

# **Safety communication is about respect as well as numbers**

Ralph Stuart, CIH, CCHO  
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Chemical Hygiene Officer  
Keene State College

# Dr. Dorhout's Request

- *“How can we talk about **safety in the lab** without a **safe climate to communicate in**? Let’s include a discussion on sexual harassment as part of the 2019 ACS Safety Summit on Safety Education”*
- I was a little skeptical, but in light of 2018 statements from scientific societies on the topic, it felt like a reasonable request
- The resulting discussion provided interesting insights on the connections between technical aspects of lab safety culture (training, oversight, resource priorities) and the cultural climate of the organization



# 20th Century Risk Assessment

Chemical Risk =  
Hazard \* Exposure

What pieces are missing from this equation?

Among others:

*Who assumes the risk and who benefits from the risk?*

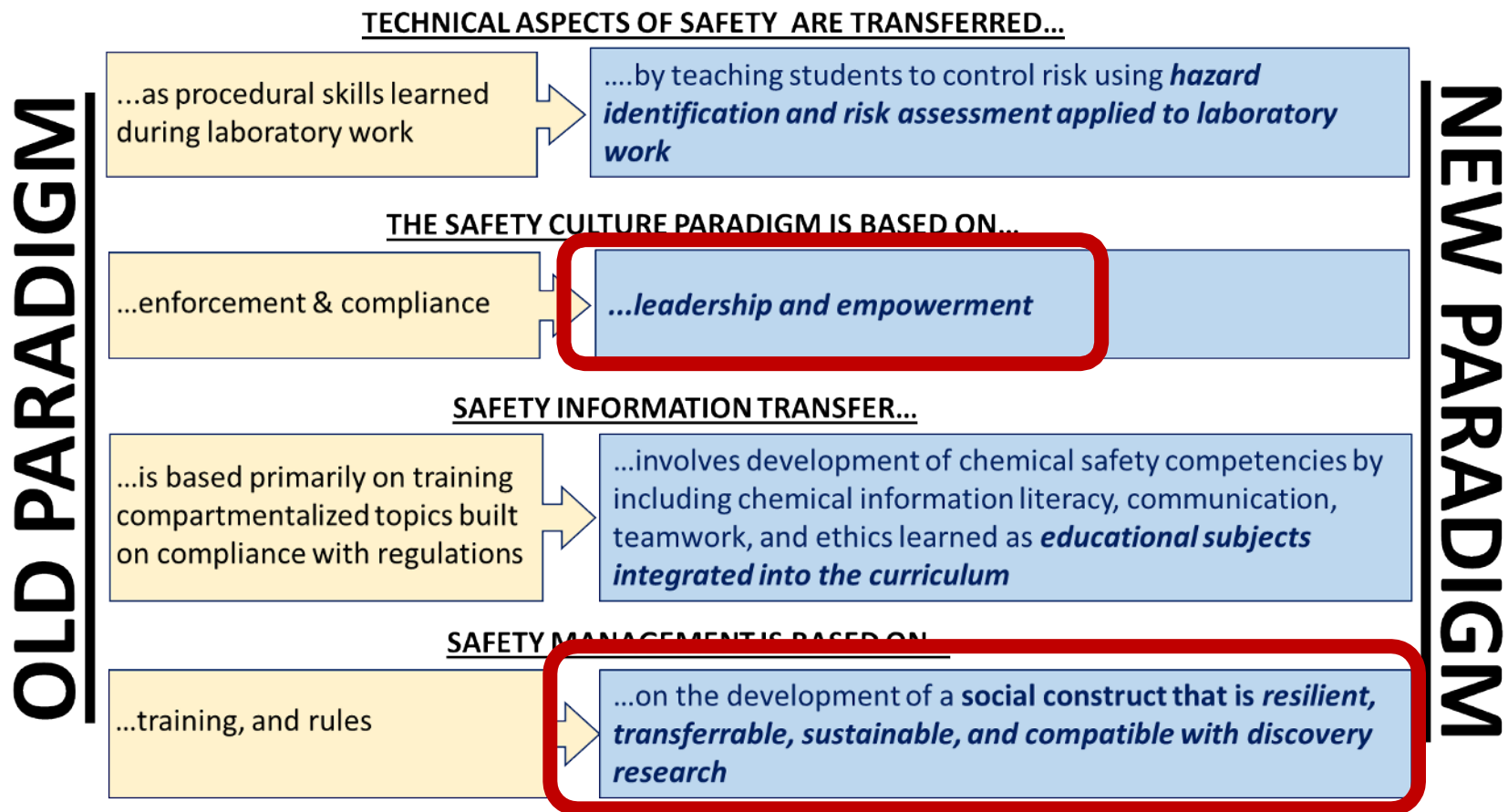


Monument to the X-ray and Radium Martyrs of All Nations, Hamburg, Germany



Marie Curie statue at the Radium Institute, Warsaw

# Chemical Safety as a Social Construct



Sigmann, McEwen, Stuart (2019),  
DOI: 10.1016/j.trechm.2019.03.015

# What is the Safety Connection?

Systems Thinking for Safety:  
Ten Principles

A White Paper

**Moving towards Safety-II**

August 2014 – European  
Organisation for the Safety of  
Air Navigation

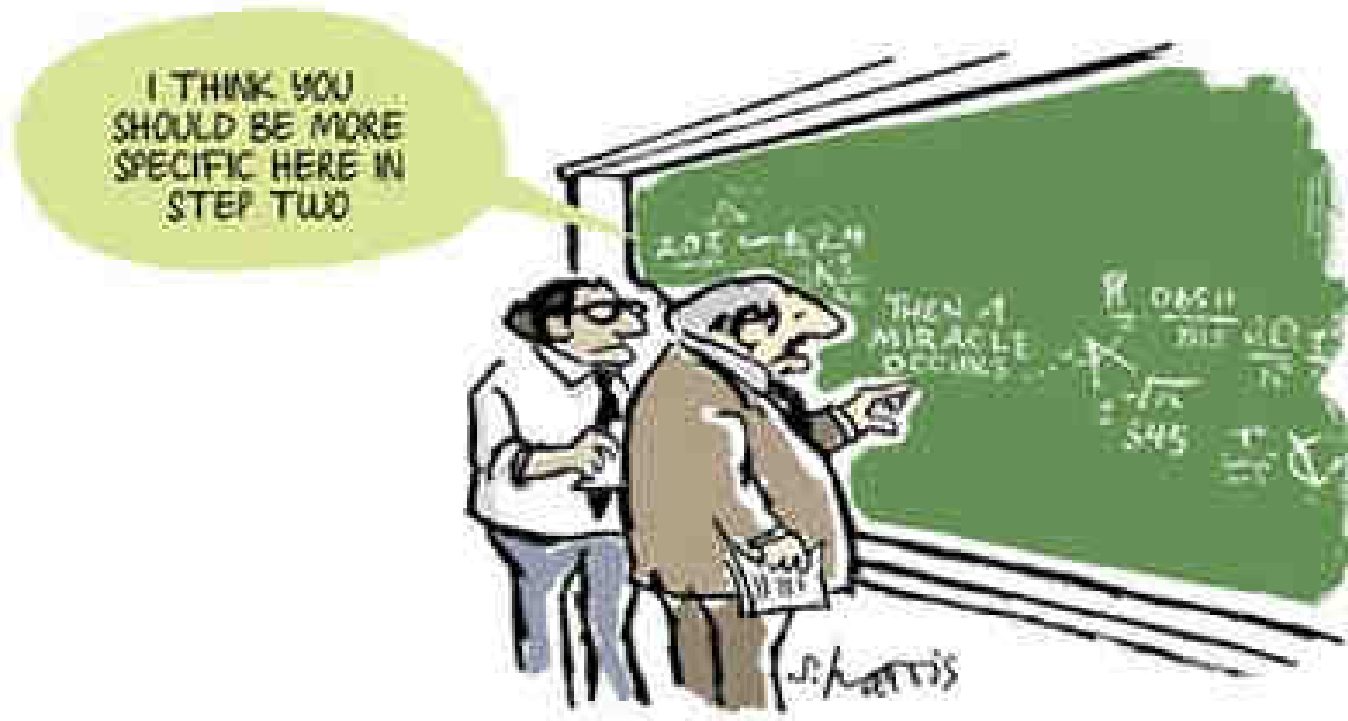
Systems Thinking for Safety: Ten Principles  
A White Paper  
Moving towards Safety-II

DNM Safety



# Safety Communication Challenges: Research Culture Protects Inspiration

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# Safety Communication Challenges: Research Culture Values Serendipity

