

Study of students' engagement in various styles of safety videos



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False sense of security among researchers

A need for change



- Recent tragic laboratory accidents have brought to the forefront the importance of safety at academic institutions.
- First international survey of researchers' workplace attitudes and practices demonstrate that there is a false sense of security among researchers (*Nature*, January 2, 2013).
- Although 86% of respondents perceive their laboratory as a safe working environment, more than half had suffered an injury during the course of their work. Most of the reported injuries were minor, but about 30% of respondents indicated that they had witnessed a major laboratory injury.
- In fact, many researchers felt that suffering an injury is “part of the job,” and 60% of the chemists felt that laboratory safety “most likely” could be improved.

Reaching to student's in their natural playground

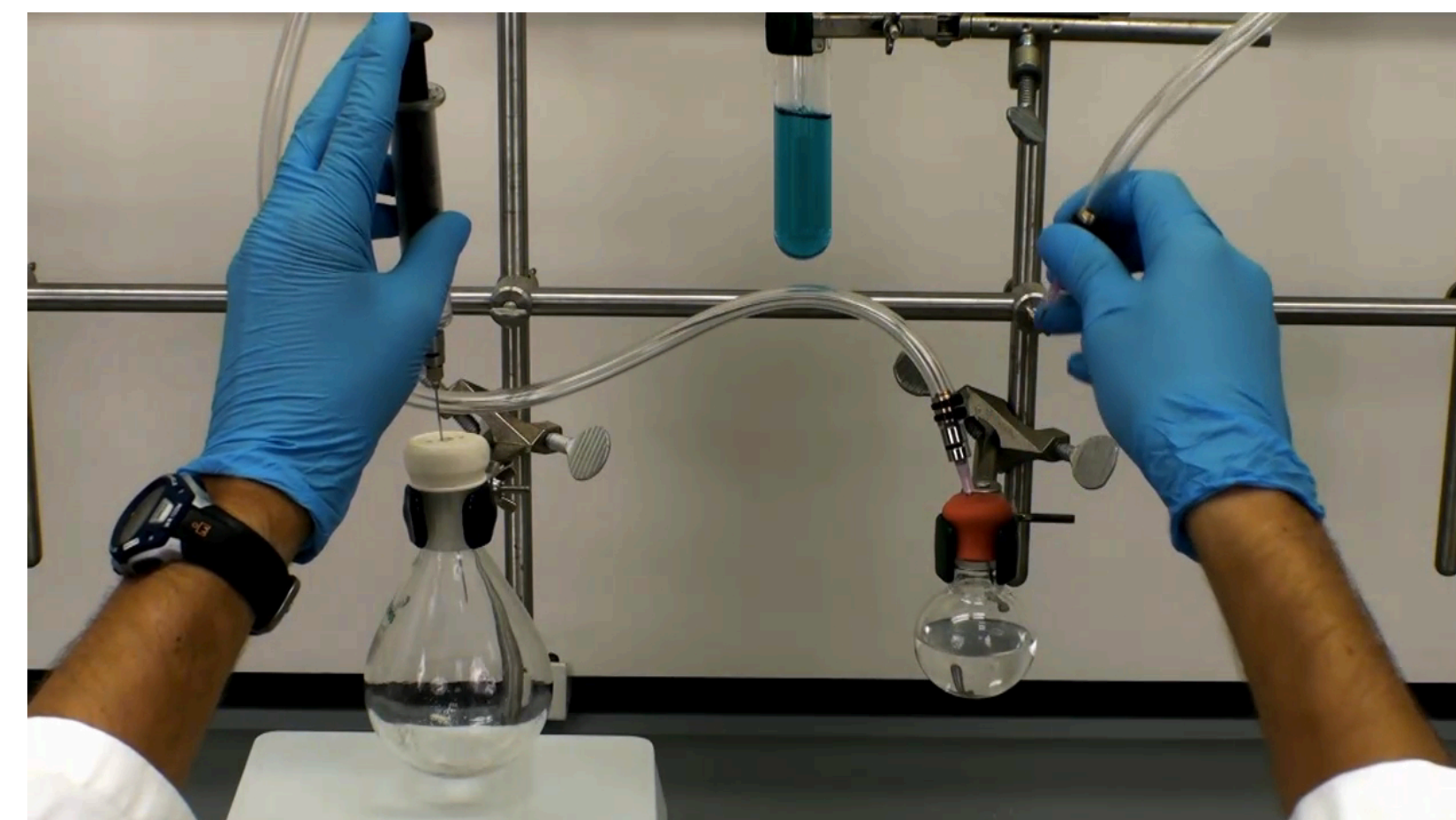
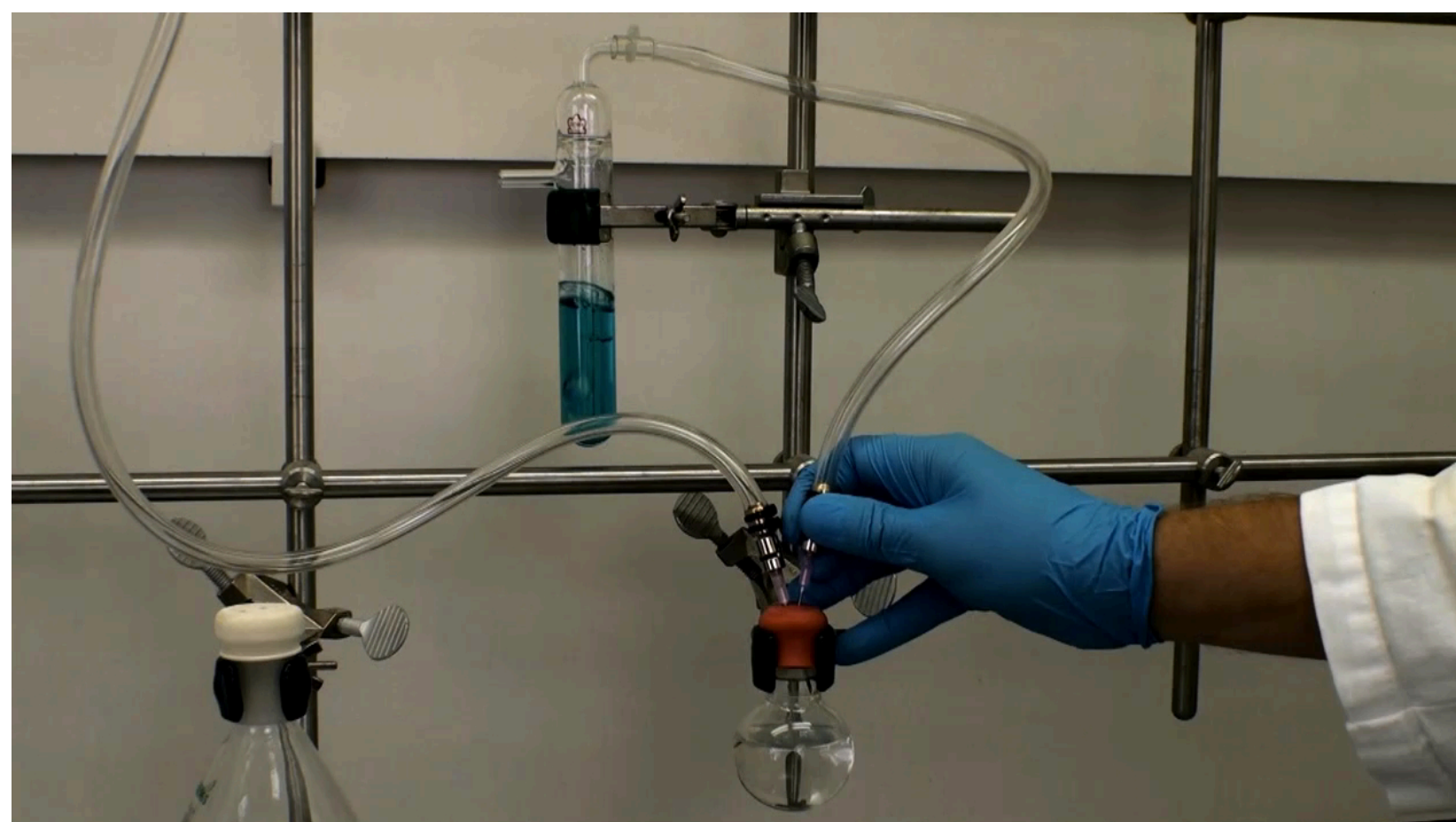
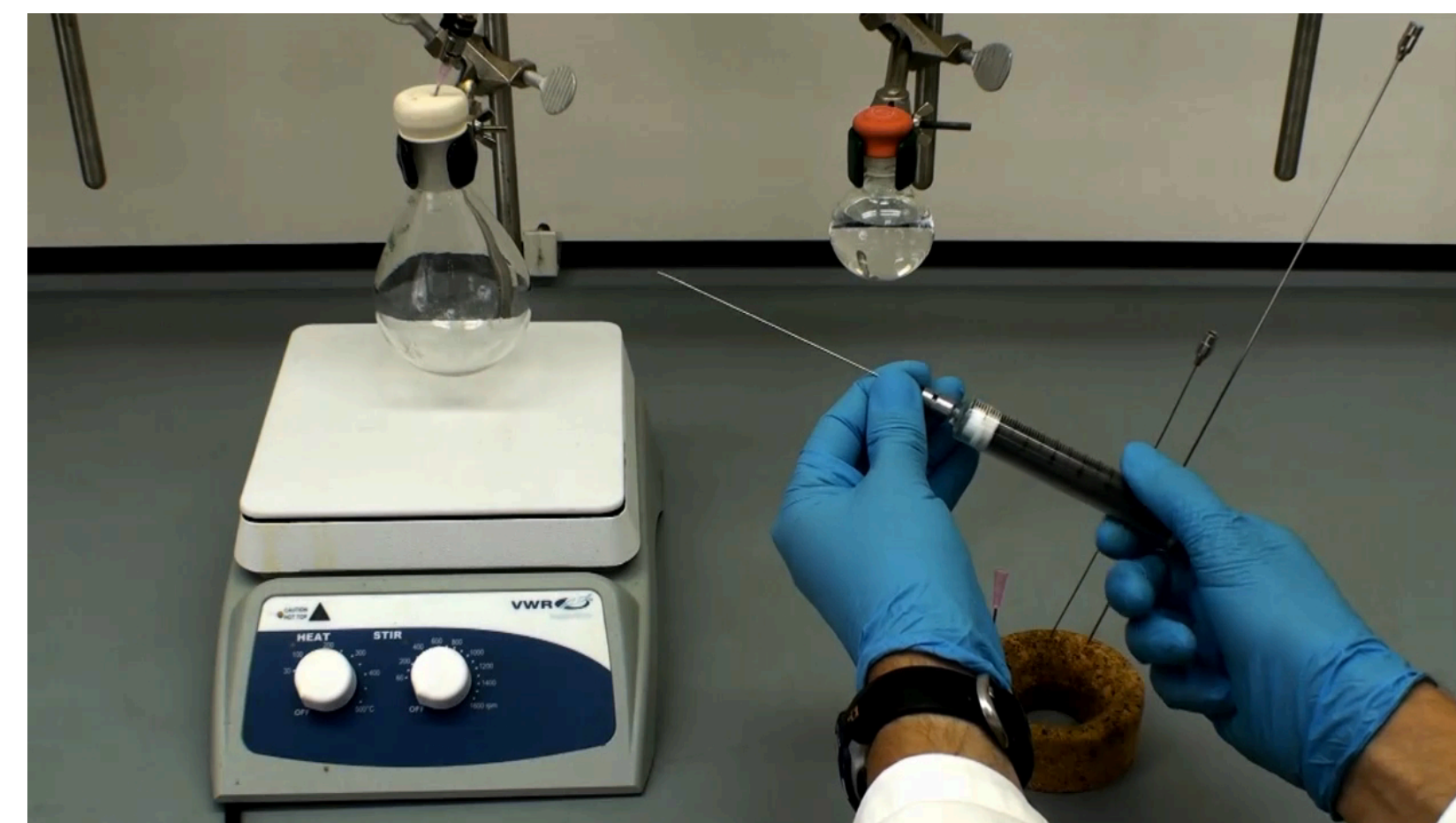
Online safety videos

