Which of these aspects of laboratory EHS do you feel MOST knowledgeable about?

- Where our lab wastes go after they leave the lab
- What will happen in case of an emergency in the lab
- What safety equipment is available to me in the lab and how it is best used and maintained
- What government regulations apply to the work in our laboratory and how we demonstrate compliance with these

* If your answer differs greatly from the choices above tell us in the chat!
How did you find out about safety as a career?

Chem BS/MS

Physical Chemistry PhD

EHS rep group job

mentors

EHS committee service

an unexpected path…
If you have an advanced STEM degree, how do you ensure that counts as experience for your safety role? refra…

technical/practical experience
- synthesis, nano, gloveboxes, air-sensitive methods, vacuum systems, lasers, cryo, lab move

teaching/training skills
- teaching assistant, STEM outreach, equipment trainer, safety trainer

soft skills
- leading teams and volunteers, advocacy, organizing events, developing programs, conflict management

reframe translatable skills…
Are there limitations of someone switching into safety from a degree in STEM vs starting with a safety-related degree? i.e. opportunities...

- codes and standards
- EHS professional certifications
- Direct EHS experience
- leading teams and volunteers, advocacy, organizing events, developing programs, conflict management
- soft skills
- teaching/training skills
- teaching assistant, STEM outreach, equipment trainer, safety trainer
- technical/practical experience
- synthesis, nano, gloveboxes, air-sensitive methods, vacuum systems, lasers, cryo, lab move
- synthesis, semiconductor fab, cleanrooms, LOTO, toxic gases, chem safety
- LOTO, HAZWOPER, toxic gases, chem safety
- construction, emergency response, facility management
- equipment safety, e-learning, safety training
- teaching assistant, chem ed, teaching/training
- chemical health & safety (CHAS)
Be reflective of your whole self when considering your career path.

Chemistry provides a technical foundation to build upon, so be confident in the unique skills you would bring to an EHS position.

Continue to foster a scientific mindset in your approach to EHS.

A few parting thoughts…
Do you feel comfortable discussing EHS concerns with people outside the laboratory?

- Yes, I am confident that I can explain to anyone why my work is safe for myself and for the environment
- Somewhat, I find that people are not easily convinced that laboratories are safe places to work
- No, people who don't work in my lab are not qualified to understand safety aspects of our work

* If your answer differs greatly from the choices above tell us in the chat!
Career Path

ES&H (Individual Contributor)
- Laboratory Space Manager
- Chemical Management
- Environmental Protection / Waste
- Nanomaterials!

ES&H and Operations Management
- Division research support
- Directorate level operations support (+ training, facilities, IT)
- Laboratory / Enterprise level program management (hazard analysis, ELN, …)

The views and opinions expressed in this discussion are the speakers and do not necessarily reflect the views or positions of any organizations referenced in the discussion.
Certifications – what do you need?

Balance – Certification / Education / Experience!

A sampling of courses available:
- CIH / CSP prep courses
- How to be a more effective Chemical Hygiene Officer
- Safety Leadership in the Chemistry Enterprise
- Laboratory Waste Management
- Empowering academic researchers to strengthen safety culture
- Foundations of Chemical Safety and Risk Management (FREE)

NATIONAL REGISTRY OF CERTIFIED CHEMISTS
- Chemical Hygiene Officer
- Industrial Hygiene Chemist
- Clinical Chemist / Technologist
- Toxicological Chemists / Technologist
- Environmental Analytical Chemist
- Cannabis Chemist (coming soon)
My ESH&Q Team (and where do chemists fit in?)

ESH&Q

- Health and Safety SME
- Research Support Professional
- Environmental Protection Officer
- Waste Services Representative
- Training Officer
- Radiological Control Officer

Extended Operations Team

- Facility Operations Managers
- Quality Representative
- Security Interface
- Communications
- Human Resources
- Project Management
Professional Development – Engagement is Key!

