Workgroup Topics – DRAFT February 2021

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1. Laboratory Safety in the Teaching Lab

How can safety be effectively integrated into lecture and laboratory classes? What are examples for successful integration of safety practices in a laboratory class? What constitutes effective training on risk assessment, rather than listing do's and don'ts, in laboratory classes? Are there examples for successful risk assessment training for a laboratory class? Can a toolbox for laboratory safety training in a laboratory class be developed; what best practices can be included? What type of communication structures should students and TAs have to report safety issues? How can the culture of safety be assessed in the teaching lab? What could be the curriculum for safety training ranging from first year undergraduates to graduate and postdoctoral training, including faculty mentoring training? What is the minimum level of safety training and safety proficiency for a BS degree in art,

biology, chemistry, engineering, physics, and other disciplines (especially for teachers)?

2. Teaching Laboratory Safety to Middle and High School Educators

What can academic and industry researchers do to promote safety training for secondary school science teachers? What is known about the type and number of accidents occurring in middle and high school science labs in the US? Are there root cause commonalities? Who is currently training secondary school science teachers in safety practices? What cost-effective training could the research community offer to secondary school science teachers? What should the training entail? Should a safety toolbox be developed for secondary school science teachers and what should it include? What resources would be needed to support accident prevention in middle and high school science education and who should provide those resources?

3. Safety of Undergraduate Student in Research Labs

What type of onboarding should undergraduates receive when they enter a research lab? Should there be limitations in what type of procedures or hazardous materials undergraduates are allowed to work with? How should such restrictions be decided, communicated, and enforced? What type of supervision should be in place for inexperienced and experienced undergraduates? Can undergraduates work alone in the lab; what should restrictions or exceptions be – if any?

4. Student-led Lab Safety Initiatives

How can students be actively involved in safety practices and policies? How can students start a safety organization at their institution? How can students sustain their safety organizations? What type of support is needed to create and support a student-led safety organization? How can students motivate other students to be engaged in laboratory safety either by joining their organization or in their lab? How can students from different disciplines be integrated into student safety groups? How can student safety organizations integrate safety needs of TAs in their activities? What type of activities have student-led safety organizations developed? How can student safety organizations effectively interact with PIs, with their administrative leadership, and with EH&S?

5. Laboratory Safety Coordinators/Managers

What types of services and resources can EH&S provide for lab safety coordinators/managers to increase researchers' lab safety buy-in? What barriers do safety coordinators/managers encounter and how can these barriers be overcome? How can PIs best support their safety coordinators/managers? What type of training should safety coordinators/managers receive to be most effective in their tasks? What examples exist for tasks done well by safety coordinators/managers; can a toolbox be developed? Are there examples for safety coordinators/managers rewards?

6. Reproductive Safety for Researchers and EH&S Professionals

What type of risks exist for pregnant researchers in the lab? What type of safety guidance specific to pregnant researchers would be useful and/or should be provided? What type of safety guidance would be useful and/or should be provided to researchers planning to become pregnant or unwilling to declare their pregnancy? What type of guidelines for assessing risks for pregnant researchers should be created? How should risks be communicated? Should there be restrictions for pregnant researchers on performing certain experimental procedures and/or working with certain hazardous materials? How should communication with pregnant researchers be done while being compliant with HIPAA requirements? What gaps exists to address reproductive concerns; are long-term health concerns adequately addressed? How can lactation needs be effectively and sensitively attended to?

7. PI Engagement in Safety

What are effective ways of motivating PIs to engage in promoting safety and safety culture in their research groups? Are there existing examples that are effective? What type of support would PIs need to be effective in safety engagement? What can PIs do to improve the safety engagement of their students and staff? Should PIs, students and staff be held accountable for poor safety practices/performance? What are effective ways to communicate with students and staff regarding safety issues and expectations? How can PIs evaluate the success of their lab's safety practice?

8. Lab Inspections

What are the pros and cons of EH&S versus self-inspections? How can self-inspections be done effectively; what type of tools would be helpful? How often should self-inspections be conducted? How can PIs, students and staff be motivated to participate in lab inspections? How can EH&S conducted lab inspections get the most bang (improved safety culture and active engagement) for the buck (time and resources)? How can EH&S move from inspecting for compliance to inspecting for unrecognized hazards? How can EHS lab inspections be used to improve the lab's safety culture? What are examples for educational lab inspections? What examples for rewards exists for diligent labs or labs that have improved on lab safety issues? Are there examples for labs recognizing their EH&S partner for an inspection well done or general helpful and pragmatic suggestions?

