

# A Decade Later: The Death of Sheri Sangji as a Catalyst for a Change in Safety Culture



Sheri Sangji

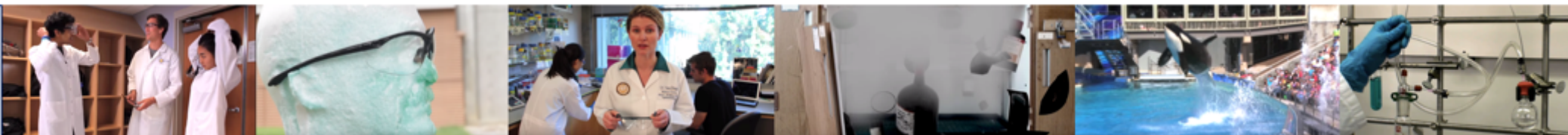
# Evaluating the perspective of chemistry graduate students on the 2008 UCLA incident

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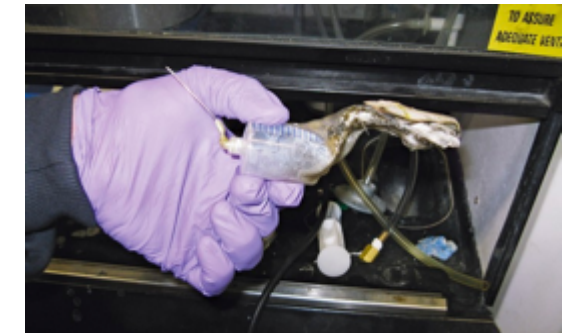
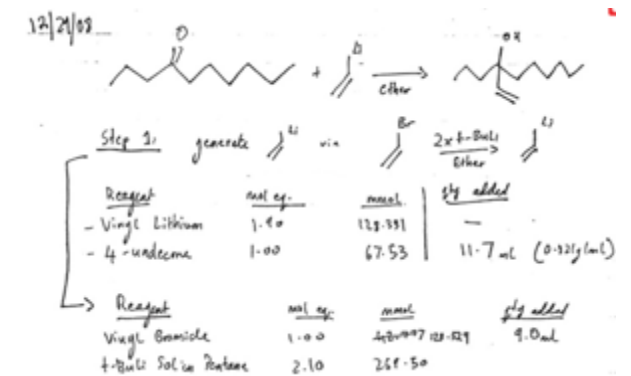
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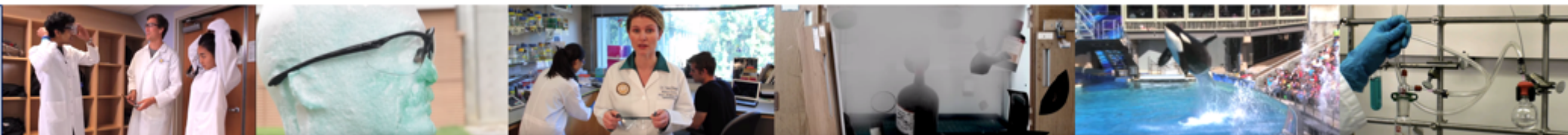
# Dec. 29, 2008: UCLA laboratory accident

- Sheri Sangji, a 23 years old lab technician was working with tert-Butyllithium. It was likely only the second time she was working with the reagent.
- She began drawing up liquid using a 60 mL syringe and the plunger came out. The pyrophoric material ignited and her cloths caught fire.
- One of the postdocs tried wrapping his lab coat around her, but that caught fire too. Her synthetic sweatshirt had melted. She had not been wearing a lab coat.
- She was treated for the next 18 days and then on Jan. 16 died.



