Safety Coordinator’s Boot Camp

BSRB September 8, 2017
Welcome
U-M Laboratory and Research Safety Initiative

Safety Coordinator BootCamp
August 22, 2017

Kevin Hegarty
Executive Vice President and Chief Financial Officer,
Office of the President
U-M Laboratory and Research Safety Initiative

Safety Coordinator BootCamp
August 22, 2017

Chris Gordon
Director of Wilson Student Team Project Center
College of Engineering

Member of the U-M Laboratory and Research Safety Committee (LRSC)
Together we will
Strengthen
the culture of safety
Challenges

1. Cutting-edge research that changes over time
2. New students/trainees and high turnover of personnel
3. Infrastructure (e.g. open-bay design, costs)
4. Regulatory authority is not prescriptive
5. Inconsistent follow-through in correcting deficiencies (knowledge- and behavior-based)
6. Lack of awareness of safety incidents and near-misses
7. Faculty autonomy
8. Peer pressure

Not unique to U-M; these are shared by research institutions across the nation
Proposed plan

Key Elements
1. Improve communication
2. Enable cooperation
3. Establish commitment

• Maximize outcome while minimizing burden
• Use non-punitive information to drive change
Strengthening the culture of safety

Too little oversight
- No change
- Continued potential for harm

Too much oversight
- Police state
- Burden
- Blame and train

Balance oversight and burden
Non-punitive information
Education
Cooperation
Increased productivity
Previous working relationship

EHS

PI

Staff
Vice President for Research

Executive Vice President Chief Financial Officer

Provost
Laboratory and Research Safety Initiative

• Launched early 2015 •
Laboratory and Research Safety Initiative

- Launched early 2015 -

Laboratory and Research Safety Committee (LRSC)

- Vice President for Research
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School, College, Unit Safety Committees Established as of Fall 2016

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Vice President for Research
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Provost

UMOR
Laboratory and Research Safety Committee (LRSC)
EHS

15 School, College, Unit Safety Committees Established as of Fall 2016
• Improve **Communication**
  – Closing the feedback loop
  – **Central** messaging
  – **Local** autonomy for implementation
  – Improved awareness

15 School, College, Unit Safety Committees Established as of Fall 2016
Enable **Cooperation**

- Accountability is shared
- Governance is guided
- Resources are accessible
- Re-establishing trust
• Establish **Commitment**
  – Of leadership (EOs, Deans, RADs, Dept Chairs)
  – Of faculty, staff, students, and trainees

15 School, College, Unit Safety Committees Established as of Fall 2016
Adaptive strategy for strengthening the culture of safety

Success is our goal!!

Success of this approach depends on sharing information
- We are in this together (community)
- Defined and shared responsibilities (cooperation)
- Non-punitive information
- Report near misses
- Feedback on strengths and weaknesses
- Share best practices
- Identify/communicate barriers to compliance

Goal: Inspection ready 24/7/365
- Decrease burden
- Increase productivity
- Research and academic excellence

WE NEED YOU
Thank you

Comments

Questions

Target: Inspection ready 24/7/365
How do we best engage with you and your units to:

- Establish **Commitment**
- Improve **Communication**
- Enable **Cooperation**

We will be exploring these questions and more throughout the day.
Safety Coordinators

Laboratory and Research Safety Initiative
Welcome!

Some reminders as we get started:

- We want you to get the most out of this
- Housekeeping
  - Terminology reminder
- Ground Rules
- Itinerary is a guideline but relatively fluid

- This bootcamp is our inaugural kickoff!
MODULE I
Purpose/Mission

Building a new community

• That has authority
• That has reach
• That is reliable
• That is important
So where do we start?

• How do we accomplish these goals?
  • Education
  • Questions! Involvement
So where do we start?

We need to start with you!

Please introduce yourself to your table
1. Who are you?
2. Why are you here?
3. What do you MOST want to learn about Bootcamp?
4. How are you planning on using or sharing the information learned, when you get back to your unit?
5. When you are not at work, what do you enjoy doing?
Discussion
Safety Coordinators

Laboratory and Research Safety Initiative
APLU Recommendations

A Task Force within The Association of Public & Land-Grant Universities (APLU), identified four categories that are organized to address major recommendations to strengthen and promote a culture of safety.

1) Institution-wide dynamics and resources
2) Data, Hazard Identification, and Analysis
3) Training and Learning
4) Continuous Improvement

APLU Call to Action

“The Task Force on Laboratory Safety calls on all universities to embrace a renewed commitment to improving the culture of safety for all academic research, scholarship, and teaching. We ask that college and university presidents publicize their commitments and expectations within their institutions. We encourage all academic institutions to look beyond the traditional research laboratory to commit to improving safety in research and teaching laboratories; in shops, studios, and stages; in teaching classrooms; and in the field.”

– APLU April 2016
Enhancing the Culture of Safety in the U-M Research Community

April 2015

President Schlissel wrote a letter to the campus community announcing an ambitious plan regarding enhancing the culture of safety at U-M

“Safe research is the responsibility of everyone in the laboratory- how we think, how we act, most of all understanding that making sure no one gets hurt in the process is paramount”

Specific measures stated in that letter include:

1. Oversight committee and structure on research safety
2. Survey to assess awareness
3. Clarification of roles and responsibilities
4. Increased communication and information
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Laboratory and Research Safety Initiative
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UMOR • Laboratory and Research Safety Committee (LRSC) • EHS

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2. **Survey to assess awareness**
3. Clarification of roles and responsibilities
4. Increased communication and information
Major outcomes

• Confusion on who in the laboratory is ultimately responsible for ensuring compliance.