From *Safe Science*

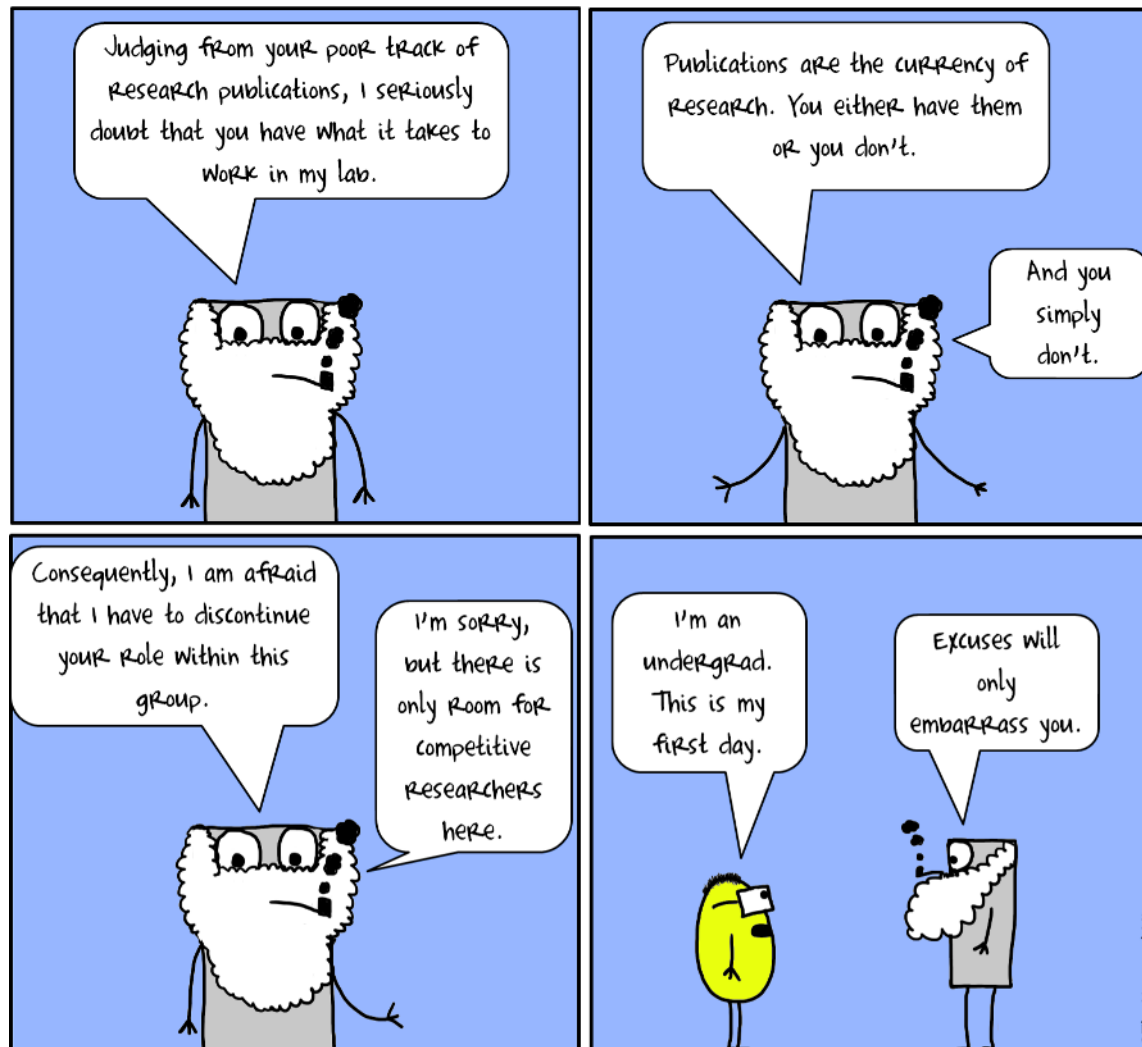


**FIGURE 3-1** Complexities of student perceptions of where lab safety ranks.

<http://www.phdcomics.com/comics/archive.php?comid=1613>. Accessed November 6, 2013.

Used with permission from "Piled Higher and Deeper" by Jorge Cham [www.phdcomics.com](http://www.phdcomics.com).

# Safety Communication Challenges: Research Cultures are Proud to be Selective





# The Impact of these Habits: Working Alone in the Lab

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WORKING  
ALONE  
IN THE  
LAB?

