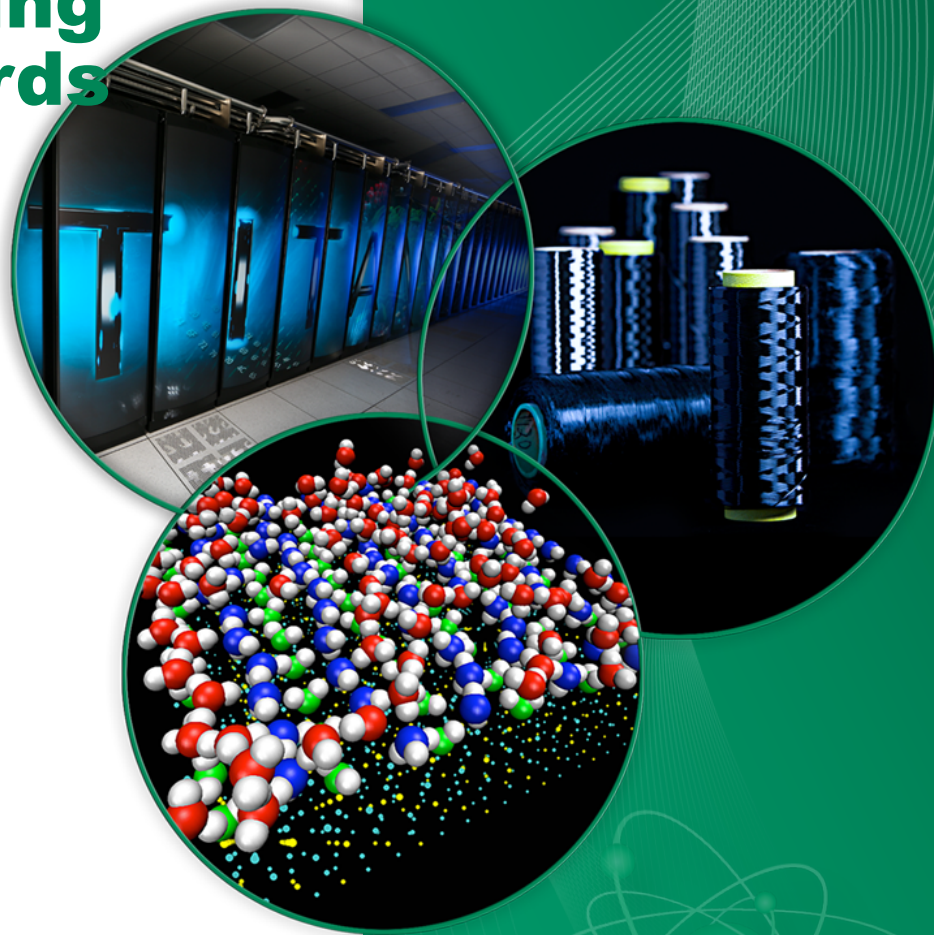


# Introducing the ACS Publication “Identifying and Evaluating Hazards in Research Laboratories”

Presented at the  
246<sup>th</sup> ACS National Meeting  
Indianapolis, IN

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# Chemical Safety Board recommendations from the investigation into the Texas Tech University explosion

- Physical hazards are not always part of safety management plans
- A process to evaluate and mitigate research-specific hazards is key
- **Comprehensive hazard evaluation guidance for research laboratories does not exist**
- Protocols and training are needed
- Organizational authority is important when implementing improvements
- Need increased communication of near-misses



