒	☐				

Other Guests:	Department	Pres.	Abs.				
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Agenda:

- Opening Welcome!
- Approval of Minutes
- Safety Culture Minute
    - Linda Hamilton
- Introductions/Ice Breaker (just this once)
    - Name Tag Exercise (15 minutes)
- Committee Reports
    - Lab Safety Culture Awards (Carter)
    - HHCC (Moser)
    - IBC (Hamilton)
    - RAD (Smith)
    - Instructional Labs – proposed new committee (Mobley)
- Survey Results
    - Chemical Inventory/ Storage (Moser)
    - Safety Stratus
- Incidents/Concerns
    - Review with iCue method (Introduce iCue Method)
        - Bunson Burner Fire –BCMB (Carter)
        - Oven Fire -EEB (Baker)
- LSS updates (Ranger)
- Charter Updates
    - Addition of Past Chair role
- Items from the floor?
- Next meeting October 10, 2024

Attachments and References:

- Agenda
- June LSC Meeting Minutes
- PowerPoint on *"Chemical Inventory Management & Best Practices"*

Topic Summaries

I. **Introductions/Opening**
- The LSC Chair, Dr. Sarah Mobley, opened the meeting.

II. **Approve Minutes from Last Meeting** (06/17/2024)
- The LSC Meeting minutes from 06-17-2024 were approved as written.

III. **Safety Culture Minute**
- 3 Levels of Risk Maturity (*Images & references were shown to support this agenda item*)

- Workspace (Primary Level)
  - This focuses on the challenges of physical & objective risks.
  - 1) The area someone is working in, 2) the method and how someone is working, 3) What someone is working with, etc.
    - This includes SOPs.
- Headspace (Secondary Level)
  - This focuses on the Challenges of Psychological Risks
  - How someone is thinking about the space.
- Group space (Tertiary Level)
  - This focuses on the Challenges of Social & Cultural Risks
  - How does the group function? Pressure? Habits?

IV. **ICE Breaker**

- **Name Tag & Exercise**
  - Groups gather & discuss/address:
    - *"What is your biggest current concern?"*
    - *"What resources could the LSC/EHS provide to help you run your lab safety program more effectively?"*
    - There are resources within LSC that all groups/safety-programs could share.

    - Group 1 (orange)
      - This group would like to focus on engagement beyond LSC & EHS
      - Only ½ of the departments have engagement.
        - IAMM specifically (industry)
      - A focus would be getting different depts on same page.
        - Some are good about this; some are *only* in LSC.
      - Working on:
        - Getting lab safety in expectations & reviews with dept. heads
      - Dept. wide lab safety assessments
        - Includes incident reports, lab cleanings, etc.
        - Partners with EHS to involve dept. heads, staff, & faculty
        - *"What can we do as a dept. & college to improve."*

    - Group 2 (green)
      - This group has a concern relating to housekeeping.
      - Communication – this group is self-aware that it could be improved. There are resources that could be approved to improve communication.

    - Group 3 (yellow)
      - This group brought up concerns concentrating on ordering aspects:
        - Know what is coming onto campus.
        - Let business office people know what is hazardous, and if orders need to be flagged
        - *"How can the LSC get involved"*
          - High hazard committee – this committee can help to improve & focus on this concern
        - Natalie Metzger (EHS – LSS (Chem)) offered to review orders to flag hazardous items & orders

    - Group 4 (Blue – Bio Focused)
      - This group has concerns with Lab moves being an issue
      - *"What happens with commissioning's/decommissioning's"*

- Incident reporting:
  - *"Where did this end up? How does it need to be revived? How can awareness be spread?"*
- How can LSA's help peers with commissioning & decommissions?
- Communication with EHS