• Barriers to being compliant with safety included
  – perceived lack of a strong safety culture,
  – lack of reminders or refresher communication about hazards,
  – peer pressure,
  – infrastructure and physical limitations (i.e., lab design)
Major outcomes (cont.)

- The majority of respondents said they understood potential hazards and are comfortable in discussing safety concerns with their supervisors and colleagues, but expressed less confidence in the knowledge, commitment, and concern of their peers to act in a safe manner.

- Less than 50% indicated that proactive efforts are underway to address potential future safety concerns.
Enhancing the Culture of Safety in the U-M Research Community

April 2015
President Schlissel letter

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1. Oversight committee and structure on research safety
2. Survey to assess awareness
3. Clarification of roles and responsibilities
4. Increased communication and information
Building Strong Safety Cultures

- Leadership in Safety
- Positive Attitude for Safety
- Safety Education
- Institutional Support
- Collaborative Interactions
- Promoting Safety

Strong Safety Culture

American Chemical Society
Purpose/Mission

Building a new community

• That has authority
• That has reach
• That is reliable
• That is important

• And that communicates!
Communication Exercise
Communication Exercise

How does this relate to your local community?

Discussion
Laboratory and Research Safety Initiative

Safety Coordinators
MODULE II
Roles and Responsibilities

Safety coordinators are **liaisons** between their departments, researchers, and Environment, Health & Safety (EHS). They help to **resolve issues** by answering researcher’s questions, correcting or elevating issues, and disseminating information about safety and environmental health issues and topics.
Roles and Responsibilities

• Act as safety liaison between the academic or research operations and EHS, and assume the authority delegated by the dean or chair to deal with safety or environmental issues that arise during research operations.
• Disseminate all safety and environmental information to appropriate personnel in the department. This may be educational material, posters, signage, or specific changes in safety or environmental rules or practices.
• Perform periodic walk-throughs of academic laboratory and research areas to identify safety or environmental issues that require mitigation or reporting to EHS.
• Work with academic or research faculty and staff in resolving questions or raising concerns to appropriate authorities.
• Notify both the unit safety committee and EHS of potential safety hazards, exposures, accidents, injuries, illnesses, spills, releases, near misses, or other regulatory and environmental issues.
• Attend the annual EHS training program for Safety Coordinators and any other training recommended by EHS or safety oversight committees.
• Respond in a timely manner to all reports of failures of individuals to adhere to safety or regulatory requirements.
Roles and Responsibilities

• Act as **safety liaison** between the academic or research operations and EHS, and assume the authority delegated by the dean or chair to deal with safety or environmental issues that arise during research operations.

• **Disseminate** all safety and environmental information to appropriate personnel in the department. This may be educational material, posters, signage, or specific changes in safety or environmental rules or practices.

• Perform **periodic walk-throughs** of academic laboratory and research areas to identify safety or environmental issues that require mitigation or reporting to EHS.

• Work with academic or research faculty and staff in **resolving questions or raising concerns** to appropriate authorities.

• **Notify** both the unit safety committee and EHS of potential safety hazards, exposures, accidents, injuries, illnesses, spills, releases, near misses, or other regulatory and environmental issues.

• **Attend** the annual EHS **training** program for Safety Coordinators and any other training recommended by EHS or safety oversight committees.

• **Respond** in a timely manner to all reports of failures of individuals to adhere to safety or regulatory requirements.
Exercise

• Share and communicate
Town Hall Forum

• Questions
• Challenges
• Goals

• Discussions

• Goals setting!
Break

10:45a - 11:00a
Safety Coordinators

Laboratory and Research Safety Initiative
Risk Assessment

What it is and How to do one
Assessing the risk
Risk Unidentified or Unacted Upon
Risk defined

- Possibility of loss, injury, disease or death
  
  - Is the probability of risk acceptable?
  
  - Are the control measures adequate to mitigate the risk and lower the probability to an acceptable level?
Risk Assessment and Management

• Risk Identification
  ➢ Adverse events

• Risk Estimation
  ➢ Probability of adverse event

• Risk Management
  ➢ Controls to mitigate identified risk

Every research lab, shop, studio, etc. has a unique set of risks that should be assessed, identified and managed prior to beginning work.
Hierarchy of controls

1. Elimination
   - Physically remove the hazard
2. Substitution
   - Replace the hazard
3. Engineering controls
   - Isolate people from the hazard
4. Administrative controls
   - Change the way people work
5. PPE
   - Protect the worker with personal protective equipment
Personnel Risks

People contribute to risk as much as the materials

- Attitude regarding safe practices determines behavior
- Training: How much? and How often?
Risk Assessments prevent accidents

3 Causes of Accidents

DIDN’T HEAR  DIDN’T SEE  DIDN’T SPEAK

Safety Instructions  Safety Hazards  Safety Concerns
Risk Assessment Case Study

• What is the issue?
• What is the context of the problem?
• What key facts should be considered?
• What alternatives are available?
• What would you recommend — and why?
Risk Assessment Case Study

• A PhD candidate in the Art department plans to exhibit some of their performance work in the Gallery. One performance involves working with and “reconstituting” dried human blood.