# My personal journey into safety education

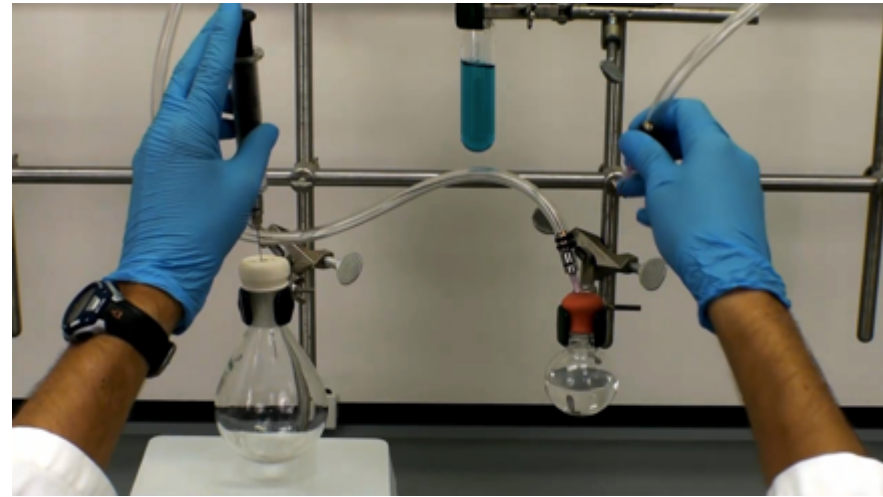
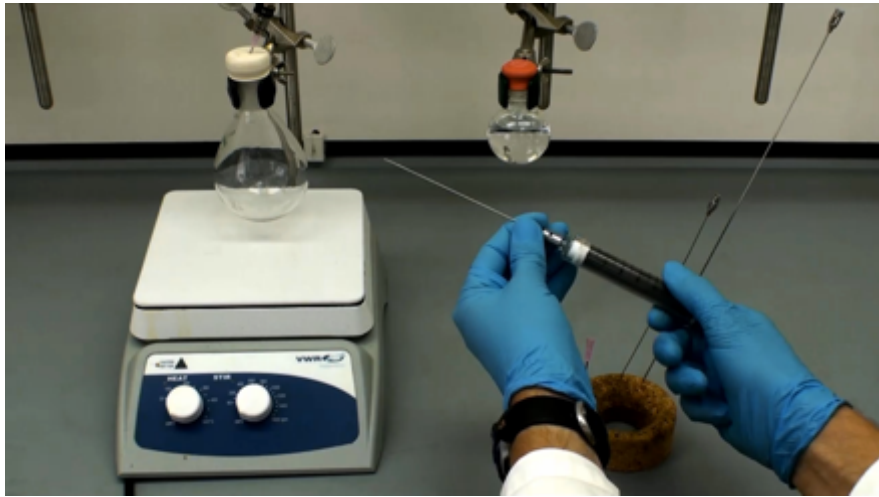
- After the incident I was contacted by Doug Harvey
- At the time I produced a series of videos for organic labs. One of the motivations was to increase laboratory safety.
- My initial reaction was no
- But reading about the incident revealed a need for better training and safety education
- The academic 'apprentice model' lacks safeguards for proper training





# How to handle pyrophoric materials, Aug 2009

- 3 videos that cover best practices for handling pyrophoric materials



# How to handle pyrophoric materials, 2009

- Facilitating a change in safety culture



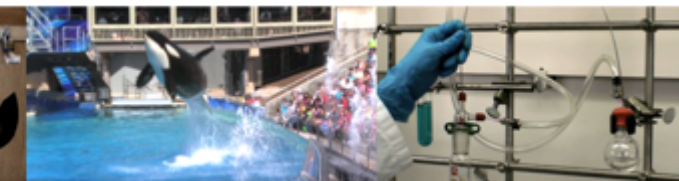
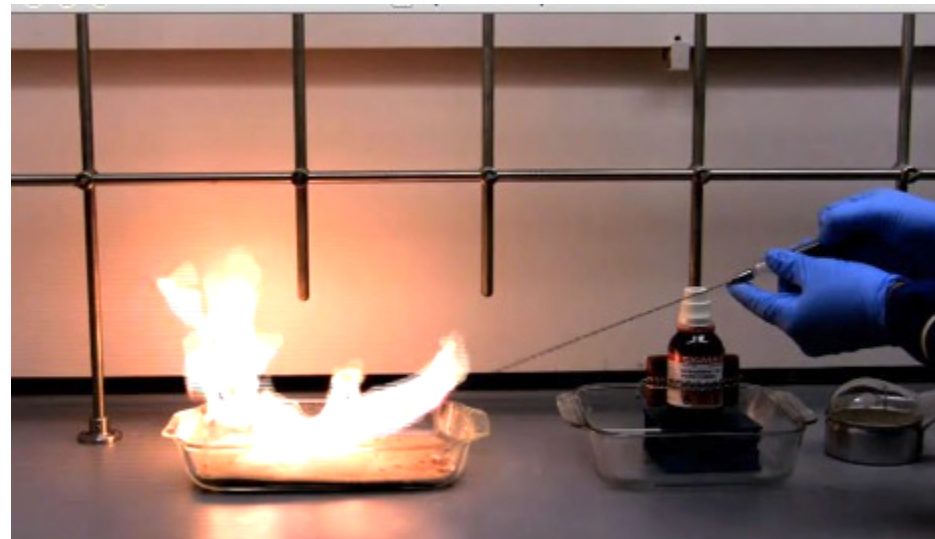