There is a real problem that needs attention:

1. Lack of proper technique (due to apprenticeship model?)
2. Lack of safety culture



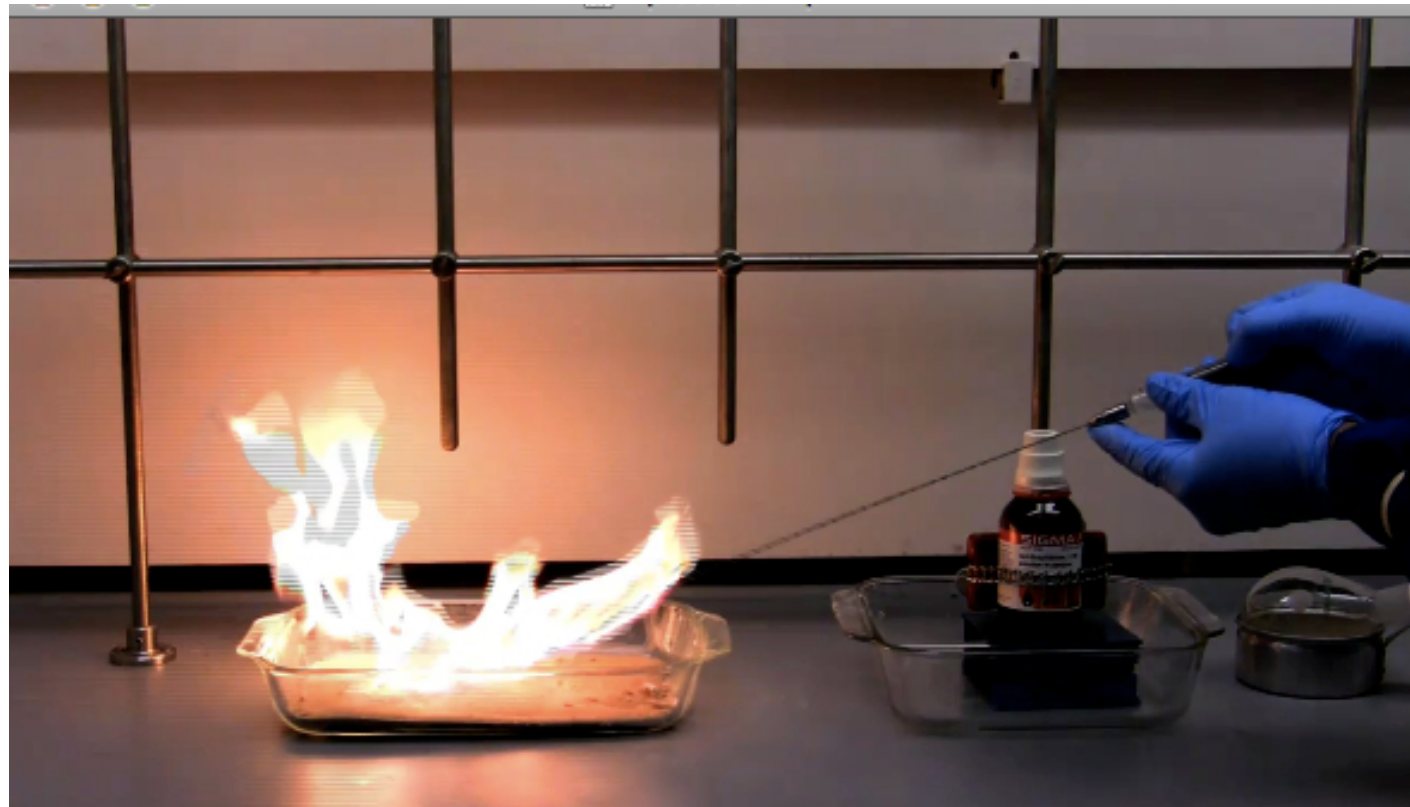
How to handle pyrophoric materials, 2009



Ahead of the game

Change in safety culture

We produced 3 videos on August 2009.