V. **Committee Reports**

- Lab Safety Culture Awards (Carter)
  - Please try to engage, pay attention, & promote Lab Safety Culture
  - Flyers have been posted; emails are sent out
  - There have been no submissions yet (minimal involvement)
  - This quarter is focusing on Stress Management.
    - Spread the word!
    - LSC members can apply
  - There are 3 PhD winners for Q3
  - A Challenge was brought to the Lab Safety Culture Awards:
    - Request to share why the winners win
    - "What did they win for? What were their ideas"
    - Goal is to promote lab safety ideas & to share them!
  - End of Year dinner
    - Good opportunity to roll out the above 'challenge'
    - Surprisingly difficult to distill winning idea into shareable idea, etc.
  - Any ideas & feedback are welcome!
- HHCC (Moser)
  - The High Hazard Chemical Committee was started last fall
  - This committee has a small quorum: this interfered with the ability to meet
    - Currently, the HHCC is in "reset mode & restart mode"
  - There is currently an effort to create strategies to make the committee more sustainable
  - There is a good outlook & hopes for future
- IBC (Hamilton)
  - Be mindful that certain biomaterials need to be registered with the committee
    - This includes: certain infectious agents, certain RDNA molecules or synthetic nucleic acids, certain biological agents & vectors, certain acute biological toxins, certain HDM (cells, blood, body fluids), Venom, poisonous plants, novel nanoparticles conjugated to biologically active or cell-modifying molecules, etc.
    - Full details on each biomaterial can be found on the IBC's page at biosafety.utk.edu.
  - The full list will be distributed to LSC.
- RAD (Smith)
  - The last Radiation Safety Committee Meeting was this past May. The next meeting will be held in October.
  - The RSC is a requirement by the university for Radioactive Materials license(s).
  - Radioactive License & Materials must be approved through the Radiation Safety Committee
  - In addition to radioactive materials, the RSC also oversees x-ray generating devices & particle accelerators.
    - Use/approval of high-powered lasers is not required to be approved by the committee but is recommended to let them know.
- Instructional Labs – Proposed New Committee (Mobley)
  - No current meetings/committee
  - Communication, discuss & involve with LSC
  - Sarah Mobley has requested that LSC members provide information for potential members
  - LSC Chair does have a framework & potential team list

VI. **Survey Results**

- *"What are the topics you want to talk about?"*

- **Chemical Inventory/ Storage (Moser)**
  - A List was attached to agenda
  - Faculty buy in, group cohesion, etc.
  - Plan is to discuss the topics throughout meetings.
- Chem Inventory Management & Best Practices:
  - Two Requests focused on this topic:
    - "*In light of recent incidents, I would say Chemical inventory/management/disposal practice reform. I have seen multiple labs in the past year incur significant (and more importantly avoidable) remediation costs for lapses in this area."*
    - *"Chemical vetting for chemical ownership transfers."*
  - Inventory Requirements:
    - Update the lab's hazardous chemical inventory at least annually (from Chemical Inventories Guide)
    - Complete verification of the inventory in the Safety Stratus chemical inventory management system
    - Ensure lab members have access to the updated inventory (29 CFR 1910. 1200 [Hazard Communication] and 29 CFR 1910. 1450 [the Lab Standard])
    - Comply with Local, State, and Federal regulations.
      - There is a guide in EHS's safety manual.
        - This updated at least annually and is supported by many manuals/resources.
      - EHS shall:
        - Provide chem inventory management guide.
        - Review submitted inventory.
  - Unexpected Death of PI
    - PI passed away unexpectedly. (Grad Students were permitted to continue using the space)
    - Lecture bottle inventory discussed prior to PI passing away.
    - Space was reassigned and chemicals had to be disposed at one time.
    - Main issue was a large number of lecture bottles/small gas cylinders.
    - Total of 82 gas cylinders – 30 had to be treated as unknowns because they were not labeled by a known company.
    - *Total cost of disposal was upwards of $60k.*
  - Retirement – Holding Chemicals:
    - PI retired after 30 years of service (known retirement date)
    - Large inventory; including high hazard chemicals. Lecture bottles, and reactive metals.
    - PI wanted to give incoming faculty member the "first pick" of chemicals.
      - Incoming faculty did not want a majority of the chemicals in the lab.
    - *Total Cost of disposal was upwards of $51k.*
  - Retirement – Unable to Safely Assist
    - PI retired after several decades of service.
    - Post-doc left the lab, and the PI was unable to assist with the cleanout.
    - Large inventory of with a wide range of chemicals; including peroxide formers, acutely toxic, and several unlabeled, unknown working containers.
    - EHS had to assist with cleanout.
    - *Total Cost of disposal was upwards of $20k.*
  - Legacy Chemicals – High Hazard