# How to handle pyrophoric materials, 2009

Demonstrating transfer of large amounts with uncommon glassware



Demonstrating the pyrophoric nature of tBuLi (emotional appeal)



# Pyrophoric video script, version 1

## Episode 1

(Wide shot, an undergraduate student approaching a fellow graduate student standing next to a rotovap)

Gidget: Hi Matt,

Matt,: What's up?

Gidget: I need to run a reaction with t-butyl lithium and I am terrified. Every time that I think about this reaction I remember the tragedy at UCLA.

(Cut to newspaper insert)

Matt,: You shouldn't be terrified. As long as you're respectful to pyrophoric chemicals you can use them safely. Don't worry, I worked with it before and I will help you out.

(Gidget smiles in relief) Great, thanks.





# What students know a decade later?

- The incident was a momentous event. It served as a catalyst for a change
- For those that are involved in chemical safety the incident is a living memory. What about others?
- Motivation for this study: What are the effects of this 'lesson learned' a decade latter?
- Remember: the average grad student today was a high school freshmen a decade ago



# Study details

- Method: Short anonymous interviews with chemistry students
- Limitations: There was no attempt to create a representative sample in respect to year/field. The majority of interviews were done at one institution
- Analysis: Interviews were coded for common repetitive theme



# Some students didn't know about the incident

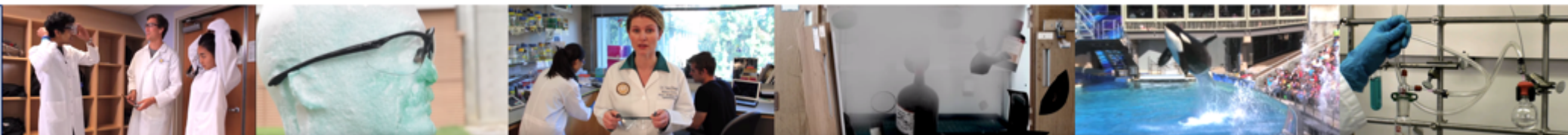
- More than 15% of students didn't know about the incident.
- Some didn't know anything and some had only a vague idea.
  - “I don't quite remember. I think there was an explosion but I don't remember”
  - “Didn't a student get hurt in a chem lab? Wasn't it something pyrophoric? I don't remember much.”
  - “I remember hearing about it, but I don't remember of the top of my head. I'm trying to remember. Was that with the fire in a lab? I don't remember”
  - “I think I should have. I don't remember. A sweater under her lab coat caught fire?”





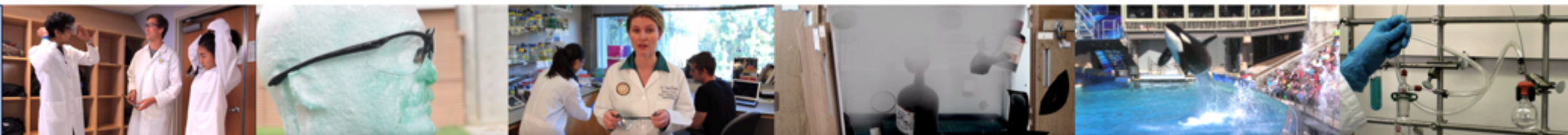
# Students received the information from various resources

