STUDENT VIEW OF SAFETY IN THE UNDERGRADUATE LABORATORY

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Current State of Safety Culture in the Undergraduate Laboratory
Problems with Laboratory Safety
How can we improve the state of Undergraduate Laboratory Safety?
CURRENT STATE OF SAFETY CULTURE

- Initial Safety Education
  - ACS “Start with Safety” video -1994
- Enforcement of proper laboratory attire
- Encouragement of use of proper equipment during experiments
- Decrease in experimental volatility
SAFETY ISSUES

▶ “Start with Safety”
  ▶ Video is over 20 years old
  ▶ Some issues within the video are less relevant in the modern laboratory
  ▶ Explains function of safety procedures, but not purpose
  ▶ Downplays some safety issues
SAFETY ISSUES

- Student Safety Education
  - Less education on proper safety from High Schools
    - Subsequent lack of habitual PPE usage
  - Less education on proper procedure from High Schools
SAFETY ISSUES

- Safety Omissions
  - Safety downplayed due to the softening of experiments
  - Leads to continued lack of PPE use
  - Prevents formation of good PPE habits
SAFETY ISSUES

- Poor Laboratory Equipment Maintenance
  - Many academic labs have aged
  - Maintenance may decline due to:
    - Lack of use of the equipment in question
    - Lack of understanding of the equipment
SAFETY ISSUES

- Instructor’s Safety education
  - Teaching Assistants and Student Teachers
  - Communication among faculty
    - Are your labs equivalent?
    - Is everyone taking the same precautions?
HOW DO WE IMPROVE?

- Initial Safety Training
  - ACS Video
    - Update it.
  - Use alternate sources
    - UC San Diego’s YouTube Channel
    - Safetyzone
    - JCHAS
HOW DO WE IMPROVE?

- Improve Laboratory Maintenance
  - Initiate regular equipment checks
  - Involve students in these equipment checks
    - Familiarizes students with function of equipment
    - Familiarizes students with the purpose of the equipment
HOW DO WE IMPROVE?

- Improve Instructor Education
  - Take time with TAs and Faculty Peers to discuss laboratory procedures
    - What are the practical skills required?
    - What are the safety concerns?
    - What would you expect to see in a research or industrial lab?
HOW DO WE IMPROVE?

- Improve Student Education
  - Schedule time at the beginning of lab to discuss safety concerns
  - Do your best to explain and understand procedure
  - Teach the lab as though the student has never had chemistry before
HOW DO WE IMPROVE?

- Build Good Habits
- “Chemical Safety is not Chemo-phobia” – John Palmer
  - Teach good laboratory procedure
    - Have students practice
  - Teach good PPE procedure
    - Give students the opportunity to practice
HOW DO WE IMPROVE?

- Remember, Undergraduate Students Are Adults
  - Your students actions are THEIR responsibility
  - It is alright to provide your students with constructive criticism
QUESTIONS?