• The dried blood will be collected from glucose test strips of a relative that has diabetes. The PhD student will be the only one handling the blood flakes. Dried blood will be scraped into a glass mortar dish, crushed and ground into a fine powder, reconstituted with water and finally used to paint the bottom of the student’s feet for the performance.

• Spectators will be present for the performance. The PhD student was told to contact EHS to determine if this something that can be safely performed?
A new professor is just setting up his research lab and the focus of his work is arbovirus/host interactions.

The researcher is planning to set up an incubator to grow mosquitoes, infect them and small animals to compare the molecular differences of virus in an animal host versus mosquito host.

What should be considered?
Incident and Near-Miss Reporting
Laboratory Research – The Good and The Bad

• The University of Michigan is a leader in cutting-edge research. However, incidents and near-misses are an unavoidable by-product.
Accidents Happen....

• U-M laboratories are not immune from incidents and near-misses.
• Last year, there were 81 incidents and near-misses reported to U-M EHS.
• And these were just the incidents that were reported...
2016 SUMMARY OF INCIDENT AND NEAR MISS DATA BY TYPE

- Alarm/Precaution Response: 9
- Slips/Falls/Physical Injury: 8
- Fire: 6
- Cuts/Punctures/Lacerations: 23
- Skin/Inhalation Chemical Exposure: 19
- Burns: 4
- Chemical Spills: 7
- Eye Accidents: 1
Why Are You Here?

• Graduate Chemistry Lab at Ohio State University

Fire damage after a spark ignited Hexane vapors. Vapors due to the container breaking in an improperly modified flammable cabinet.
Incident vs Near Miss

• **Near Miss** - "close call" is an unplanned event that has the potential to cause, but **does not** actually result in human injury, environmental or equipment damage, or an interruption to normal operation.

• **Incident** - An unplanned or unintended work-related event(s) which result in property damage, personal injury, work process stoppage or interference, or any combination of these conditions.
A laboratory fire due to improperly stored (incompatible) chemicals.
Benefits of Reporting

• When incidents and near-misses occur, it is important to document the circumstances surrounding each occurrence.
• Collecting and using this type of data helps U-M EHS Research Health and Safety determine where to focus our time and resources without assigning blame to individual researchers or laboratories.
• The lessons learned from these incidents can be shared with other laboratories that are performing similar research activities.
How To Report....

• Reporting an incident or near-miss is easy to do.
• A link to the Laboratory Incident and Near-Miss Report Form can be found on the homepage of the EHS website. A copy of the form can also be found in Section 6 of the blue binder
• The Form can be completed and submitted online.
Form Details

• The Laboratory Incident and Near-Miss Report Form is a summary of the event in question.

• Some details that will be required include:
U-M EHS Follow-Up

• U-M EHS will investigate each incident and near-miss and provide follow-up to the lab if necessary.
• Follow-up can be a phone call, email, or a laboratory visit.
• U-M EHS will help the lab with applicable corrective actions.
• Any lessons learned in a given event will be shared with others who are involved with similar activities.
Incident/Near Miss Example

• Near Miss

A laboratory researcher working with level II pathogens was picking colonies with toothpicks. The used toothpicks were discarded into a biohazard bag. As the individual reached for the biohazard bag to discard a toothpick, their right thumb poked another toothpick.

No evidence of a hole was observed even when the glove was tested by filling with water. (UM 8/3/17)
Incident/Near Miss Example

• **Incident**
  
  While working in a machine shop an individual was struck in the chin with a 1 cm drill bit piece. The individual was improperly using the CNC milling machine to drill holes causing the drill bit to break into pieces and shoot out of the milling machine. (UM 5/14/15)
A Safety Coordinator introduction: Safety Inspections
Types of Inspection Reports ...

- EHS Inspections: Lab, Shop/Studio, Biosafety, Laser, Radiation, etc.
- Laboratory Self-Inspections
- Unannounced Lab Visits
- Shop/Studio Self-Inspections
**EHS’ Lab Safety Inspection Process!**

- **Start:** Conduct periodic lab inspection based on Lab Hazard Rank.
  - **Deficiency Found?**
    - **No:** Issue report within 1 week.
    - **Yes:** Take immediate action to eliminate risk of serious injury or death.
  - **Imminent Hazard Found?**
    - **Yes:** Take immediate action to eliminate risk of serious injury or death.
    - **No:** Issue report within 1 week. 60 day deadline to correct standard deficiencies.
  - **Critical Deficiency Found?**
    - **Yes:** Corrected During Inspection?
      - **Yes:** Issue notification same day; Re-inspect Critical Deficiencies within 2 business days.
      - **No:** Critical Deficiencies Corrected?
        - **Yes:** OSEH Mgr: sends Chair and copies PI with new 2 business day deadline.
        - **No:** Critical Deficiencies Corrected?
          - **Yes:** Repeat this process from start until all issues are resolved.
    - **No:** Email received from PI?
      - **Yes:** Update corrective action database; Save email to Solve.
      - **No:** Issue report to Chair and copy PI; Save email to Solve.