UCSD EH&S
Instructional videos

August 17, 2010

Working with pyrophoric reagents

Part 1: Getting Ready

Part 2: Transferring Pyrophoric Liquids

Part 3: Working with Reactive Metals

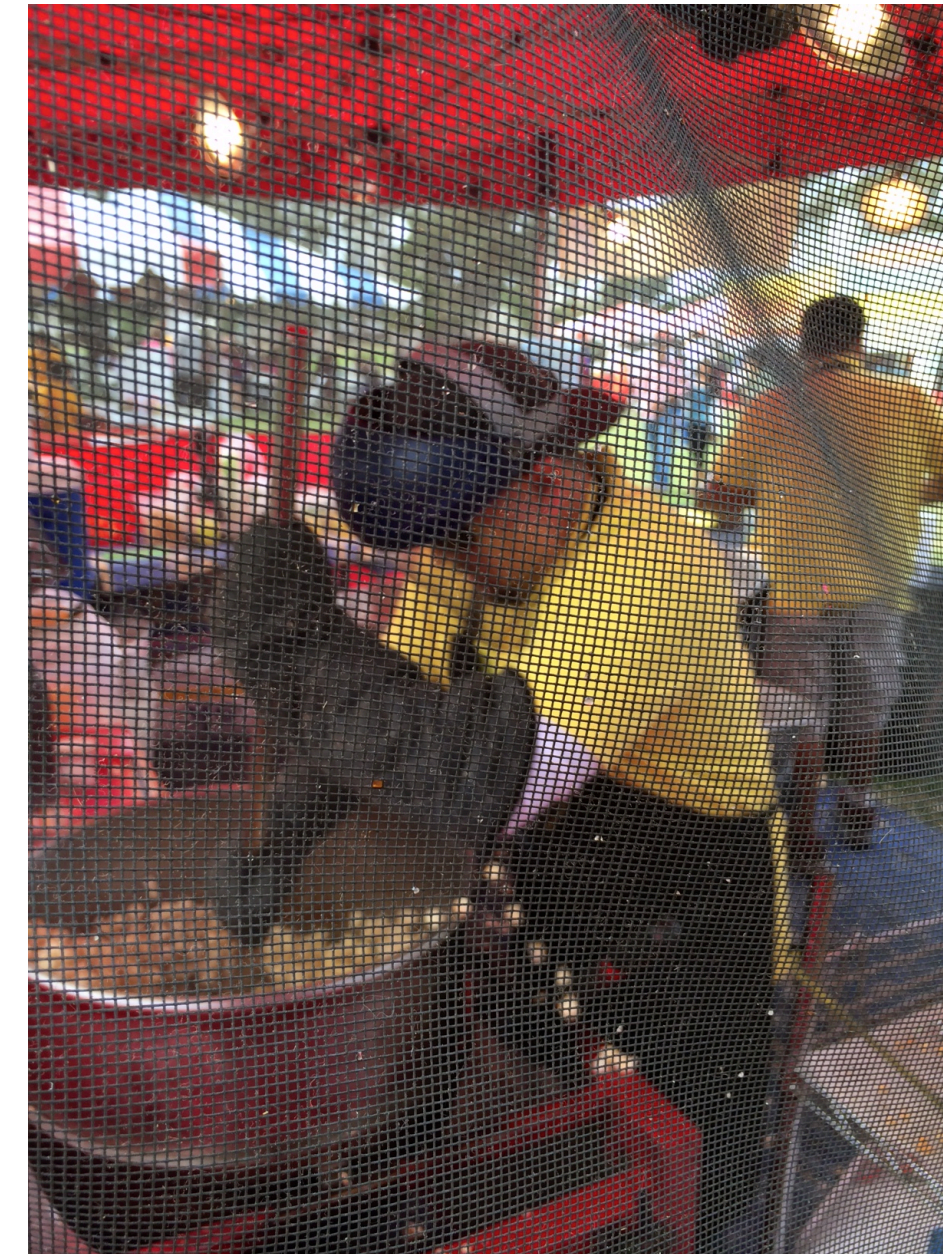


Regulatory enforcement vs. common sense

From safety training to safety education



Green Flash Brewery, San Diego

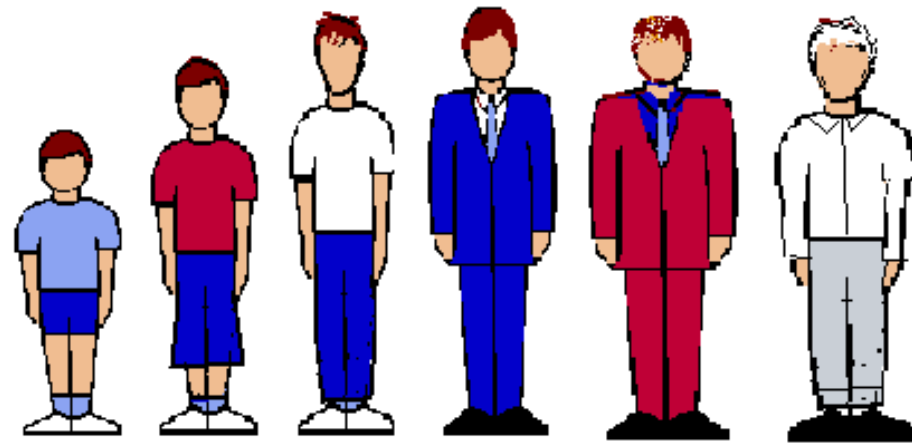


Street Fair , San Diego

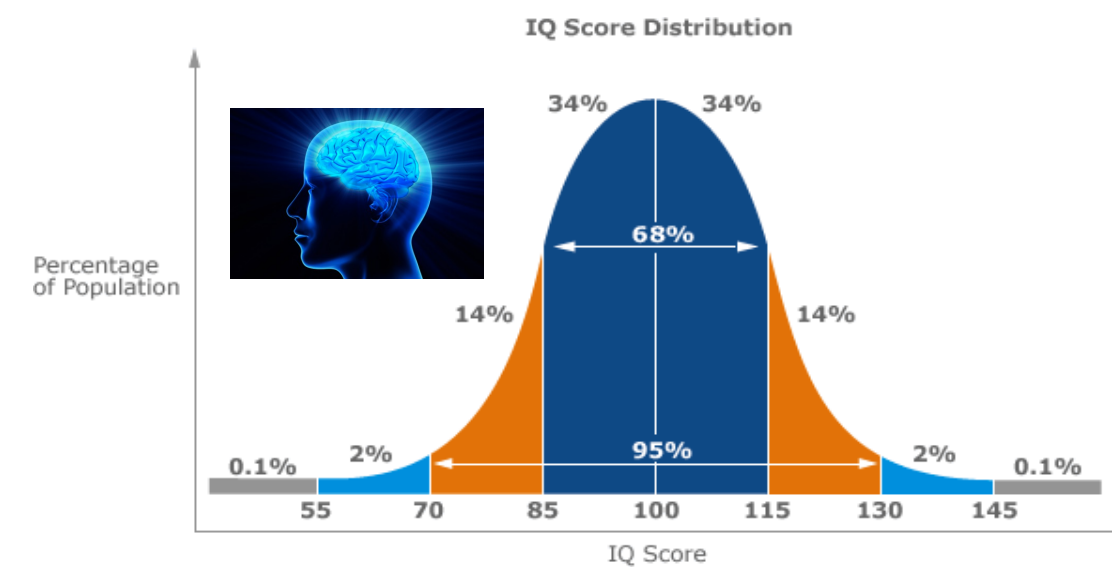
The goal of safety education is to create a situation where safety information is embedded into the decision-making processes.