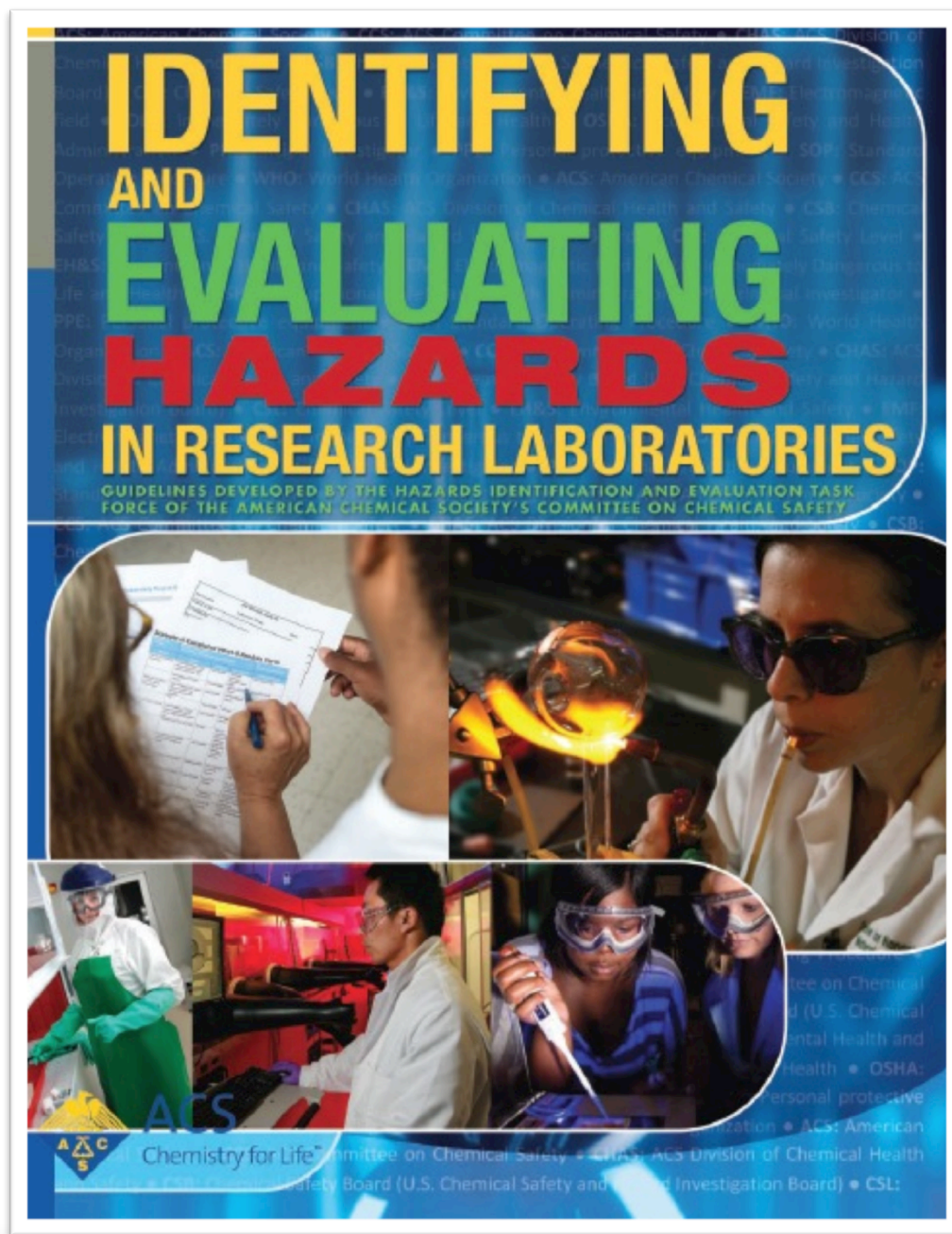
# The challenge the CSB presented to the American Chemical Society

**“Develop good practice guidance that identifies and describes methodologies to assess and control hazards that can be used successfully in a research laboratory”**

- Current emphasis in regulation is on health hazards
- Extensive guidance in the chemical process industry
- Existing guidance acceptable for use in research environment is limited
- Note that the recommendation does not say “**academic** research laboratory”

# Report Availability

- Now available on the Committee for Chemical Safety Web Site
- Please treat as draft
- Accepting comments through October 15, 2013
- Will be released on a dedicated web site with supporting tools



# Core Taskforce Members

Name	Affiliation
Kim Jeskie	Oak Ridge National Laboratory
Peter Ashbrook	University of Illinois at Urbana-Champaign
Dominick Casadonte	Texas Tech University
Debbie Decker	University of California Davis
Laurence Doemeny	ACS Committee on Chemical Safety
Todd Houts	University of Missouri
Robin Izzo	Princeton University
Ken Kretchman	North Carolina State University
Samuella Sigmann	Appalachian State University
Erik Talley	Weill Medical College of Cornell University
Support: Marta Gmurczyk Bob Hill	American Chemical Society Battelle Memorial Institute

# Desired attributes considered when choosing the tools for the guide

**“Develop good practice guidance that identifies and describes methodologies to assess and control hazards that can be used successfully in a research laboratory”**

- Enable the freedom to conduct discovery science
- Help a principal investigator keep the research group safe
- Work within the research environment and be connected to the research
- Be intuitive, easy to use, and easily adaptable to the sometimes rapid pace
- Be customizable, easy for an institution to pick up, modify and make its own