- “Some on the internet, some by talking to other people”
- “Just word of mouth”
- “Our lab has a weakly safety moments and it was mentioned in one of those”
- “As an undergraduate I was also working with tBu lithium so they told me about it then”
- “Everybody talks about it here because we are in the UC system”
- “Back in my undergrad when I was working at a research lab there, it was brought up in group meeting”
- “I first heard about it from the grad students, Then I’ve thought this can’t be true so I searched google”



# Students received the information from various resources

- Most students learned about the incident at their undergraduate institution:
  - As part of laboratory safety sessions
  - Part of training by PIs or peers
  - Safety moments during group meetings



# Theme: Working with corrosives/flammables

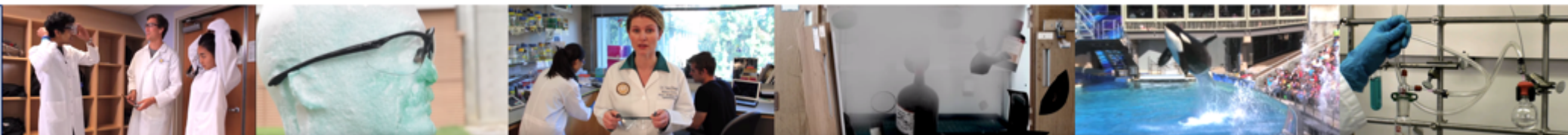
- “She was working ...with a volatile solvent, something happened ..... and when it ignited it caused fire and she got burned”
- “Lets See. I think it was an explosion, right? and I believe it was corrosives or something like that all over the person...end dying... I can't remember the specific reagents but I believe like it was burn over part of the body”
- “Used a very reactive compound, I think like mmm, when exposed reacts violently or something like that..... I have heard it a couple of times but...”





# Theme: Working with nBuLi

- Almost all students related the incident to nBuLi
- Students that perform synthesis were more likely to know the correct reagent (tBuLi), but not all



# Theme: No PPE

- “She didn’t have a lab coat on”
- “She was not wearing the correct PPE when she had that accident”
- “...because she just came from the party back to the lab and just wanted to add a reagent she didn’t put on a lab coat and just was wearing synthetic clothes”



# Theme: Lack of proper training

- Students referred explicitly to lack of training regarding handling of syringe or transfer techniques
  - “Didn’t draw properly, wasn’t trained in drawing that chemical”
  - “...just attempt something that you never been trained before with some very reactive compound”
- Students also pointed to lack of experience.

“She was, I want to say she was a first year grad student or something similar”





# Theme: Impact on UC system

- “That started like a whole UC safety like redo were everyone like took a step back and said wow, we need to refigure out what our safety procedures are for EHS”
- “That became a big issue, I don't know if it's just California or country wide, but in the UC system it became a big issue because now it became a lawsuit in terms of: was the student properly trained on how to use this, and was she wearing the proper equipment and was it a rule that was not implemented or wasn't enforced in the lab.



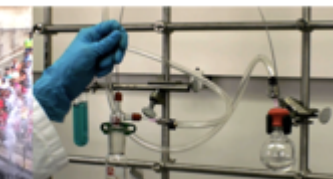
# Theme: Working alone

- “She was working alone” (most common phrase among many)
- “She was working alone, late at night time”
- “in the middle of the night with no backup”
- “The person I think was working alone, use the wrong size needle, no one was there.”
- “She didn’t know where the overhead shower was, unfortunately she went the opposite direction, and by the time someone else found her it was too late”
- “Since there was no one around to help her, that’s how she ended up passing”
- “There was a female worker who was working late at night or actually it was not late at night, it was just during a time in which no other lab member was in the lab because there was another party going on for the lab somewhere else. So she wanted to go in to complete a reaction..”



# Theme: Working alone, opened questions

- What are the reasons for this misconception?
- Was it promoted or assumed?
- Should this be corrected?





# Conclusions

- This was a limited study but it revealed gaps in students knowledge
- It is somehow surprising that there are students that don't know anything. But several students had very detailed picture.
- Interestingly, none of the students mentioned the presence of hexanes
- Is it important that student will know about the incident? This should be answered by the community





Syringe problem  
Either over pressures caused spray or plunger got out  
needle gauge size

