Nurturing A Safety Culture
Through Student Engagement

SERMACS 2019
Teaching, Creating & Sustaining a Safety Culture
Ralph L. House, Alexander Miller, David Lawrence, Jeffrey Johnson
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Research Faculty

Analytical Chemistry

- Jeffrey Dick
- Gary Glish
- Leslie Hicks
- Matthew Lockett
- Michael Ramsey
- Mark Schoenfisch

Inorganic Chemistry

- Jillian Dempsey
- Mike Gagné
- Jerry Meyer
- Alex Crimmins
- Cindy Schauer
- Joe Templeton

Organic Chemistry

- Erik Alexanian
- Jeff Aubé (joint)
- Mike Crimmins
- Abigail Knight
- Jeff Johnson
- David Lawrence (joint)
- Simon Meek
- Dave Nicewicz
- Marcey Waters
- Sidney Wilkerson-Hill
- Simon Meek
- Joe Templeton

Physical Chemistry

- Joanna Atkin
- Max Berkowitz
- Jim Cahoon
- Yosuke Kanai
- Andy Moran
- Zhiyue Lu
- John Papanikolas

Biological Chemistry

- Dorothy Erie
- Bo Li
- Gary Pielak
- Matt Redinbo
- Nancy Thompson
- Kevin Weeks

Polymer/Materials Chemistry

- Joe DeSimone
- Frank Leibfarth
- Sergei Sheiko
- Scott Warren
- Wei You
- Alex Zhukhovitskiy

41 Research Faculty
~36 Postdoctoral Fellows
~250 Graduate Students
Teaching Faculty

Todd Austell
• Analytical
• General
• Organic

Josh Beaver
• General
• Organic

Carribeth Bliem
• General
• Physical

Anna Curtis
• General
• Physical

Nita Eskew
• General
• Physical

Thomas Freeman
• General
• Biochemistry

Brian Hogan
• General
• Biochemistry

Domenic Tiani
• Analytical
• General

Danielle Zurcher
• General
• Organic

High structure classrooms
• Interactive learning
• Peer mentors
• Technology in the classroom
• Evidence-based methods
• CURES labs (course-based research)
• Safety (David Lawrence)

Undergraduate Lab Supervisors:

Kathleen Nevins

Calvin Grant

Maribel Borger

Tyler Motley
Awareness Leads to Healthy Safety Culture

Hubris: “That will never happen to me”; “I’d never do that”

Adaption: Adopting group culture; specialization

Rushing: Process takes too long or is inconvenient

Management: Cultural variation between groups

Overcoming H.A.R.M.

Propagate strong safety culture in the next generation chemistry professional through active student engagement, empowerment, and ownership
Engagement: Student Safety Committee

Department Safety Committee:

David Lawrence (Chair)  Alex Miller  Cindy Schauer  Jim Cahoon  Mike Crimmins  Randy Simmons  Kathleen Nevins  Cathy Brennan  Ralph House  Olivia Williams

Student Safety Committee:

Olivia Williams (Chair)  Ralph House

Brendon Sargent  Yuli Wang  Xiao You  Corban Murphey
Debanjan Dhar  Rui Zhang  Matt Glasscott  Michael Turlington
Hannah Starr  Paul Soma  Tessa Bartges  Adam Zahara
J.C. Wong  Erin Day  Joshua Welfare  Sally Lewis
Jon Patteson  Diane Wallace  Justin Marcum  Ninghao Zhou
Alex White  Sarah Sutton  Candice Crilly  Olivia Sanchez-Felix
Bill Walton  Andrew Keith  Jessica Coleman  Kyla Stingley
Patrick Irving  Jeromy Rech  James Custer  Quinton Bruch
Engagement: Student Safety Committee

- Office of the Chair
- Departmental Safety Committee
- Student Safety Committee
- Student Sub-Committees
Empowerment: Emergency Action Plan

- Evacuation routes undefined
- Have to cross road
- No accountability
- Expectations poorly communicated
- EAPs vary greatly across groups
Empowerment: Emergency Action Plan

Assignment:

Develop department-wide emergency action procedures and make recommendations to the safety committee.