# Basic outline of the guidance document

## Introduction and theory

- Defining hazard ID and evaluation
- Roles and responsibilities
- Information gathering
- Keys to effective reviews
- Managing change
- Measuring success

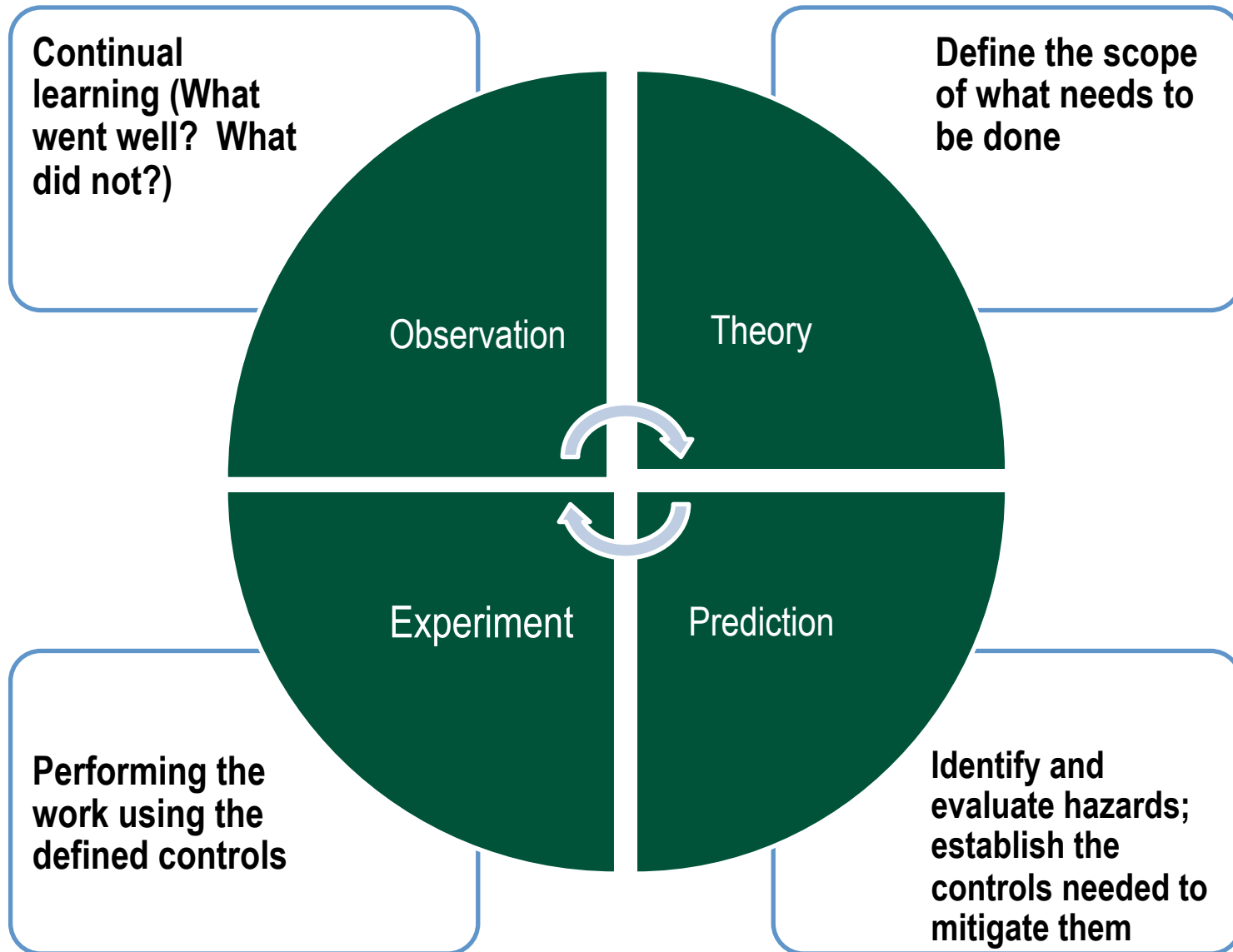
## Methods and tools

- Chemical Safety Levels
- Job Hazards Analysis
- What-if Analysis
- Checklists
- Structured development of Standard Operating Procedures

## Supporting Appendices

- Additional discussion on risk
- Control mechanisms
- Full checklists
- Completed examples

# Introducing the concept





# Establishing roles and responsibilities

For a hazard identification and evaluation process to be effective, everyone must know and be committed to their roles and obligations