Characteristics of target population

20S years old



Higher than average intelligence (?)



Multicultural



Three types of videos

Three pronged approach



Safety guides:

Provide information about proper behavior in the lab and teach the reasoning beyond safety rules in order to foster their acceptance.

Teaching techniques “101”:

Target students who are looking for professional development resources. Crucial safety features are weaved into a practical guide and therefore the videos are not viewed as “safety videos”

Safety commercials:

Short videos for delivering and promoting a particular message.



Design principles for “Safety Guides”

With Students for Students: Students are presented in real life situation where they make mistakes but are willing to learn how to correct them. Students are also presented as knowledgeable and caring about their peers' safety.



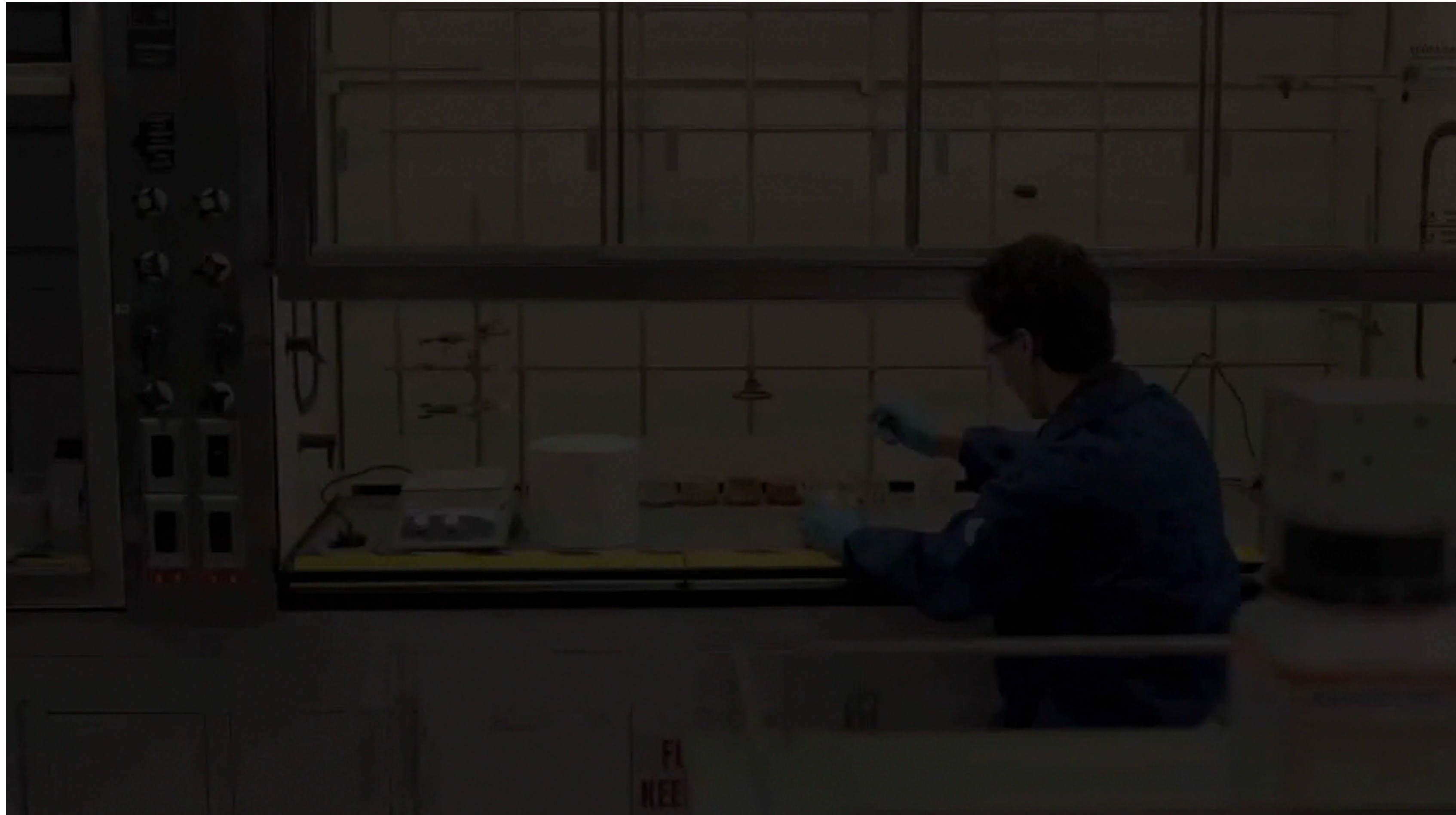
Reduce “anti” attitude: Research shows that people are more likely to be persuaded by messages that do not seem to be designed to influence them (Petty & Cacioppo). Therefore we do not address the viewer directly.

High production quality: Professional looks sends professional message.



PI and not a safety officer

Knowledgeable, responsible, caring



Explaining Why

Understanding the reasoning behind a safety rule is a key for accepting it.

General Chemistry Safety and Laboratory Rules

12. Never force glass tubing through cork or rubber stoppers without proper lubrication.
13. Never direct the open end of test tube toward yourself or anyone else.
14. Never pour water into concentrated acid.
15. Learn the proper procedure for igniting and operating a laboratory burner. Always

Teaching techniques “101”

Weaving crucial safety features into practical guide



Promoting attitude change towards culture of safety

Safety commercials



Research shows:

- People are particularly susceptible to attitude change during the impressionable ages of 18-25. There is hope!
- People are more likely to be persuaded by:
 - Credible speakers with obvious expertise (Jain & Posvac, 2000)
 - Speakers with attractive physical or personality attributes (Petty, Wegener & Fabrigar, 1997)


First “safety commercial”

Splash Zone



Are video safety videos effective?