**Definitions:**
- **Imminent Hazard:** There is high probability that immediate serious physical harm would result if the situation is allowed to continue. Examples may include major toxic chemical releases, inappropriate work operations such as work with highly hazardous materials without proper controls, exposed or damaged electrical components, etc.
- **Critical Deficiency:** Serious or uncorrected condition where there is a reasonable probability that if allowed to continue will result in serious physical harm, fire, or significant environmental impact.
The **Safety Coordinator’s Role**

1) **Assist/conduct annual** *(ideally)* **self-inspections** *(lab, shop, studio, etc.)*
2) Assist the Lab Director, Lab Manager, Facilities Manager w/ correcting deficiencies ID’ed in EHS’ Safety Inspections and Lab Visits
3) Contact EHS Staff for assistance & consultation re: Safety Inspections and/or Lab Visits
2016 Lab, Shop & Studio Inspection Summary:

<table>
<thead>
<tr>
<th>College / School</th>
<th>Laboratories (#s and SF)</th>
<th>Shops / Studios (#s and SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COE</td>
<td>618 364,634</td>
<td>84 49,112</td>
</tr>
<tr>
<td>LS&amp;A</td>
<td>891 310,245</td>
<td>15 60,531</td>
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<tr>
<td>Pharmacy</td>
<td>89 36,708</td>
<td>0 0</td>
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<tr>
<td>LSI</td>
<td>178 50,685</td>
<td>0 0</td>
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<td>Medical School</td>
<td>2,038 498,385</td>
<td>8 3,447</td>
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<tr>
<td>Dentistry</td>
<td>73 22,843</td>
<td>0 0</td>
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<tr>
<td>Kinesiology</td>
<td>8 3,014</td>
<td>2 458</td>
</tr>
<tr>
<td>SNRE</td>
<td>12 14,924</td>
<td>0 0</td>
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<tr>
<td>Public Health</td>
<td>69 32,396</td>
<td>0 0</td>
</tr>
<tr>
<td>UMTRI / Mcity</td>
<td>4 1,596</td>
<td>7 537</td>
</tr>
<tr>
<td>Totals</td>
<td>3,980 1,335,430</td>
<td>81 114,085</td>
</tr>
</tbody>
</table>

Frequency of Lab & Shop inspections are based on their respective “Hazard Rating”
2016 Radiation Safety Inspections

- Quarterly Radiation Safety Inspections: 2302
- Lab Decommissionings: 87
- Laser Safety Inspections: 100
- Laser Lab Visits: 420
2016 TOP COMPLIANCE ISSUES

- Door Sign Deficiencies: 270
- Chemical Storage Deficiencies: 281
- Chemical Labeling Deficiencies: 274
- Chemical Inventory Deficiencies: 263
- Chemical Hygiene Plan Deficiencies: 468
- Postings and Notices Not Posted: 457
2016 Laboratory Visit Data
266 visits
2016 TOP COMPLIANCE ISSUES

- **MISSING SHOP DOOR SIGNS/CONTACT INFO**: 25
- **MISSING REQUIRED POSTINGS**: 55
- **MACHINE SHOP EQUIPMENT - NOT SECURED**: 12
- **PEDESTAL/BENCH GRINDER DEFICIENCIES**: 17
- **HAZARD COMMUNICATION PLAN DEFICIENCIES**: 43
- **EYEWASH EQUIPMENT ISSUES**: 29

*Shops*
Tools and Resources ...


2. EHS’ website

3. **EHSA (Chemical Tracking) System**

4. **GoldFFX SDS Database**

5. **H&S Training**: My LINC Courses, EHS’ Newsletters,

6. **EHS’ Multimedia Resources**: On-line Videos, DVDs, Posters

7. “Coffee and Conversation with EHS” Sessions
Lab Inspection Report

Building: Example Lab
Inspector: Mike Waszak
Room: Safety Reports

5. Eye Wash

Monthly inspections of all emergency eyewash stations within the laboratory are required per the UM Chemical Hygiene Plan. Conduct & document monthly inspections on the EHS provided tag or equivalent.

6. General Safety Problems

Consumables located near research materials: Consumption, storage and preparation of food and beverages are prohibited in research spaces where animals, hazardous chemicals, or human tissues/ fluids are located, as well as in all laboratories designated as Biosafety Level 1 or 2. Food and drink is only allowed in non-research areas that are physically separated from the research area by a door or partition which can be closed.

7. Missing lab door or sticker

The notated lab hazard door symbol(s) and/or icon(s) will be provided by EHS. Please fill out the appropriate door sign request form for new signage. NOTE: Some departments may provide their own door signs.

http://ehs.umich.edu/forms/laboratory-door-sign-request-form/

For department specific door signs:
- Chemistry: contact Chet Peters at chspeter@umich.edu
- LSJ: contact Shala P. Meara at shala@umich.edu

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No Eating or Drinking/Wear Protective Clothing/Wear Safety Glasses

Additional Comments (If Any)

Obtain SDS for all items, e.g., Aqueous, IPA, Toluene, Naphtha; Post “No Food” on upright refrigerator; Maintain all SDS for 30 yrs; All refrigerators & microwaves in a lab need appropriate labels identifying food/non-food usage. Obtain new SDS poster.
# Biohazard Lab Inspection Report