9. Laboratory-Specific Emergency Preparedness/Response Plans

How can lab-specific emergency preparedness/response plans be developed? What are examples of existing, well working emergency plans? What are examples of laboratory emergencies; what went wrong, what went right? Should emergency drills be conducted; if yes, how often? What items should be part of an emergency

plan? What type of emergency plan should be implemented for teaching labs? What should be the emergency plan for animal facilities?

10. Planning for Research Continuity After Emergencies

What needs to be in place for research to continue after a catastrophe? What type of backup should be considered to preserve valuable data? What type of backup should be in place to preserve valuable samples or unique equipment? How can animal facilities be protected? What preparations need to be in place for a looming power outage, and natural disaster or an unexpected flooding event?

11. Laboratory Security

What are the recommendations and what are the tradeoffs between safety, security and researchers' freedom? Do security measured impede on reserachers' safety? Do researchers feel impeded in their work by security measures? What are potential targets for theft or espionage in the research environment? What measures are needed to protect against theft of chemicals, gases, radioactives, controlled substances or acute toxins? What security measures currently exist in academic, industrial and government research environments? What can academic researchers learn from their industry and government lab colleagues? What are security gaps in the research environment that should be addressed (e.g.,door cards with researchers personal information)? Who should oversee laboratory security for research labs?

12. Academic-Industrial Laboratory Safety Initiatives

Can industry safety methods and standards be applied to academic research labs; what are the barriers? How can safety methods and standards from industry be transferred most efficiently to the academic research environment? What can industry/academia partnerships look like? What specific industry standards should be recommended for research safety in academic settings? What are main differences between industry, government and academic safety training? How can we match lab safety training in academia with industry expectations?

13. Safety in Core Facilities

How is safety currently handled in shared instrumentation core facilities? Who has or should have oversight over safety practices and training? What would be effective guidelines for facility-specific safety management structures including verification of required safety training to perform a procedure or use of specific type of equipment? Who should deliver facility-specific safety training? What are the responsibilities of the core facility's director/manager? What are the responsibilities of researchers and their PIs working in a core facility?

14. Interdisciplinary Research

What are potential safety problems that can arise when researchers engage in interdisciplinary research? What are potential laboratory safety needs and how can they be addressed? Who should be accountable for the safety of those researchers that perform work in different labs (e.g., Microbiology lab and Chemistry lab)? Should researchers receive lab specific training from all the labs they perform work at? How can hazards be recognized that arise from interdisciplinary research? Who should have oversight over highly hazardous interdisciplinary research? What are the safety challenges and potential solutions when there are "open" labs with researchers from different disciplines sharing labs?

15. Safety in Maker Spaces

What type of maker spaces exit and what are their potential hazards and risks to students? What is the process of creating makerspaces and who has oversight over this process? Who has/should have oversight over the activities in maker spaces? Should there be restrictions over the use of maker spaces, potentially based on hazard level? Should there be a registry for maker spaces and their activities? How can students be motivated to employ safety measures in maker spaces?

16. Safety in Research Publications

ACS publications require authors to emphasize any unexpected, new, and/or significant hazards or risks associated with the reported. Is this approach effective? What are potential gaps? What are the benefits? What are the roles and responsibilities of the editors and reviewers? Should guidelines be developed for addressing safety in research publications and if so, what should be included? How can this approach be promoted in other disciplines?

17. Safety Levels

How beneficial are biological safety levels; what are the pros and cons? Do special engineering and administrative controls exist for highly hazardous radioactive materials, processes or equipment? Should principles of biological safety levels be extended to chemical and physical sciences? Should safety levels and their practices be considered for working with select highly hazardous chemicals, operations or equipment? What would be the pros and cons?

18. Equity, Diversity, Inclusion and Respect in the Research, Teaching and EH&S Environment

How can equity, diversity and inclusion be best promoted in the hiring process for EH&S? How can respect for individuals be promoted to ensure personal rights in the work environment? What are the issues for equity, diversity, inclusion and respect related to safety training, practices, and expectations in teaching and research labs and how can they be overcome?