Email from Biology professor at UC Berkeley

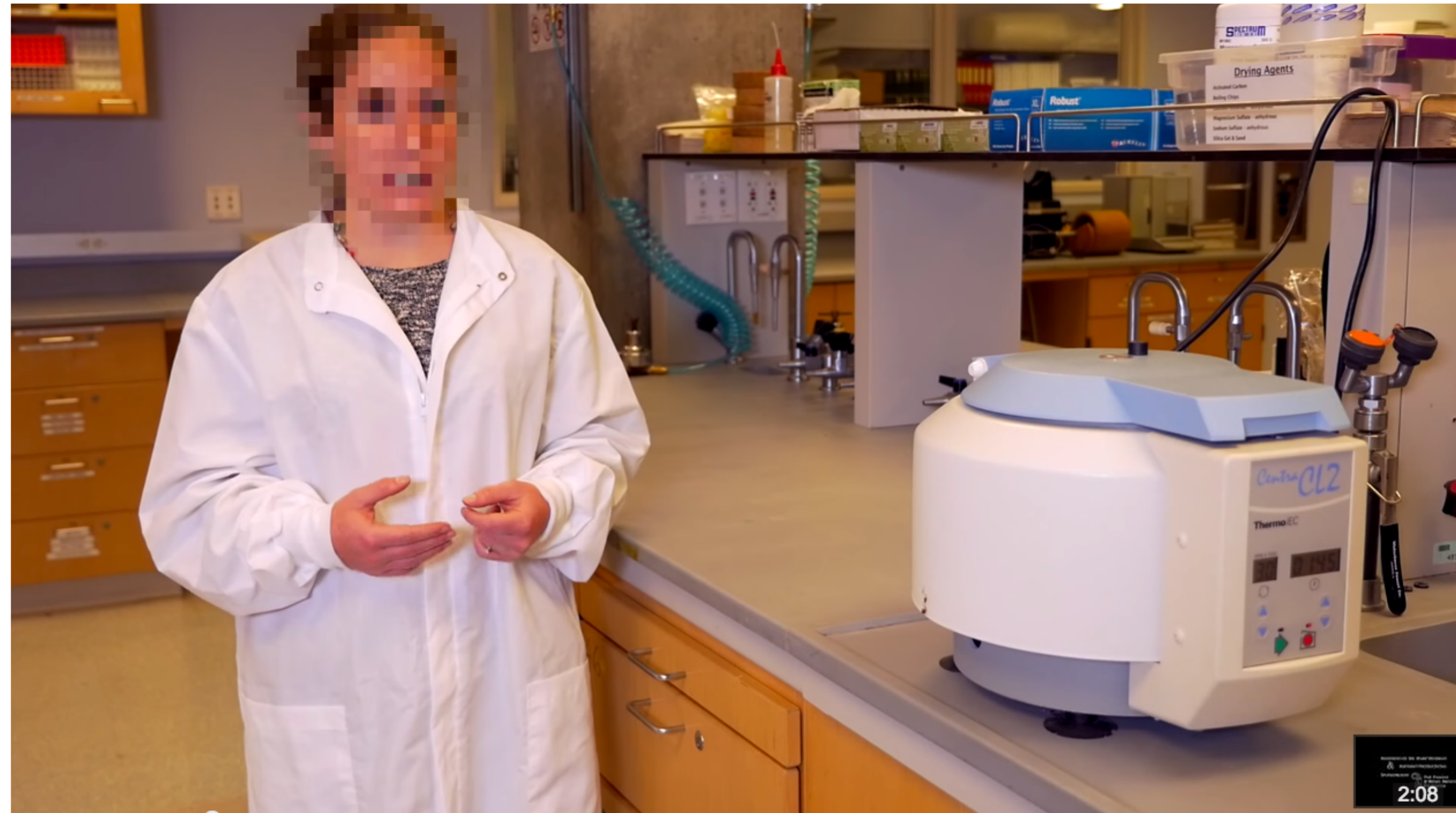
“In my lab we use very common molecular biology approaches, so our risks are not great.Yet, it has been very difficult to instill a culture of wearing safety glasses and lab coats all the time.After I found out about your video, I showed it at our lab meeting. We didn't discuss it much, and to be honest, the students laughed a bit--I think they saw themselves in the video. But, I have to say it worked. The glasses are now on the students as are the lab coats. One student told me she now never takes off her coat in the lab--they also found where they could get more  stylish coats and glasses on campus.

Study design: Beware of TFA

Goal: Produce and study several videos that promote the use of PPE

- Use in context of TFA
- Use different levels of emotional appeals
 - Informational**—Explain the acidity of TFA and demonstrate its effect on skin
 - Real Case Study**—Interview with a student
 - Strong Emotional Appeal Based on Fear of Long-Term**

Why I wear my lab coat?


