Risk Perception in Academic Laboratories

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Overview

• Background on risk perception
• Factors affecting risk perception in the laboratory
• Risk versus safety perception
• Impact of safety culture
• Conclusions and recommendations
Some Terminology

• Risk is a measure of the probability and severity of adverse effects

• Risk perception is the ability of an individual to discern a certain amount of risk

(Lunch Atop A Skyscraper’, by Charles Ebbets in 1932)

(National Safety Council, 2003)
Risk and Risk Perception

https://www.youtube.com/watch?v=UeB7l_08T6o
Inaccurately perceived risk can cause inadequate safety behavior
Facts Influencing Risk Perception

Hazard → Soft Facts → Risk perception → Hard Facts
Quantitative Measures of Risk Perception

How do researchers perceive risk?

- Analysis of responses from 991 researchers in academic U.S. laboratories
- Chi-square, ANOVA, regression analysis

Schroeder et al, JCHAS, 2016
I believe that the level of risk of the work conducted in my lab is:

- **Low risk/Very low risk**
- **Moderate risk**
- **High risk/Very high risk**

- Risk perception is independent on age and job experience
- Risk perception is independent on whether or not safety training was received

**Majority underestimates the risk of work in the lab**
Researchers with high-risk perception

- Work more often alone in the lab

- Work more often with hazards - especially pyrophorics, human bodily fluids or tissues, animals and hazardous machines
Risk perception is influenced by major lab-related injuries
Risk perception is influenced by major lab-related injuries

- Severity of the injury matters
- In accordance with Protection Motivation Theory: “People are more likely to protect themselves when they anticipate negative consequences, have the desire to avoid them and feel they have the ability to take preventive measures”*

*Campbell Institute: Risk Perception (NSC), 2013
Risk Perception Motivates Safety Behavior

- The higher the perceived risk the more consistently researchers wear PPE.
- Not true for wearing gloves.
- Industry safety behavior is independent of risk perception.
- Safety behavior in industry is standardized.

"I feel that my lab is a safe place to work"

The lower the perceived risk, the safer researchers feel
What affects feeling safe in the research environment?
Feeling safe at the work place

• Dependent on general safety training
• Dependent on hazard-specific training
Feeling safe at the work place

Question: Which of the following statements best describes your laboratory in regards to safety? Safety is

- Paramount important
- Very important
- Equal important to other lab activities
- Less important
- Low priority

Feeling safe

Neutral about feeling safe

Not feeling safe

The more safety is of paramount importance or very important the safer researchers feel
Feeling safe is dependent on how safety is prioritized in the lab

Safety Culture

✓ “How we do things around here”
✓ A community where everyone cares about one’s own and others’ well being
Feeling safe is dependent on how safety is prioritized in the lab

Safety Culture
PIs Impact

• PI has no direct impact on risk perception
• BUT, PI impacts students feeling safe

My supervisor/lab manager/PI regularly checks to make sure I am performing my laboratory duties in a safe fashion using proper safety equipment.
Impact of PI on Student Safety

Injuries witnessed or personally experienced by students and postdocs (n=406)

![Graph showing the impact of PI on student safety with different injury levels and lab injuries.]

- **PI monitors lab safety**
- **PI may or may not check safety**
- **PI does not monitor lab safety**

*Schröder, Huang, Ellis, Gibson, Wayne, J Chem Health and Safety 23:12-23, 2016*
Conclusions and Recommendations

• Risk perception is affected by:
  - working alone
  - types of hazards included in work
  - severe injuries or accidents experienced
  - feeling safe in the lab

• Feeling safe in the lab is affected by:
  - safety training
  - how safety is prioritized in the lab
  - PI or supervisor monitoring safety

• Engage leadership on all levels but especially PIs to monitor safety and discuss risks

• Provide risk assessment training
Thank You

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