# Styles of Risk Cultures

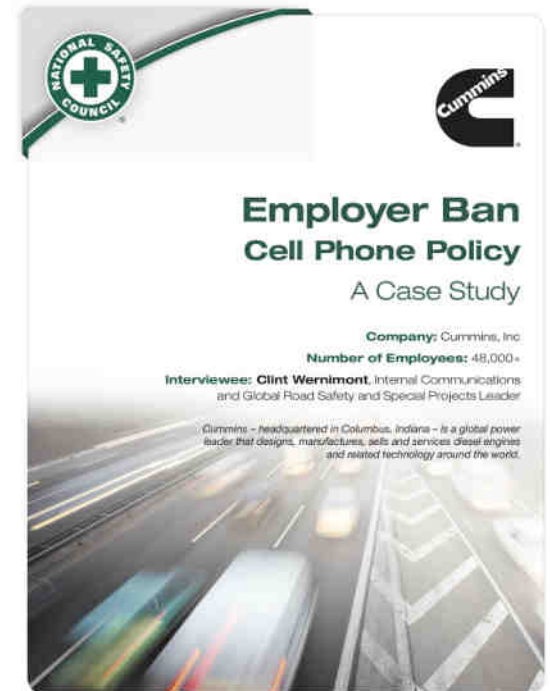
	Danger Culture	Compliance Culture	Safety Culture	Just Culture
Safety Program Psychology	Heroic	Evangelical	Community oriented	Generative (e.g. Green Chemistry)
Response to Surprises	Deny problems	Address concerns raised by others	Think through scenarios	Practice scenarios
Reason to Change	In reaction to crises	Rules or budgets	Individual assessment	Team assessment

*As personnel and resources change, organizations move back and forth along this scale*

# Changing Safety Cultures

How did your employees react to the roll out of the policy?

- ❖ The reaction to the policy was split between those who felt they would not be as productive if unable to conference while driving, and ***those who were relieved that conferencing and driving would no longer be acceptable or expected...***
- ❖ Organizational recognition that driving is the most dangerous activity of the day means that our full attention must be placed on that task.



# Mary Beth Koza's Safety Culture Equation

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# How does a leader serve?

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They shape the organization's culture by:

- Instilling confidence in the group and group's people
- Creating opportunities for self-fulfillment
- Promoting peer leadership
- Allowing conflict to move in a direction that lets people define and solve problems
- Asking tough questions that aren't being asked



# Instilling Confidence in the Group

Over the last three years, the ACS:

- Recognized “professionalism, safety and ethics” as a core value
- Established a full time office to coordinate ACS Safety Programs
- Held two Presidential Safety Summits on strategy and education

This didn't happen by accident

Recent ACS Presidents who have taken the lead on safety



Diane Schmidt,  
2015



Allison Campbell,  
2016



Peter Dorhout,  
2018



Bonnie  
Charpentier,  
2019

# Promoting Peer Leadership

- “You always look both ways before you cross the street, even if you’ve crossed the same street safely 100 times before; **take the same approach with your lab experiments.**”
- Dr. Gallagher’s passion for this message led to a CHAS video that has been viewed at least 7000 times in one year. He showed the video to 800 students in China yesterday.



Tim Gallagher,  
dean of the college  
of chemistry,  
University of Bristol



# Asking Tough Questions

The University of Minnesota has developed the habit of asking for help in understanding incidents they experience

UNIVERSITY  
HEALTH & SAFETY



## Dangers of Peroxide Formers—Explosion at UMN

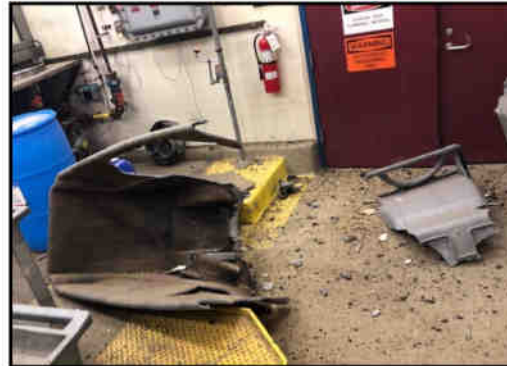


Figure 1: Damaged cart and glass fragmentation from the detonation.

### Incident:

A large explosion occurred while a UHS Environmental Health and Safety Technician was processing organic waste from a laboratory cleanout. The technician was in the process of combining flammable solvent waste into a “bulking drum”, which is a standard practice at our facility. Upon disposal of an emptied glass bottle into a tip cart for recycling, a large detonation occurred in the cart. The shockwave from the detonation was large enough to rip the cart in half (Figure 1), blow open the doors in the room, cause damage to adjacent rooms, and shake the windows in the facility. The technician survived the blast without major injuries.



# Remember We're All in This Together