Student Safety Committee:

Ownership: Emergency Action Plan
Ownership: Emergency Action Plan

1) Evacuate
   • When a fire alarm sounds, exit the building immediately via the closest available exit

2) Assemble
   • Report to the nearest Safe Zone as described in evacuation protocol

3) Communicate
   • Check-in with Emergency Coordinator either in person, via phone or text
   • Emergency responders will be notified if someone’s location is unknown
Empowerment: Chemalert
Empowerment: Chemalert

Assignment:

Develop a method to rapidly communicate safety-related events to the entire department

Student Safety Committee:
Safety Group Listserv Registration

E-mail
Your Email Address

Cell Phone Number
Your Cell Phone Number

Cell Phone Carrier
Your Cell Phone Carrier

SUBMIT
Ownership: Chemalert

[chemalert] Chemical odor Kenan 5th floor

Miller, Alexander James Minden <ajmm@email.unc.edu>
Mon 9/30/2019 9:18 AM
[ChemAlert] <chemalert@listserv.unc.edu>  

Good morning -

A strong chemical solvent odor has been noted on the 5th floor of Kenan. We are contacting EHS, but please be advised.

Alex

[chemalert] Chemical odor Kenan 5th floor

Simmons, Randy L <rlsimmon@email.unc.edu>
Mon 9/30/2019 9:26 AM
[ChemAlert] <chemalert@listserv.unc.edu>; [ChemAlert] <chemalert@listserv.unc.edu>  

Construction using paint on roof, they are finished now

Randy

Sent from my iPhone

Subject: [chemalert] Fire alarm Chapman

Kind regards,

Olivia Sanchez-Felix (she/her/hers)
Graduate Student
Analytical Chemistry

Subject: [chemalert] Suspicious Person in Kenan..
UNC Police received report 30 minutes ago of suspicious male in first floor Kenan women
Next Steps: Joint Safety Teams

Dow Chemical Teams Up With Universities On Laboratory Safety

Partnership brings practices from industry to academia

By Jyllian Kemsley

• University formed safety teams of students and postdocs
• Dow tours schools and meets with safety team to understand current safety culture
• Safety teams visit Dow for two days of workshops and facility tours, all expenses paid
• Teams set priority and plans to improve lab safety culture

Industrial researchers run their labs with much more attention to safety than do academic researchers, or so holds conventional wisdom. Dow Chemical is now tackling that disparity head-on in a pilot safety collaboration with chemistry, chemical engineering, and materials science departments at the University of Minnesota (UMN), Pennsylvania State University, and the University of California, Santa Barbara (UCSB).

https://cen.acs.org/articles/90/i44/Dow-Chemical-Teams-Universities-Laboratory.html
Next Steps: Joint Safety Teams

Participating Institutions

- University of Minnesota, http://www.jst.umn.edu, jst@umn.edu
- Yale University, https://jst.chem.yale.edu, chemjst@elilists.yale.edu
- The Ohio State University, chemistry.osu.edu/safety/jst, cbc-jst@lists.osu.edu
- University of Illinois at Urbana-Champaign, https://publish.illinois.edu/chemistryjointsafetyteam/, chemsafety@illinois.edu
- University of Chicago, @UCHicago_JRSI, jrsi.uchicago.edu
- Northwestern University, northwesternrssi.wixsite.com/rssi, rssinorthwestern@gmail.com
- Penn State, Safety Leadership Team, http://chem.psu.edu/about/safety-resources
- University of Nevada, Reno, Chemistry Department Student Safety Program, https://www.unr.edu/chemistry/degrees/undergraduate-students/lab-safety/student-safety-program
Next Steps: Joint Safety Teams

- Stall Street Journal
- Safety minutes during colloquia and seminars
- Student-led safety minute during mandatory class
- Safety tip at the beginning of weekly newsletter
- Industry safety tours (advisory board/alumni engagement)
- Collaboration with peer institutions
Acknowledgments

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Hannah Starr  Joshua Welfare

Olivia Sanchez-Felix  Patrick Irving
James Custer