40 years as an Environment, Health and Safety Professional

CHAS 40th Anniversary Symposium

Mary Beth Koza, MBA

Executive Director - Environment, Health & Safety/Risk Management

Responsible Official CDC Select Agent Program

Department of Environment, Health and Safety/Risk Management

University of North Carolina at Chapel Hill

MBKOZA@ehs.unc.edu

www.ehs.unc.edu

40 Years of Questions

- Does Compliance equal Safety?
- Which are better performance standards or design standards?
- Do individuals understand the number of regulatory requirements?
- What defines safety culture?
- Does an organization need an EHS management system?
- How are Safety and Sustainability related?
- What drives performance?

- 1979 – 1980 Process Engineer

- 1980 – 1982 Section Head Production Services

- 1982- 1884 Department Head Facilities Services

- 12/84 -11/94 - *Divisional Manager, Environmental Affairs, Occupational Health & Safety*
- 11/94 - 7/97 *Associate Director, Environmental Affairs, Occupational Health &Safety,-Consumer Products*
- 7/97 – 7/2002   *Associate Director, Environmental, Health & Safety - Hopewell & Hillside*
- 7/2002 – 3/2008 *Director – Environment, Health, Safety / Facilities Compliance and Documentation for BMS-Facilities Operations*

Hillside

Hopewell

New Brunswick

Lawrenceville

Published 1992

Used to market and share "What Does Pollution Prevention Throughout the Product Life Cycle Mean!

PERFORMANCE STANDARDS	DESIGN STANDARDS
Performance-based regulation	Prescriptive-based regulation
Set results-oriented goals	Mandate a technology, equipment, or action
Establish objectives or tiered standards	Specify behaviors or methods of compliance
Encourage flexibility and innovation	Demand certain solutions be implemented
Focus on outputs and outcomes	Focus on inputs and products

What is an EHS organization's role?

The anticipation, recognition, evaluation and control of the work environment to ensure a safe and healthy workplace and protect the environment for our employees and communities.

EHS Organization must be a High-Performance Team

Outperforms external standards

Performs better than its potential

Generates energy, excitement and enthusiasm

Process Roll of EHS Professional

- Facilitator
- Educator
- Marketer
- Auditor
- Business Leader
- Business Partner
- Knowledge Resource
- Regulatory Liaison

Content role of an EHS professional

- **General Safety**
- **Emergency Response**
- **Fire Safety**
- **Environmental permits (air, water, waste)**
- **Process safety**
- **Radiation Safety**
- **Reproductive health evaluation**
- **Accident injury investigation & prevention**
- **Waste Management**
- **DOT**

- **Industrial Hygiene**
- **Biologics**
- **Process safety**
- **Biosafety**
- **Indoor Air Quality**
- **Ergonomics**
- **Construction/Contractor safety**
- **Engineering Support**
- **Training**
- **Regulatory reporting**

What are our current and future challenges?

- Economics
- Homeland Security
- Regulatory Requirements & Certifications
- Global Warming/Climate Change
- Sustainability
- Nanotechnology
- Biomedical Engineering
- Accident prevention
- Artificial Intelligence
- Fear of the Unknown

Management System Examples

Plan Do Check Act Model

ISO 9001 Quality Management

ISO 14001 Environmental Management

ISO 18001 Occupational Health and Safety (OH&S)

ISO/IEC 27001 Information Security Management

BS8800 British guide to occupational health and safety management systems

The Importance of Metrics

Linked to vision, values & key success factors

Focus on past, present and future

Linked to needs of the customers, stakeholders and employees

Should be shared at all levels of the organization

Should be consistent

Multiple measurements can be combined into an indices of performance

EHS Metrics

Metric	Indicator
Accident Statistics	Lagging
Training	Leading
Near Miss Reporting	Leading
# of Permit Conditions	Leading
# of observations/inspection	Lagging
# of Emergency Responses	Leading/lagging
Defined Contractor Safety Metrics	Leading/lagging
# of governmental interactions	Leading/lagging

EHS Metrics

Metric	Indicator
Committee activities	Leading
Customer Service	Leading
Internal processes	Leading
Web site review	Lagging/leading

UNC-CH EHS Annual Report 2018

Level	Education					Customer Service					Internal Processes				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Level Four								–	–	–	–	–	–	–	–
Level Three								–				–			–
Level Two													–		
Level One									Qualitative Assessment						
Compliance															

Leadership

Everyone is a leader

Develop the leader from within

Create and articulate a vision
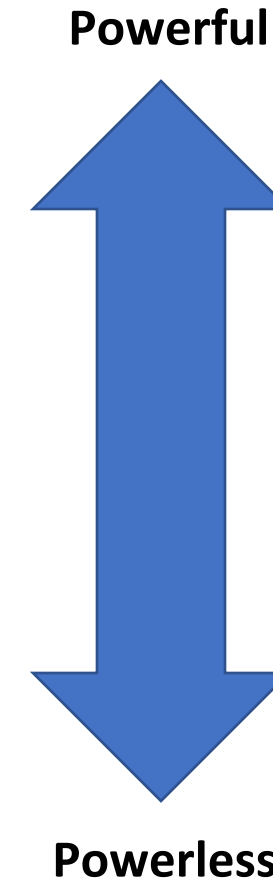
Set priorities and allocate resources