• National involvement through meetings
  – ACS National and Regional Meetings
  – Division of Chemical Health and Safety
  – Campus Safety, Health, and Environmental Management Associate (CSHEMA)

• Local Involvement (cross-disciplinary!)
  – ACS East Tennessee Section
  – Tennessee Valley Section of AIHA

• Organizational/Field Specific
  – Communities of practice / EFCOG
  – Regional APLU, SASEF, …

• Share Knowledge
  – ACS Journal of Chemical Health and Safety
    • Read
    • PUBLISH!!!
  – List-serv: Division of Chemical Health and Safety (DCHAS-L)

• Continuous Education
  – Safety: move beyond the standard (Reactive chemicals, human performance, …)
  – Management / Leadership

Get out and see how others run their labs!
Career Progression

How do skill/qualification requirements change as one progresses from SME/IC to management?

Early Career
- Narrow(er) focus
- Expectations to understand other areas are limited
- Fundamental knowledge and capabilities
- Focus on “Hard” Skills

Later Career
- Broad focus
- Awareness of topics beyond your expertise!
- Interpersonal and collaborative capabilities
- Systems thinking!
- Focus is on “Soft” Skills
Who is your primary resource for EHS aspects for your laboratory work?

• The manager of my lab understands and shares what I need to know about EHS in the lab
• I have built a productive relationship with the EHS staff in my organization
• I rely on discussions with peers to identify and address EHS issues that arise
• I rely on my chemical intuition to manage EHS concerns

* If your answer differs greatly from the choices above tell us in the chat!
Career Path – Beginning in Industry

Explosive Technology, Inc. Fairfield, CA

• Energetic Materials Chemistry
• Quality Assurance
• Failure Analysis
• Training
Career Path – Transition to Academia

- Chemical Hygiene Officer
- Industrial Hygienist
- Plan Review Specialist
- Safety Manager
- Subject Matter Expert
Industry vs. Academia

**Q:** What is the difference between the role of an EHS professional in industry and academia?

- Responsibility
- Accountability
- Liability
Different Safety Professional Roles

**Q:** How do responsibilities differ if you are hired to work as an embedded safety professional within a department vs the EHS team directly?

Campus EH&S team is focused in large part on campus-wide policy and initiatives

Embedded safety professionals are focused, primarily, on representing the best interests of their department or unit.
Q: Describe how chemists might move into an EHS professional role. That is, how does a chemistry education relate to:

* chemical hygiene officer - understanding the regulatory framework of the laboratory standard

* embedded safety professional - understanding what the scientific needs are and the hazards/risks of those needs

* industrial hygienist - understanding how chemicals can move about in the workspace and migrate into the breathing zone or physical contact with a worker

* research/lab safety specialist - understanding how researchers/scientists do their work and what level of risk workers might be accustomed to

* hazardous waste management - understanding how chemicals behave when in contact with each other and how wastes are generated

* safety engineer - understanding what the scientific needs are and the hazards/risks of those needs

* leadership/management roles - understanding how research gets accomplished
Where to Start?

Q: What can they start doing while in school to increase their chances of securing a safety-related job?

Make the acquaintance of safety professionals at their institution.

Look for internships or opportunities to volunteer for safety-related projects.

If they’re doing research, take on safety duties in their lab.

Join the ACS!
Which of these statements best describe your understanding of the professional qualifications of laboratory Environmental Health and Safety (EHS) staff.

- Only EHS professionals can fill the EHS role adequately
- Chemists can fill EHS roles but they are at a disadvantage to credentialed EHS professionals in those situations
- Chemists have an advantage over traditional EHS professionals because they know the science better
- Only chemists can perform EHS work for chemistry research activities adequately

* If your answer differs greatly from the choices above tell us in the chat!
ACS CHAS Peer Led Workshop:
Empowering academic researchers to strengthen safety culture

Led by Amanda Chung, University of California, Irvine
Hossain Shadman, University of Memphis
Sunday, 26th June 2022 from 2PM – 6PM ET
Registration for this workshop is $25 per participant.
This workshop is directed at frontline researchers in academic institutions: graduate students, postdoctoral scholars, and undergraduate students. Faculty and safety staff are also very much encouraged to participate.

Workshop Goals:
- Educate participants about the value of risk assessment
- Guide participants towards gaining awareness of safety culture messages from leadership at their institutions
- Empower participants to expand their safety networks and develop laboratory safety teams

https://www.eventbrite.com/e/acs-chas-empowering-academic-researchers-to-strengthen-safety-culture-registration-295820506097