- PI moved from an existing lab into space of a retiring professor.
- Decommissioning of space did not occur.
- Large inventory including peroxide forming, time sensitive chemicals, & reactive metals
- Determined to be a high-hazard event, and contractor performed cleanout.
- *Estimated Cost of disposal is upwards of $100k.*

- Chem Inventory Management:
  - Purchase only chemicals that are needed and can be used in ac chemicals lifespan.
    - Disposal costs can be several times the original cost.
    - Share chemicals for proof-of-concept experiments.
  - Perform a physical review of the chemical inventory:
    - Allows for efficient ordering.
    - Identifies current location of the chemical.
    - Identifies chemicals no longer in use or that have been forgotten.
      - *"If it hasn't been used in xx years, will it be used?"*
    - Identifies containers that may be damaged (broken lids), corroded (rusted shipping cans), or leaking.
    - Identifies time-sensitive chemicals that may have expired.
      - Look for crystal formation, phase separation, precipitate formation of peroxide-forming chemicals.
      - Establish testing schedule for peroxide-forming chemicals.
      - Look for discoloration, which could indicate a high hazard situation
      - Review the "Time Sensitive Chemical Guide" for a list of time-sensitive chemicals: chloroform, hydrazine, perchloric acid, etc.
    - Identifies chemicals that may be subject to new regulatory requirements (DEA, EPA, etc.)
      - Legacy chemicals may have changed status and become a DEA listed drug or precursor (Iodine used in methamphetamine production)
    - Allows lab members to identify incompatible storage, which may be hazardous.
    - Enter chemicals into inventory as soon as they are received.
    - Have a designated person and an alternate for chemical inventory (these should not graduate at the same time)
- Management Tips:
  - Order only the amount of chemicals needed.
  - Substitute chemicals that may become hazardous over time.
  - Identify & remove chemicals that may become more hazardous over time.
  - Limit lecture bottle use.
    - Some can be $1k+ for disposal.
    - Some companies (Sigma & Matheson) have a lecture bottle buy-back program (for a fee, but cheaper than disposal)
      - Bottles must be purchased from the company and be in good condition. (Original receipt & PO to verify)
- Prior To Leaving UTK:
  - If known retirement or leaving date (approximately a year):
    - Notify EHS & schedule a review of existing chemical inventory.
    - Start purging inventory of items that are unusable/contaminated chemicals.
    - Move through inventory in small increments.
  - Prior to opening the inventory to others, allow EHS to review remaining chemicals.
    - Send inventory to incoming faculty.
    - Keeps highly hazardous legacy chemicals from transferring to labs without proper training.
- Any questions? Contact EHS - Scott Moser

- **Safety Stratus (Payne)**
  - Safety Stratus is a modular health and safety management software system that EHS uses for chemical inventory management, etc.
  - You can access Safety Stratus on EHS's website (ehs.utk.edu)
    - Click "Safety Stratus" on EHS's main menu, then the blue "Login to Safety Stratus" button
  - IAMMS Chem Inventory
    - They are expected to keep one.
    - Please contact EHS to discuss this one if needed.
  - Unknown Chemicals Being Purchased
    - This is an example of blind spot.
    - The concern is that there are chemicals being bought & used on campus, that EHS is not aware of.
    - EHS does not decide what you can bring in. EHS is here to help you safely purchase, use, & manage chemicals safely.
    - There is no central location or process for how we are identifying what is being brought to campus.

VII. **Incidents/Concerns**

- **Review with iCue method (Introduce iCue Method)**
  - This will be added to next month's agenda.
  - "What is root cause based off different parameters?"

  - **Incident: Bunson Burner Fire –BCMB (Carter)**
    - During the end of a project in summer, a student came to work with a brace on their hand/arm.
      - The student was provided with the choice of computer-based tasks or working in the lab, if able.
    - The student tried to open a tub with their good hand/arm, and then knocked their arm into a Bunsen burner (sterile field next to them)
      - The Bunsen burner was operating normally in a good condition.
    - The student's sweater caught fire. The student then signaled this & yelled out to others in the lab.
    - A lab member helped to put it out the fire.