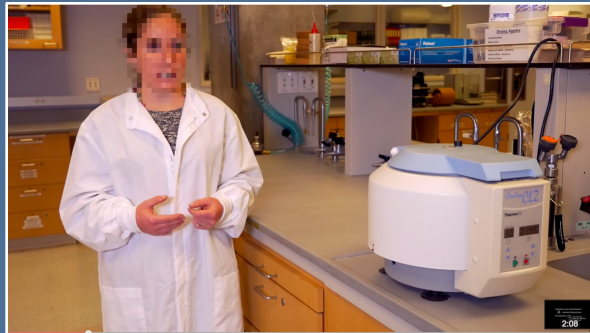


Survey data

217 students at all levels

Will you click on a link for a safety video in an email sent to you (1 unlikely, 5 very likely)	
EHS	3.40
PI	4.65
Friend	4.08

Survey data

	Be Wise (1 least, 5 most)	Why I wear (1 least, 5 most)
		
Visually appealing	4.19	3.71
Maintains interest throughout the video	3.49	4.35
Delivers effective message	3.22	4.81
Will recommend to others	2.90	4.17
Has potential to encourage others to wear PPE	2.98	4.78

Interviews

Be Wise

- Looks very nice. Professionally produced
- The image is beautiful but the message is not well delivered
- A bit generic, could be about anything not necessarily about lab safety
- Although it is emotionally touching and appealing, I don't think it is enough to scare people into wearing PPE.
- didn't seem super immediately relevant to safety
- thought I was watching a car commercial or something
- Did not like it. Seems like a cheesy commercial
- a bit too emotional. Seemed like a car advertisement
- It was a little cheesy. The people looked like actors

Interviews

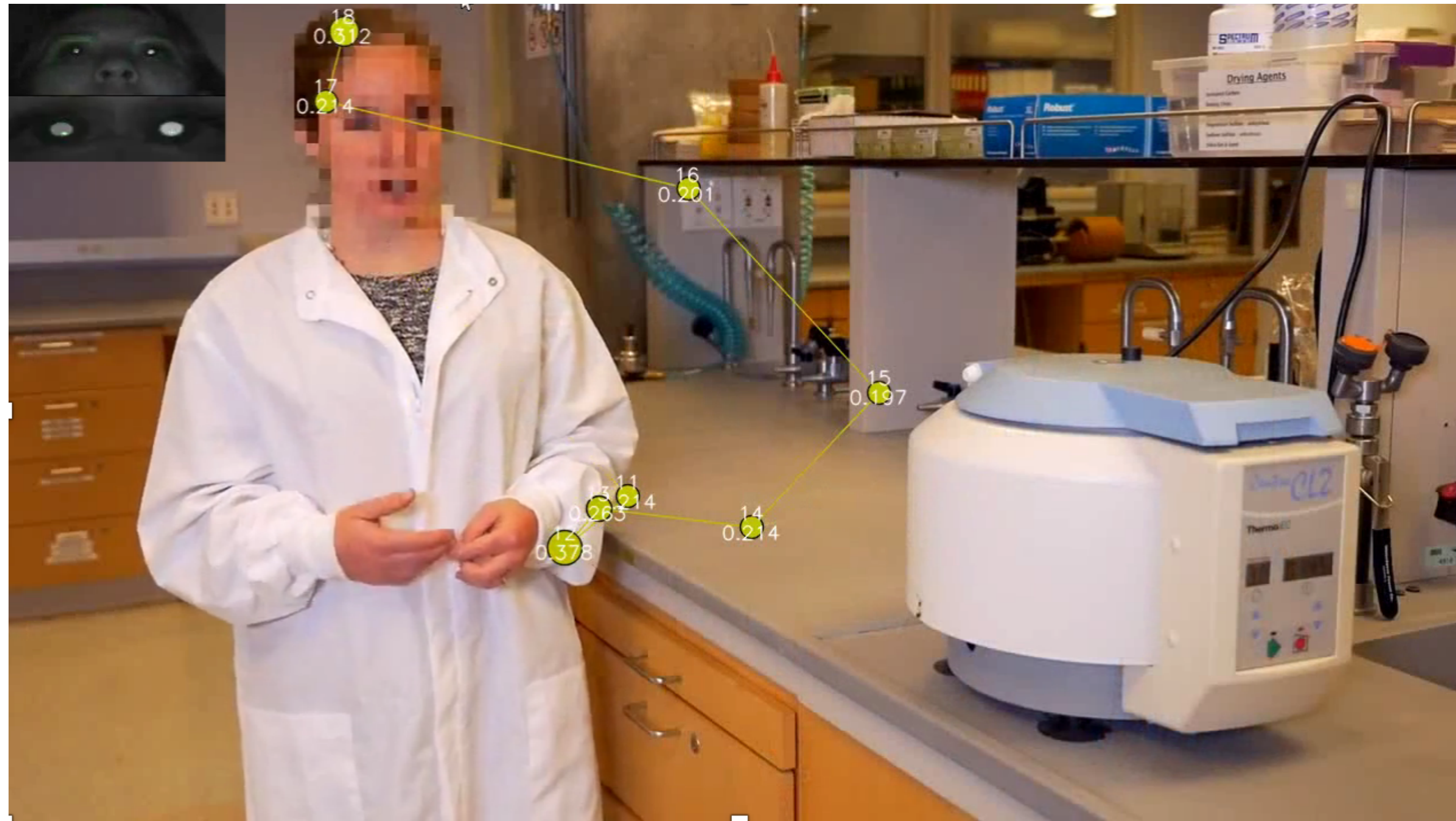
Why I wear my lab coat

- A little too scary video
- Like real example. You see what happens when a mistake is made
- The video works very well for teaching me lesson
- A really good example uses something we commonly use in the lab and can easily forgot how dangerous it is/ Really hits home.
- I like how realistic it was-showing an actual student with actual injury really drives home the point
- I like that it was a testimonial about how a lab coat would've helped her. It shows visually the risks of not having a lab coat
- The blurred face is super distracting-maybe reshoot without her face in it at all or with other images and just her face over.