Drive innovation

Accept accountability and achieve results

Develop others

Set the example and shape the culture

Levels of Accountability

- Get on with it
- Find Solutions
- "Own it"
- Acknowledge reality
- Wait and hope
- Personal excuses
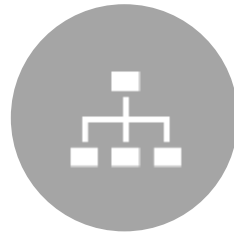- Blame others
- Unaware/Unconscious

Powerful

Powerless

Mission of Higher Education

Create	Create next generation of leaders
Center	Center of Excellence
Provide	Provide access to learning
Foster	Foster success and prosperity of each rising generation
Adapt	Adapt to changing times

College and Universities unique characteristics & challenges

DIVERSITY

HORIZONTAL DECISION STRUCTURES

TRADITION OF FACULTY AUTONOMY

AUTHORITY

RESPONSIBILITY

Challenges

Design across	Design across organizational boundaries
Engineer	Engineer processes into strategic capabilities
Develop	Develop individual competencies into a learning organization
Align	Align information technology with business strategy
Integrate	Integrate all the pieces

Culture of Safety

- Core Value of Organization

- Safety is Everyone's responsibility – campus environment must support this and empower the community

- Good Science is Safe Science – Safety is a critical component of the scholarly excellence and responsible conduct of research.

- Safety training and safety education are essential elements of research and education.

- An investment in the future

Three Cultures types of an Organization

Safe Science 2014

- **Pathological** – power-oriented, information is guarded as personal resource
- **Bureaucratic** – heavily rule-oriented, information not welcome - or ignored
- **Generative** – performance-oriented, information welcomed and directed to the right person Generative culture allows for near-miss reporting, no blame, recognition of hazards

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Generative cultures allows for near-miss reporting, open communication, no blame and best of all proactive recognition of hazards and elimination of those hazards

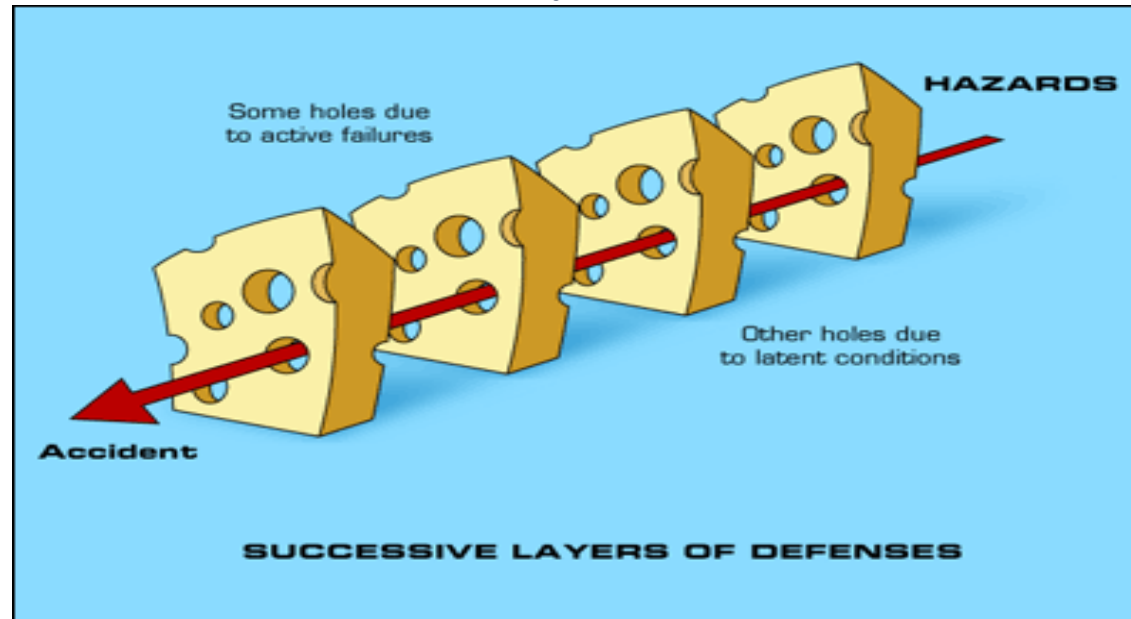# Organizations succeed or fail as a whole

Safety Culture Equation

⬇

- Leadership
- Committee Structure
- Responsible Officials
- Culture
- Information systems