  - <u>Bunsen Burner Incident Discussion</u>:
    - The use of lab coats was discussed; they could be an issue (as well as bulky clothing and long hair)
    - *"What is the lab appropriate attire?"*
      - No flowy sleeves, no stringy pieces, etc.
      - Sweatshirt or cardigan could be removed in lab.
      - Keep in mind of your lab coat material, & make sure size fits correctly.
        - Cotton or flame retardant
    - The hand/arm being in a brace was a factor for the incident.
    - The student was aware of the work that was involved in the lab.
    - *"Did it seem like the systems & potential for Questions & discussions optimal in the lab? Could this have been an off day"?*
    - There were sound decisions in the work/group spaces. The error was in the headspace.
    - <u>Fire Response</u>:

- There is a Fire Safety in Labs training on canvas; this would be beneficial to assign.
- There is Lab specific training (the training could improve their subjects involving the use of fire & fire safety)
  - Knowing what to do if the lab space or individual catches on fire
  - Training on Stop Drop Roll
  - Safety Shower
  - If not you, fire extinguisher if fire requires it.
    - This can be rinsed away.
- Because there are temporary uses of lab spaces, this training could be overlooked.
- The lab did have lab specific training; after the incident, it was discussed for the lab to incorporate more elements into the training.
  - Lab coats, appropriate use of fire, etc.

- **Incident: Oven Fire -EEB (Baker)**
  - The incident involved a Drying Oven Fire
  - This lab is separate from other labs.
  - The individual was working alone when the incident occurred. The individual was focusing on routine tasks, along with working on other tasks as well.
  - The individual noticed smoke coming from the oven and opened oven door, thus resulting in fire. The individual then grabbed the closest fire extinguisher, using it to put out the fire.
  - The individual notified EHS, the Lab, Department Head, and FLS
  - It was found that the oven had been overloaded.
    - The vent was covered by a sheet pan left on top.
  - No one was injured, but the individual did contact Corvel to be evaluated for smoke inhalation.

  - <u>Oven Fire Discussion & Resolutions</u>:
  - *"How full is too full?"*
  - To prevent this incident from happening again, it was proposed to check the space around the oven to make sure vents are not blocked and can work properly.
  - The lab is looking into fire extinguishers & fire training.
  - This was a workspace error.
  - The temperature in the oven was not too excessive; however, the vent is a huge factor in the combustion of the plants & paper material.

VIII. **LSS updates (Ranger)**

- There are currently no metrics; however, these will be reported in October.
- <u>Annual review process:</u>
  - LSS is currently finishing reviews in Anthropology. They will begin reviews soon starting in additional departments (CBE, CEE, etc.)
  - Biosafety will begin reviews in early October for the Ag campus, etc.
- Linda Hamilton has been names Interim Program Leader & BSO
  - She has been working diligently on Safety Culture – Thank you, Linda!
  - Her work has been recognized by CSHEMA. They have awarded Linda a $3k grant to continue the hard work.
- Dabney Bueler Clean Out
  - Scott Moser, Natalie Metzger – Great Work!
  - Every group within EHS helped & was involved in the process
  - The success of the cleanout was great! Thank you everyone!
- Q: after action report?

- EHS is working on an after-action report for the Dabney Bueler Clean Out
- More information is to come.

IX. **Charter Updates**

- It was proposed to update the charter to include: The Addition of Past Chair Role
- This is being sent out to the LSC and will be voted on at the next LSC meeting.

X. **New Business / Open Floor**

- Contacts for Building Safety
  - It was asked if there is a list of contacts for building safety.
  - Two students climbed on roof.
  - There was a concern for a pipe that spouts steam.
  - IWS on the LSC could help consult with Facilities Services & provide more information.

XI. **Next Meeting**

- Thursday, October 10th, 2024, from 1:30pm – 3:00pm EST.

[Meeting Adjourned]