**Principal Investigator:** Safety Fred  
**Biosafety Level:** B1/B2  
**Type of Work:** Adenovirus, HIV vectors, human cell lines  
**Building:**  
**Rooms:**

**Inspector:** Sheya Martin  
**Inspection Date:** 8/8/2017

---

**TO:**  
**FROM:** Sheya Martin, MS  
Senior EHS Representative  
**DATE:** August 08, 2017  
**SUBJECT:** Biohazard Lab Inspection for 0001 BSRB  
Agent(s) used: Adenovirus, HIV vectors, Human cell culture

This is to report to you that the BL2 laboratory inspection for Dr. Fred Safety was completed on August 8, 2017. The inspection consisted of an interview and a site visit to 0001 BSRB. EHS personnel conducted the inspection with the assistance of Dr. Safety. The inspection covered required parameters for research at BL2 facilities, safety parameters of good lab practice, and regulatory compliance.

A biohazard lab inspection report is provided and attached to this correspondence.

The inspection report is formatted into 4 columns:
- **Items Inspected**
- **Status of items at time of inspection**
- **Corrective action (CA) will be indicated in Red**
- **Completion date (CD)**

A “Yes” in the CA column indicates the lab is responsible for implementing any necessary corrective action for that item (indicated in Red). When the item is corrected please indicate date of completion on the appropriate item line in the CD column. **General reminders, recommendations or other comments will be in Green.**

---

**1. Knowledgeable of CDC guidelines?**  
Yes

**2. Is biosafety authorization on file?**  
No in progress

**3. Were previous audit deficiencies corrected?**  
Not applicable

**4. Are policies established by lab director?**  
Yes, need door sign link

**5. Is Biosafety Manual complete?**  
Must be customized

**6. Do employees have experience with agent?**  
Yes

**7. Are lab specific training records available?**  
Yes, need to update training

**8. Is training updated and reviewed annually?**  
Yes

**9. Is lab access restricted when unoccupied?**  
Yes

**10. Written SOP to address emergency spills?**  
Yes

**11. Spills/incidents reported to Lab director?**  
Yes

**12. Administrative Comments:**  

**13. Current BSC certification:**  
Yes

**14. Appropriate BSC location?**  
Yes
## Example Biosafety Inspection Report

### University of Michigan Environment, Health Safety

**Biohazard Lab Inspection Report**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Biosafety Level</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>B3.2.A.B.2</td>
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<table>
<thead>
<tr>
<th>Department</th>
<th>Type of Work</th>
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<table>
<thead>
<tr>
<th>Building</th>
<th>Inspection Date</th>
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<table>
<thead>
<tr>
<th>Rooms</th>
<th>Inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Knowledgeable of CDC guidelines?  
   - [ ] Yes  
   - [x] No

2. Is biosafety authorization on file?  
   - [x] Yes  
   - [ ] No

3. Were previous audit deficiencies corrected?  
   - [ ] Yes  
   - [x] No

4. Are policies established by lab director?  
   - [ ] Yes  
   - [x] No

5. Is Biosafety Manual complete?  
   - [x] Yes  
   - [ ] No

6. Do employees have experience with agent?  
   - [ ] Yes  
   - [x] No

7. Are lab specific training records available?  
   - [x] Yes  
   - [ ] No

8. Is training updated and reviewed annually?  
   - [ ] Yes  
   - [x] No

9. Is lab access restricted when unoccupied?  
   - [x] Yes  
   - [ ] No

10. Written SOP to address emergency spills?  
    - [x] Yes  
    - [ ] No

11. Spills/accidents reported to Lab director?  
    - [x] Yes  
    - [ ] No

12. Administrative Comments:  
    - [x] Yes  
    - [ ] No

13. Current BSC certification:  
    - [x] Yes  
    - [ ] No

14. Appropriate BSC location?  
    - [ ] Acceptable  
    - [x] Non-acceptable  

15. Vacuum system protection in place?  
    - [x] Yes  
    - [ ] No

16. Equipment/area missing Biohazard label?  
    - [ ] Yes  
    - [x] No

17. Appropriate lab pressurization?  
    - [x] Yes  
    - [ ] No

18. Noted autoclave problems:  
    - [x] Yes  
    - [ ] No

19. Missing handwashing supplies:  
    - [x] Yes  
    - [ ] No

20. Laundry facilities available for lab coats?  
    - [x] Yes  
    - [ ] No

21. Noted facility problems:  
    - [x] Yes  
    - [ ] No

22. Comments on Comments:  
    - [x] Yes  
    - [ ] No

23. Load and unload buckets/containers in BSC?  
    - [x] Yes  
    - [ ] No

24. Staff wash hands after handling materials?  
    - [x] Yes  
    - [ ] No

25. Eating and drinking prohibited in lab?  
    - [x] Yes  
    - [ ] No

26. Appropriate decontamination schedule?  
    - [x] Yes  
    - [ ] No

27. All waste decontaminated before disposal?  
    - [x] Yes  
    - [ ] No

28. Appropriate containers used for transport?  
    - [x] Yes  
    - [ ] No
Shop Inspection Report

Building:                Inspector:                Rick Waszbicki
Room:                    Inspection Date:            7/30/2015
Critical deficiencies are due: 0/3/2015
MSRP: Standard deficiencies are due: 9/26/2015

This inspection report documents deficiencies within the noted location. All deficiencies must be corrected within the indicated time frame. Please contact the inspector above when complete. Questions should be directed to the inspector at (734) 615-1143. Any item highlighted in red is a critical deficiency that creates an unsafe condition where there is reasonable probability that it allowed to continue will result in serious physical harm, fire, or significant environmental impact. A danger tag has been attached by EHS to the item, and the expectation is the deficiency will be corrected within 2 business days. Corrective action(s) for deficient equipment may include repair or removing it from service. The tag shall only be removed by EHS personnel upon verification that the hazard has been corrected.