Eye tracking studies



Eye tracking studies



Conclusions

And implications

- ‘Lessons learned’ style is effective safety video for students
- Pixilation was an issue for many
- Longer video is not always worst than a shorter one

- ☐ Administration tend to dislike sharing ‘lesson learned’
- ☐ Hopefully this study demonstrates the need for this

A Day in the Lab (9:09 min)* <http://www.youtube.com/watch?v=aA8mC5RIj5k>

To be (safe) or not to be (8:47 min)* <http://www.youtube.com/watch?v=YdYapyzJNsE>

Flash Chromatography 101 (7:23 min)* <http://www.youtube.com/watch?v=fF1gXUvyGb4>

Splash Zone (1:33 min)* http://www.youtube.com/watch?v=5TqQT9Pfh_Q

Stay Protected (1:05 min)* <http://www.youtube.com/watch?v=cJRXyJ9eZnM>

Outfit for Safety (5:27)* <http://www.youtube.com/watch?v=RXmG8mjUvil>. Safety video for the the UC system. A mandatory safety training for all UC researchers as part of the LHAT

Why I wear my lab coat (2:09) <https://www.youtube.com/watch?v=a6DrCdjedas>

Be Wise (1:00) <https://www.youtube.com/watch?v=kDxrQkOKUdI>

Working with pyrophorics



Matt Buller
Gidget Tay

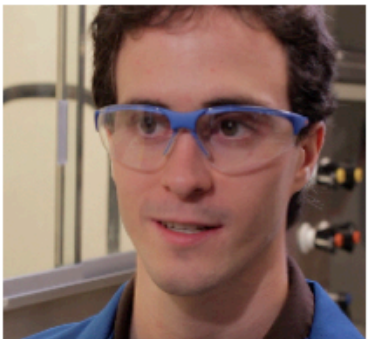
A day in the Lab



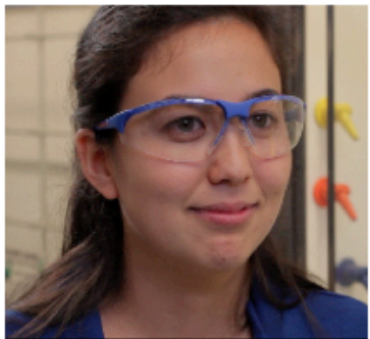
Kayla Busby



Natalie Elder



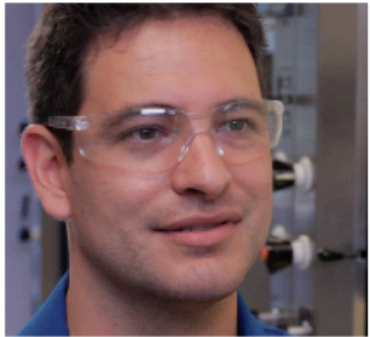
Cody Higgins



Alyssa Miyake



Bao Ho



Andro Rios



Kristy Elbel



Ryan Weiss

To be (safe) or not to be

- Anjali Bansal
- Kayla Busby
- Alexandra DeLaney
- Kristy Elbel
- Ellice Kang
- Kate Kim
- Robert Lewis
- Don Nguyen
- Roger Park
- Andrew Raub
- Andro Rios
- Nathan Schoepp

Splash Zone



Kayla Busby



Kate Kim



Dr. Shira Robbins



Nathan Schoepp

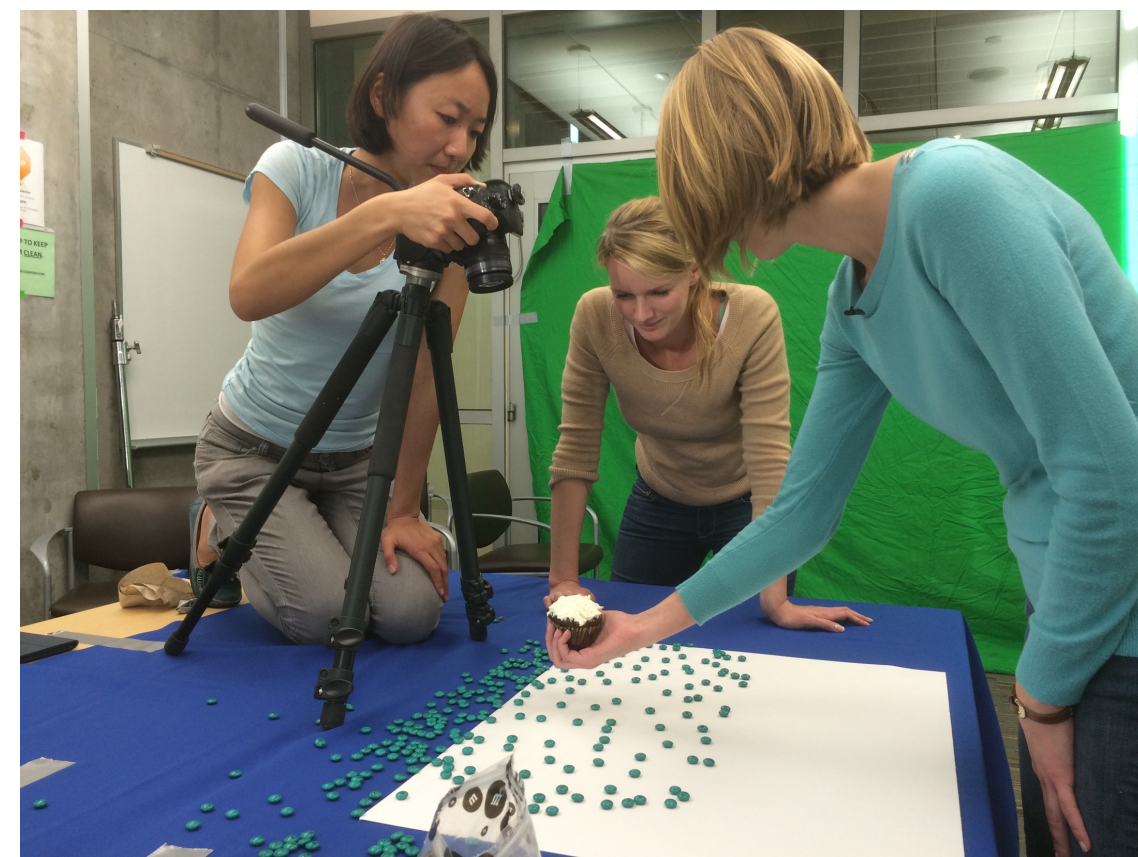


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