

# **Safety**

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# Safety Culture

**Promoting and maintaining safety is not a procedure, it is not a form to sign, it is not a protocol, it is not a chore or burden.**

**It is a culture.**

# Safety Culture Tip # 1

**Dedicate 1-2 slides (3-5 minutes) before a scientific presentation to safety.**

**It could be before the seminar, or before the group meeting.**

**Borrowed from Dow Chemicals**



**Borrowed from University of MN**



**Physical Chemistry Joint Group Meetings at USC**

# Safety slide example

Safety Starts with U

## Smart Phones in the Lab

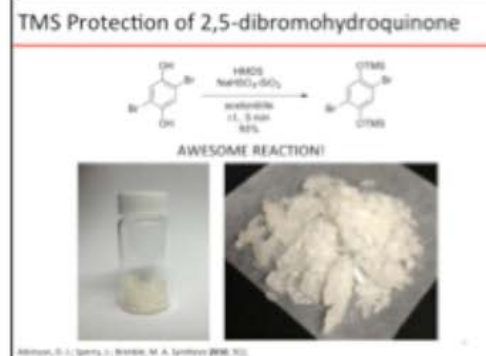
**Upsides:** A useful tool, photographic evidence (makes for eye-catching slides)

**Phone uses:**

- Lab timer
- Calculator
- Look up information on the internet
- Pictures of experiments



chemiluminescence captured (Yong)



Wegs shows us her awesome reaction & crystals

# Safety slide example

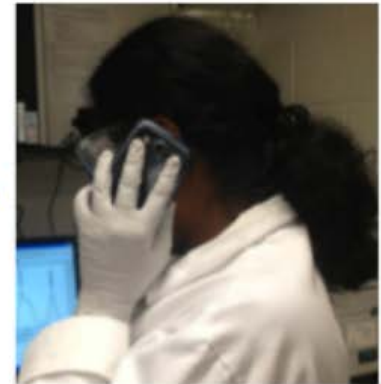
Safety  
Starts  
with **U**

## Smart Phones in the Lab

### Phone uses:

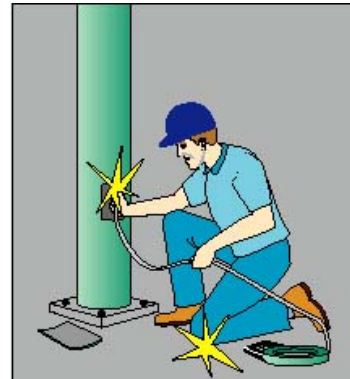
- Talk
- Text messages

**Risks:** Transferring hazardous chemicals



# Electrical Safety

- >3 ma: painful shock
- >10 ma: muscle contraction “no-let-go” danger
- >30 ma: lung paralysis- usually temporary
- >50 ma: possible ventricular fib. (heart dysfunction, usually fatal)
- 100 ma - 4 amps: certain ventricular fibrillation, fatal
- >4 amps: heart paralysis; severe burns. Usually caused by >600 volts

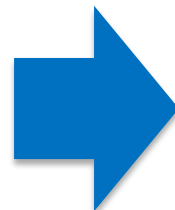


# Safety Culture Tip # 2

**Borrowed  
from Dow**



**Borrowed from  
University of MN**



**Borrowed into  
Physical Chemistry  
Group Meetings**

**Safety “skit” before the group meeting.**

- **2-3 actors 3-5 minutes.**
- **The PI could (probably should) also participate.**
- **Demonstrate unsafe behavior.**
- **Demonstrate unsafe attitudes.**

# **Safety Culture Tip # 3**

## **Power and Authority**

**Think, Pair, Share:**

**Examples of ways that your power and authority can adversely affect lab safety.**



# Safety Culture Tip # 4

## Categories of Unsafe Behavior

- **Honestly unaware that the behavior is unsafe.**
- **Know that the behavior is unsafe but do not know other options.**
- **Know that the behavior is unsafe but too lazy to correct.**
- **Cavalier attitude.**
- **Deliberately seeking risk.**

# **Safety Culture Tip # 5**

## **Thanking and Appreciating the Safety Officer**

- **Safety officer is a thankless job.**
- **Give verbal praise in a group meeting.**
- **Ask for a round of applause for managing a safety related situation.**
- **Written appreciation and praise (as in a group email, or in a card).**

# Safety Culture Tip #6

## Grey Areas

- **Grey areas exist and will continue to exist for safe chemistry.**
- **Ambiguous safety procedure.**
- **Balancing risks between options.**
- **Informed judgement calls.**

**Think, Pair, Share:  
Examples of grey areas.**

# Safety Culture Tip #7

## Reporting and Guilt

- **Formally (verbal and written) announce that there is no guilt with reporting incidents.**
- **Create a space where incidents are thoroughly investigated.**
- **Share in a methodical way the outcome of even the most minor lab incidents with the group.**

# **Safety Culture Tip #8**

## **Relation with the Safety Inspectors and Officers**

- **They are your friends, not enemies.**
- **Ask for their advice in advance.**
- **Create a respectful and professional relationship with them.**

# **Safety Culture Tip #8**

## **Who influences the group safety culture?**

- **Other groups**
- **Culture in teaching lab**
- **Friends**
- **Online videos**

# Safety Culture Tip #9

## Teaching labs and accessibility

- **Model the behavior you want to see**
  - **Faculty; lab technicians**
  - **Prepare yourself well for each lab expt**
- **Accommodations for disabilities may be warranted for safe laboratory work**
  - **It's the law!**
  - **Work with DSS office**

# Safety Culture Tip #9

## Teaching labs and accessibility

- **Instructional Lab -**
  - **Revise experiments**
  - **“Reasonable accommodation”**
  - **ACS Symposium Series Publication – Accessibility in the Laboratory, Sweet et al (2018)**



# **Safety Culture Tip #9**

**It is never complete ...**

- **You will never achieve perfection.**
- **Your lab will never achieve perfection in safety, but we can strive towards it.**