1. Electrical Problems
   Damaged electrical cord: All electrical service cords should be periodically checked for integrity. If cord insulation is frayed, cracked, or missing, the corresponding piece of equipment should be removed from service until the cord is properly repaired or replaced. Contact POCO (7-2059) to replace or repair defective electrical components.

   Modified electrical components: Only licensed electricians can modify electrical components, cords, distribution systems, and equipment. A U-M electrical inspector must approve the completed work before it is energized. The corresponding piece of equipment should be removed from service until it can be properly inspected. Contact POCO (7-2059) to arrange an electrical inspection of components.

2. General Safety Problems
   Compressed air used for cleaning purposes, e.g., parts or equipment, was not being limited to a maximum 80 PSI or were not outfitted with safety blow-back/bypass devices. Limit compressed air for cleaning to 80 PSI or install safety bypass nozzles. Also, compressed air must not be used by employees to clean themselves or clothing.

3. Waste Issues
   Hazardous waste maintained beyond 90 days: All hazardous & biohazardous waste must be properly disposed of within 90 days of the accumulation start date indicated on the waste label. Contact EHS Hazardous Materials Mgmt. (3-4528) at 60 days of accumulation date to ensure ample time to remove waste. Please refer to this website for guidance:
   http://ehs.umich.edu/hazardouswaste/biohazardwaste/
Example

Unannounced Lab Visit Safety Inspection Report

OSEH UNANNOUNCED LABORATORY VISIT

Building: __________________ Room: __________________ Date: __________________

OSEH Inspector: ________________ Principal Investigator(s): __________________

This focused laboratory inspection report is designed to identify key safety and compliance concerns. Please take corrective action and notify OSEH as indicated below.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Inspected</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>A laboratory hazard and emergency contact door sign was posted and complete. To request a lab door sign please complete the online form. Door sign for one PI in room: <a href="http://www.oshh.umich.edu/pdf/DoorSignForm.pdf">http://www.oshh.umich.edu/pdf/DoorSignForm.pdf</a>. Door sign for multiple PIs in the same room: <a href="http://www.oshh.umich.edu/pdf/MultiplePIForm.pdf">http://www.oshh.umich.edu/pdf/MultiplePIForm.pdf</a>.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>A CHP document binder was available with lab specific documentation. The University Chemical Hygiene Plan (CHP) requires each PI to maintain lab specific health and safety information and documentation. The CHP and associated materials are located at: <a href="http://www.oshh.umich.edu/guidelines/che.html/">http://www.oshh.umich.edu/guidelines/che.html/</a></td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>There was no evidence of eating/drinking in lab areas.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>All primary and secondary chemical containers were clearly labeled as to their content, using the full chemical name.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>Lab personnel were observed wearing proper lab attire, including lab coats, safety glasses, long pants and closed-toe shoes.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>Gas cylinders were properly restrained.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>Hazardous waste containers were closed and dated.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>Fume hood sash was closed when the hood was not in use.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>All emergency shower and eyewash locations were readily accessible.</td>
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<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
<td>Flammable liquids were stored in flammable liquid storage cabinets.</td>
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</table>

Additional Comments: ____________________________________________________________

Please verify within one week that all items marked "No" have been corrected by sending an email to: OSEH-LabVisits@umich.edu.

Remember to include the building, room and date written at the top of this form in your email.
I haven’t found anything wrong, **YET**. But it’s OK for you to go ahead and worry a bit longer!
EHS Documentation

Training, SOP’s & Chemical Inventory
Blue Binder - Training Part 1:

Each person working in a laboratory must attend EHS laboratory safety training (BLS009) or take the online course (BLS025w) noted in chapter 7 of the CHP. Each employee will sign the acknowledgement below or insert a copy of the training certificate in this section.

<table>
<thead>
<tr>
<th>Name</th>
<th>U-M ID No.</th>
<th>Signature</th>
<th>Date of Training</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
Blue Binder - Training Part 2:

Each person will review the U-M CHP and this CHP Document Binder. They will also receive training on lab-specific procedures identified in the Part 2 acknowledgement and sign the following acknowledgement form.

**LABORATORY-SPECIFIC TRAINING ACKNOWLEDGEMENT**

<table>
<thead>
<tr>
<th>Name</th>
<th>U-M ID No.</th>
<th>Signature</th>
<th>Date of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Blue BinderTraining Part 3:

Any additional laboratory-specific training is recorded on the documentation sheets in this section.