Safety Culture = Leadership + organizational + empowerment of
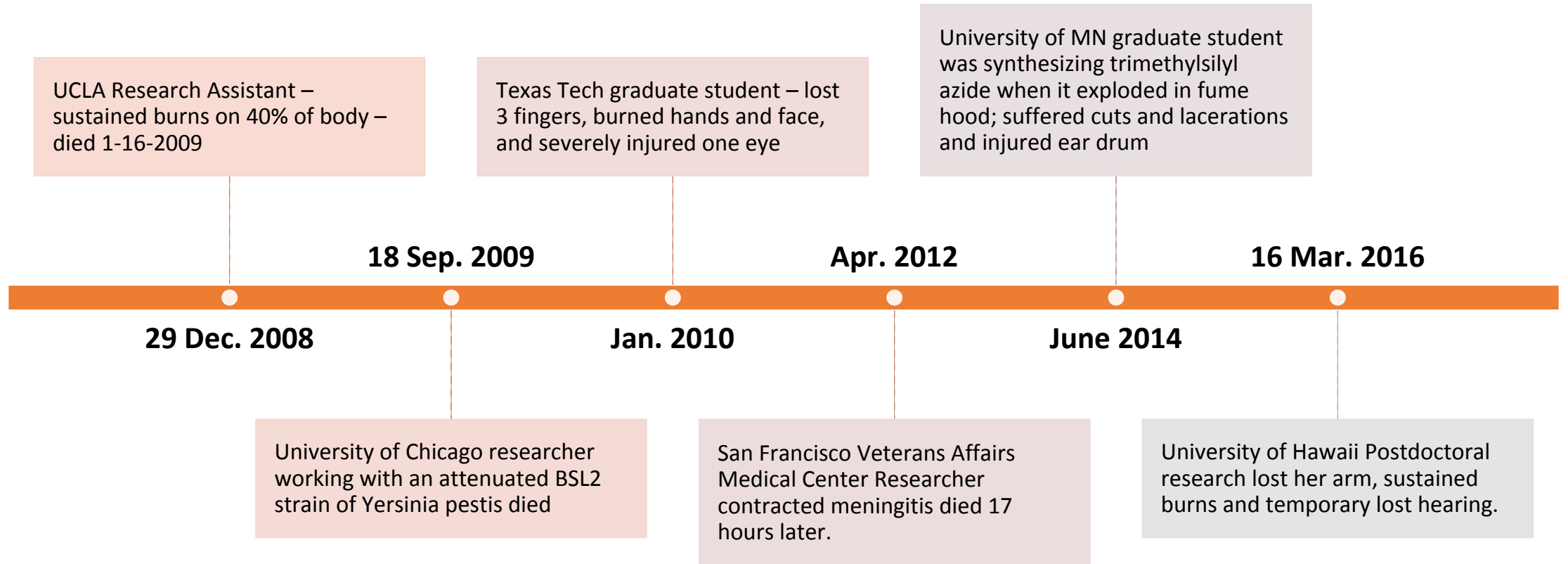design(budget)   the individual

Accident Causation

- Reason's Swiss Cheese Model
    - Cheese Layer = Safety layers (system defenses) capable of preventing incident
    - Holes = Gaps within each system where failure could occur

- If failures align then an incident or accident will occur!

Call to action!

UCLA Research Assistant – sustained burns on 40% of body – died 1-16-2009

Texas Tech graduate student – lost 3 fingers, burned hands and face, and severely injured one eye

University of MN graduate student was synthesizing trimethylsilyl azide when it exploded in fume hood; suffered cuts and lacerations and injured ear drum

18 Sep. 2009

Apr. 2012

16 Mar. 2016

29 Dec. 2008

Jan. 2010

June 2014

University of Chicago researcher working with an attenuated BSL2 strain of Yersinia pestis died

San Francisco Veterans Affairs Medical Center Researcher contracted meningitis died 17 hours later.

University of Hawaii Postdoctoral research lost her arm, sustained burns and temporary lost hearing.

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You'll Catch More Flies With Honey Than You Will With Vinegar.

"Bee" Kind.

A person can succeed at almost anything for which he has unlimited enthusiasm"

Charles M. Schwad

11 Questions to Measure
a Safe Work Place

- Do I know what is expected of me to work safely?

- Do I have the materials and protective equipment I need to do my work safely?

- At work, do I have the opportunity to do what I do best every day in a safe environment?

- In the last seven days, have I received recognition or praise for doing a safe job or assignment?

- Does my supervisor, or someone at work, seem to care about me as a person?

- Is there someone at work who encourages my development and safety involvement?

- At work, do I share my safety concerns and do my opinions seem to count?

- Does the mission/purpose of my company make me feel my job is safe and important?

- Are my co-workers committed to doing quality, safe work?

- In the past six months, has someone at work talked to me about my safety performance?

- This last year, have I had opportunities at work to learn and grow in the areas of Safety and Compliance?

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- ACS- Hazard Assessment in Research Labs

  https://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety/hazard-assessment.html

- Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition

  http://www.cdc.gov/biosafety/publications/bmbl5/index.htm

- A Guide to Implementing a Safety Culture in our Universities

  http://www.aplu.org/library/safety-culture/file

1956

1995

2017