# Roles and responsibilities

## Institution and department administration

- Ensure the tools for conducting hazard identification and evaluation are available to researchers across the institution
- Set the expectation that this process is part of any experiment, the research plan and general performance
- Ensure training and critical support are available
- Determine the acceptable level of institutional risk
- Assess implementation across the institution
- Set expectations for who can authorize what types of activities
- Foster an environment where any worker can question the completeness of an evaluation

# Roles and responsibilities

## Principal investigator



- Promote a laboratory culture where safety is a **valued component of research**
- Seek ways to make hazard analysis an integrated part of the research process
- Include the researchers who will be performing the work in the analysis
- Set the expectation that participation in the research project is contingent on the individual contributor's willingness to abide by the controls established for the work
- Reach out to support personnel and subject matter experts; defer to their expertise

# Roles and responsibilities

## Principal investigator

- Meet with research staff regularly and lead by example
- Engage in the daily operations and be available
- Use lessons learned from inside and outside the group to improve planning
- Solicit feedback from coworkers and colleagues
- Address risks to visitors
- Manage change
- Ensure training is appropriate, effective and documented



# Roles and responsibilities

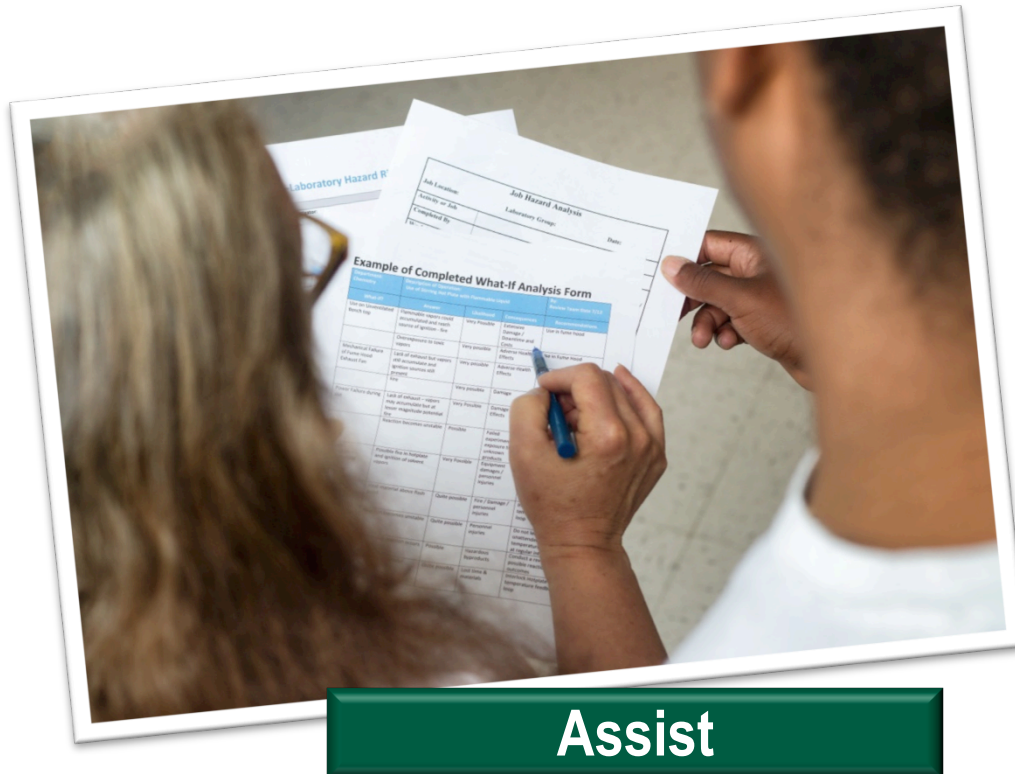
## Researcher and laboratory workers

- Participate in the hazard identification and analysis process
- Ask challenging questions
- Understand the necessary safety measures; be honest if not
- Communicate changing conditions
- Gracefully challenge and accept challenges
- Share those good ideas



# Roles and responsibilities

## Support personnel



- Provide the quality control and assurance for the process
- Actively participate in (not lead) the process
- Help confirm the operability of controls
- Communicate information about new advances

# Choosing a method from the guide and considerations for implementation

## The methods

- Chemical Safety Levels
- Job Hazards Analysis
- What-if Analysis
- Checklists
- Structured Development of SOPs

## Considerations

- The techniques are often complementary or additive
- Must consider maturity of your people and program
- Don't expect perfection the first time
- Don't just conduct the review on paper
- Discuss near misses
- Publish so others can use

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