<table>
<thead>
<tr>
<th>Training Type</th>
<th>Employee Name</th>
<th>U-M ID No.</th>
<th>Initials</th>
<th>Trainer</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>i.e. Glove box use</em></td>
<td><em>John Doe</em></td>
<td>55551212</td>
<td><em>JD</em></td>
<td><em>Dr. Smith</em></td>
<td>1-1-2011</td>
</tr>
</tbody>
</table>
Laboratory workers are required to prepare a new SOP as part of the risk assessment they must carry out for each experiment involving unfamiliar substances and those not already included in EHS’s list of SOP. In addition, SOP’s are required for substances that meet the MIOSHA criteria for “particularly hazardous substances” such as select carcinogens, reproductive toxins, and substances that have a high degree of acute or chronic toxicity.
Compressed Gas Use

Issue Date: <MM/DD/YY>
Revision Date #: 08/08/17

This standard operating procedure (SOP) outlines the handling and use of compressed gases. Compressed gases come in a large variety of sizes and pressures. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, personal protective equipment, and disposal techniques when handling compressed gases.

Description

A compressed gas is any mixture or material in a container with either an absolute pressure exceeding 40 psi at 70°F or an absolute pressure exceeding 104 psi at 130°F. Any liquid flammable material having a vapor pressure exceeding 40 psi at 100°F is also considered a compressed gas.

Potential Hazards

The large amount of potential energy contained in a compressed gas cylinder makes it a potential rocket or bomb if the pressure is released through rupture of the valve or container failure.

Compressed gases may also be toxic, flammable, or explosive – check the safety data sheet for more information. Safety considerations for these properties must also be followed.

Use this space to modify the potential hazards as they pertain to your work location.

Engineering Controls

Storage of compressed gas cylinders requires sturdy chains secured to a wall or cabinet, and/or a cylinder stand. If the process does not permit gas use and/or storage in well-ventilated areas (i.e., lab
Standard Operating Procedures

SOP’s are our step by step instructions on how to do a particular task, process, procedure, or experiment.

Why do we need them?
Consistency, accident prevention, and risk assessment.
A current laboratory inventory must be maintained in the online EHSA inventory system.
Challenges are Opportunities

Dealing with Conflict
Why do Conflicts Exist

**Diversity**
- Different experiences
- Different attitudes
- Different expectations
- Different values

**Promote Growth**
- Helps prevent apathy
- Spurs creativity
- Brings insight
Four Steps to Resolution

Communicate

• Open communication is key (step 1)
  – Express your concerns about the situation,
  – Stick to the facts
  – Focus on the problem not the person or personal differences

• Actively Listen (step 2)
  – No interrupting
  – Listen to understand
  – Ask open ended questions to gain clarity
Steps to Resolution

• Review Options (step 3)
  – Talk over options
  – Do not feel pressured to find an immediate answer
  – Look for solutions both parties benefit from

• Win-Win Solution – Satisfactory to both parties (step 4)

When one party wins by aggressive behavior or one party simply gives in, someone is losing… which leads to outcomes that do not resolve the underlying causes of the conflict.
<table>
<thead>
<tr>
<th></th>
<th>A temporary settlement of complex issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compromising</strong></td>
<td>Quick solution under time pressure constraints</td>
</tr>
<tr>
<td><strong>Avoiding</strong></td>
<td>No chance of satisfying concerns</td>
</tr>
<tr>
<td></td>
<td>Others can resolve conflict more effectively</td>
</tr>
<tr>
<td><strong>Accommodating</strong></td>
<td>Shows reasonableness</td>
</tr>
<tr>
<td></td>
<td>Minimize loss when outmatched</td>
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<tr>
<td><strong>Collaborating</strong></td>
<td>Learn and merge insights</td>
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<tr>
<td></td>
<td>Gain commitment through consensus</td>
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<tr>
<td></td>
<td>Work through feelings that have hindered relationships</td>
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<tr>
<td></td>
<td>Allow for cool down period</td>
</tr>
<tr>
<td><strong>Avoiding</strong></td>
<td>No chance of satisfying concerns</td>
</tr>
<tr>
<td><strong>Compromising</strong></td>
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<td>Shows reasonableness</td>
</tr>
<tr>
<td></td>
<td>Minimize loss when outmatched</td>
</tr>
</tbody>
</table>
• As Safety Coordinators you may have
  o Difficult questions directed to you about requirements
  o There may be situations brought to your attention that you feel require an immediate response
  o A safety issue may arise that you feel strongly about personally

➤ You are a resource because you have resources in this role
  • Safety committee
  • EHS staff contacts
Conflict Case Study 1

• Carey a lab technician in charge of lab duties such as media prep, glass ware, waste handling and minor experiments when assigned is concerned about the actions and behavior of the lab manager, James who is also a post doc in the lab.

• James is responsible for ensuring the research is progressing he trains graduate and undergraduate students in addition to handling the safety inspections and other regulatory paperwork for the lab. James, often annoyed by the inspectors, gives misleading information about work going on in the lab and the lab work practices.

• During one inspection he was reminded that the lab could not use fabric chairs while working in the biosafety cabinet and was recommended to remove the chairs. He stated that he would remove them-- but did not.
Conflict Case Study

• On the next annual inspection he told the lab tech, Carey to hide the chairs in a different lab space until the inspection was completed and then put them back after the inspectors left.

• Carey confidentially reported this concern to an inspector and confided that there were other unsafe lab practices going on. She mentioned her concerns to James he dismissed her concerns as petty. She told the inspectors she decided to mention them in a lab meeting since the PI would be there.

