Got a Risk Reduction Strategy?

William (Bill) L. Mostia, Jr. PE

SIS-TECH Solutions
“The Sky is Falling!
The Sky is Falling!”

*Chicken Little (Early Risk Assessor)*

*Michael A. Jayjock, Ph.D CIH*
Chicken Little was quite correct
The Sky IS FALLING:

Michael A. Jayjock, Ph.D CIH
Process Safety is achieved by managing the integrity of hazardous operating systems and processes by applying good design principles, engineering, operating and maintenance practices and safety management.
The goal of process safety management is to consistently reduce risk to a level that can be tolerated by all concerned.
Risk Management Plan

Management of Risk requires a comprehensive, structured plan with clear responsibilities and authority, which consistently reduces risk to an acceptable level that can be tolerated by all concerned and insures that the integrity of risk reduction is maintained throughout the life of the process.
Key Elements in an Effective Risk Management Plan

- Clear Mission Statement
- Responsibilities, Accountabilities and Authority Established.
- Lifecycle Approach
- Risk Criteria Established
- Hazard Identification
- Risk Assessment
- Risk Reduction
- Continuous Improvement
Key Elements in an Effective Risk Management Plan

Risk Reduction as a Work Process
Must Address Process Safety as a Core Competency for All Engineers
Must address Risk Reduction as a Core Attribute of the Safety Culture.
Sustainability
Key Elements in an Effective Risk Management Plan

Auditing

Tracking
a. Near Misses
b. Incidents
c. IPL Operation on Demand
d. IPL Failure
e. Safety System Failure/Success
Are HAZOP and/or LOPA enough to assess risk in a facility?
Risk Reduction

- Identify
- Assess
- Control
- Continuous Improvement
Risk Reduction Principles

1. Removal
2. Prevention
3. Protection
4. Mitigation
5. Recovery
Risk Reduction Methods

Risk Reduction

- Engineering Design
- Mechanical Integrity
- Engineering Controls
- Administrative Controls
- Operator / Control System

Process

Safety Management

Safety Culture
Key Principles of Risk Reduction

If there is no loss of containment, there is no hazard.
Key Principles of Risk Reduction

If your equipment is reliable, you will have less incidents.
Key Principles of Risk Reduction

If your people are prepared, you will have less incidents!

1. Competence
2. Training
3. Motivation
4. Tools
5. Culture
Key Principles of Risk Reduction

Experience can tell you what has happened, but cannot tell you what will happen.
No one gets too old to learn a new way of being stupid.
Key Principles of Risk Reduction

Never Underestimate the Impossible!
Can't happen here?
Key Principles of Risk Reduction

All risk assessments and reductions involve uncertainty.
GI GO

Garbage In, Garbage Out.

Garbage In, Gospel Out
Bow-tie Diagram
Got a Risk Reduction Strategy?

The End

ANY QUESTIONS?

William(Bill) L. Mostia, Jr. PE

We’re Proven-In-Use®
As Low As Reasonably Practical (ALARP)
Risk Reduction
Safety Layers Concept

Community Emergency Response
Plant Emergency Response
Physical Protection (Containment Dikes)
Mechanical Protection (Relief Devices, Design)
Safety Instrumented Systems (SIS)
Critical Alarms, Operator Intervention
Basic Process Control System (BPCS)

Defense in depth
or…
Don’t put all your eggs in one basket!
SWISS CHEESE MODEL OF LAYERS OF PROTECTION

HAZARD
CONSEQUENCE

DEMANDS

SAFE

LAYER #1

LAYER #2

LAYER #3

LAYER #4