• She said she was openly embarrassed by the lab manager and later he threatened that she would lose her job if she kept making trouble.

• Carey asked the inspector if she could help?
Conflict Case Study 2

• Dr. Leeder is working on a new project, obtaining various samples from wild wombats, live and dead. He has been in contact with EHS staff about making sure he has the appropriate approvals in place and any other information that is relevant to keeping his lab staff safe while working.

• But he is frustrated because he feels the EHS rep (rep 1) has been vague and unhelpful with moving this new project forward so he has reached out to a different EHS rep (rep 2) that has been helpful in the past to get some guidance.
Dear EHS rep 2,

Thank you for getting back to me regarding my questions and I eagerly anticipate any information you may have to move things forward.

I would also like to convey my dissatisfaction with EHS rep 1 and how they handled my questions. Specifically, the delay in response and lack of guidance.

They have stopped responding to my emails and phone calls. If you have any suggestions for how I can give this feedback to the appropriate person I would appreciate it. Thanks
Laboratory and Research Safety Initiative

Safety Coordinators
MODULE IV
Regulated Safety
Regulated - control or supervise something (especially a company or business activity) by means of rules and regulations

https://www.youtube.com/watch?v=dcX6XIPV4MM
EHS values

• The EHS department promotes health, safety and environmental compliance within the U-M campus community.

• EHS programs will incorporate the values of quality, responsibility, accountability, trust, clear communication, diversity, flexibility, and respect in all of our actions.
Who we are

- Industrial Hygienist
- Certified Safety Specialist
- Microbiologist
- Lawyers
- Toxicologist
- Hazmat professionals
- Geologist

- Biochemist
- Masters in Business Administration
- Public Health Scientist
- Biologist
- Civil Engineers
- Environmental Scientist
- Chemical Engineers
Compliance Groups and Guidelines

- **MiOSHA** – Michigan Occupational Safety and Health Administration
- **ANSI** - American National Standards Institute
- **DEQ** – Department of Environmental Quality
- **AAALAC** - Association for Assessment and Accreditation of Laboratory Animal Care International
- **NIH** – National Institutes of Health
- **FAA** - Federal Aviation Administration
Regulatory Standards

- **Applicable MIOSHA Standards**
  - Air Contaminants Standard (contains personal exposure limits for many chemicals found in labs)
  - Bloodborne Infectious Diseases Standard
  - Hazardous Work In Laboratories Standard (where CHP requirement, among other things, comes from)
  - Formaldehyde Standard
  - Personal Protective Equipment Standard
  - Respiratory Protection Standard

- **American National Standards Institute (ANSI) Standards**
  - ANSI Z87.1 Standard for Occupational and Educational Eye and Face Protection
  - ANSI Z358.1 Standard for Emergency Eyewash and Shower Equipment
EHS Staff: Safety Coordinators

- Safety professionals responsible for ensuring the University is compliant with regulatory requirements via, not limited to but includes, program development, inspections, and training.

- Safety Coordinators are responsible for being a liaison to help University departments with safety related questions or concerns by redirecting to EHS.
  - You should be communicating and asking for consulting, guidance, and clarification
  - But! You also can resolve issues! You do not ONLY redirect to EHS
Laboratory and Research Safety Initiative

Safety Coordinators
Small Group Examples

• Scenario

• A graduate student approaches you and asks: "My PI wants me to start a new project, but I am not familiar with some of these new protocols, I was told you as a Safety Coordinator can help me?"
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Small Group Examples

• Scenario

• A Lab Director is inviting a visiting lab group from England to come and tour their facility and asks:

• "Do I need to do anything special? We might be doing some experiments in front of them as a demonstration, but otherwise they will not be touching anything....I think?“
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Small Group Examples

• Scenario

• A UROP student from a neighboring lab gets injured, and someone was told to come get you "Help!!!“
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Small Group Examples

• Scenario

• Your department chair asks a question in the next faculty and facilities meeting: “How can they get a new lift put on the receiving dock quickly”
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Small Group Examples

• Scenario

• An electrician from Facilities & Operations comes by and asks you if you know who is supposed to replace one of the lights on the fume hood in the shared spaces down the hall: ”F&O doesn't do that, so call someone about it, okay bye."
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Small Group Examples

- Scenario

- A brand new graduate student walks right by you holding an unmarked bottle of liquid with no gloves on
  - Identify the topic? (e.g. risk assessment)
  - What is the safety coordinator role?
  - Who do I need to communicate this with?
  - What is the follow-up?
Small Group Examples

• Scenario

• Can you create your own?
• Can a Lab Director or Lab group create their own?
• Could everyone take 5 minutes out of their own meetings to go over a case study/small group example?
  o Identify the topic? (e.g. risk assessment)
  o What is the safety coordinator role?
  o Who do I need to communicate this with?
  o What is the follow-up?
Research Smart
Purpose/Mission

Building a new community

• That has authority
• That has reach
• That is reliable
• That is important
• That communicates
Thank you for being a safety coordinator. You are an important part of our research community and your efforts do not go unnoticed.

FROM THE RESEARCH SMART TEAM

RESEARCH.UMICH.EDU/RESEARCH-SMART