

Development and Deployment of a Process Safety Curriculum in a North American Pipeline Company

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- 65 years. Global 100 most sustainable corporations. Based in Calgary, Canada. 5 business segments: Liquids Pipelines, Gas Distribution, Gas Pipelines, Processing & Energy Services, Sponsored Investments, and Corporate.
- Workforce of more than 11,000 people.
- **We distribute energy**, Canada's largest natural gas distribution company, Ontario, Quebec, New Brunswick and New York State
- **We generate energy**, expanding our interests in renewable and green energy technologies including wind, solar energy, geothermal.
- **We transport energy**, operating world's longest, crude oil and liquids transportation system+ NG transmission and midstream



Development and Deployment of Process Safety Curriculum

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Goal to deploy a process safety program using adult learning best practices underpinned by a healthy safety culture. Break personal safety from Process Safety



Curriculum Development and Deployment with unique Canadian Content

- Face-to-face
 - Traditional lecture style, video address from CEO
 - Interactive group work and case studies

Curriculum Deployment

As of July 2016, “The Course” >18 classrooms over 6 regions across Canada and US @tank farms, office towers, terminals, over a period of 20 months with a high degree of success

Participants of the Introduction to Process Safety Course
“The Course”

- New graduate to 30+ years of experience. Mature adults to social media gurus.
- Challenge to bring common experiences, common language of Process Safety.
- Having worked many years in industry they use newspapers, televisions, internet to learn

The Curriculum Deployment :the "Recipe"

- Face-to-face + computer-based
- Traditional lecture style, + video address from CEO -1.5 hr
- Interactive group work and case studies – 2.5 hr
 - 2 group work + exercise of internalizing the curriculum presented into their everyday work responsibilities.
 - Classroom arranged for five (5) pods of 5 learners.



The “Recipe”: Why group work?

“Fold” in case studies to improve knowledge retention

- 2 modern case studies:
 - Olympic Pipeline accident in Bellingham
 - Explosion at Caribbean Petroleum Terminal



“Add spice” through learner-led presentation to internally motivate learners :

- Hands-on learning, amongst peers. Achieving something they could not have done before.
- Learners may have subconscious fear of testing material.
- Group work creates cooperative environment.

Instructor as a facilitator; learner as presenter

Instructor A presents Process Safety elements

Instructor B assesses learners experience, department and communication style.

Instructor B presents case studies and presentation

Instructor A circulates, motivates and provides technical support.

3 learners given key jobs: Presenter, scribe, timer.

The “Recipe”

Our “Secret Sauce”

Cooking up the perfect group:

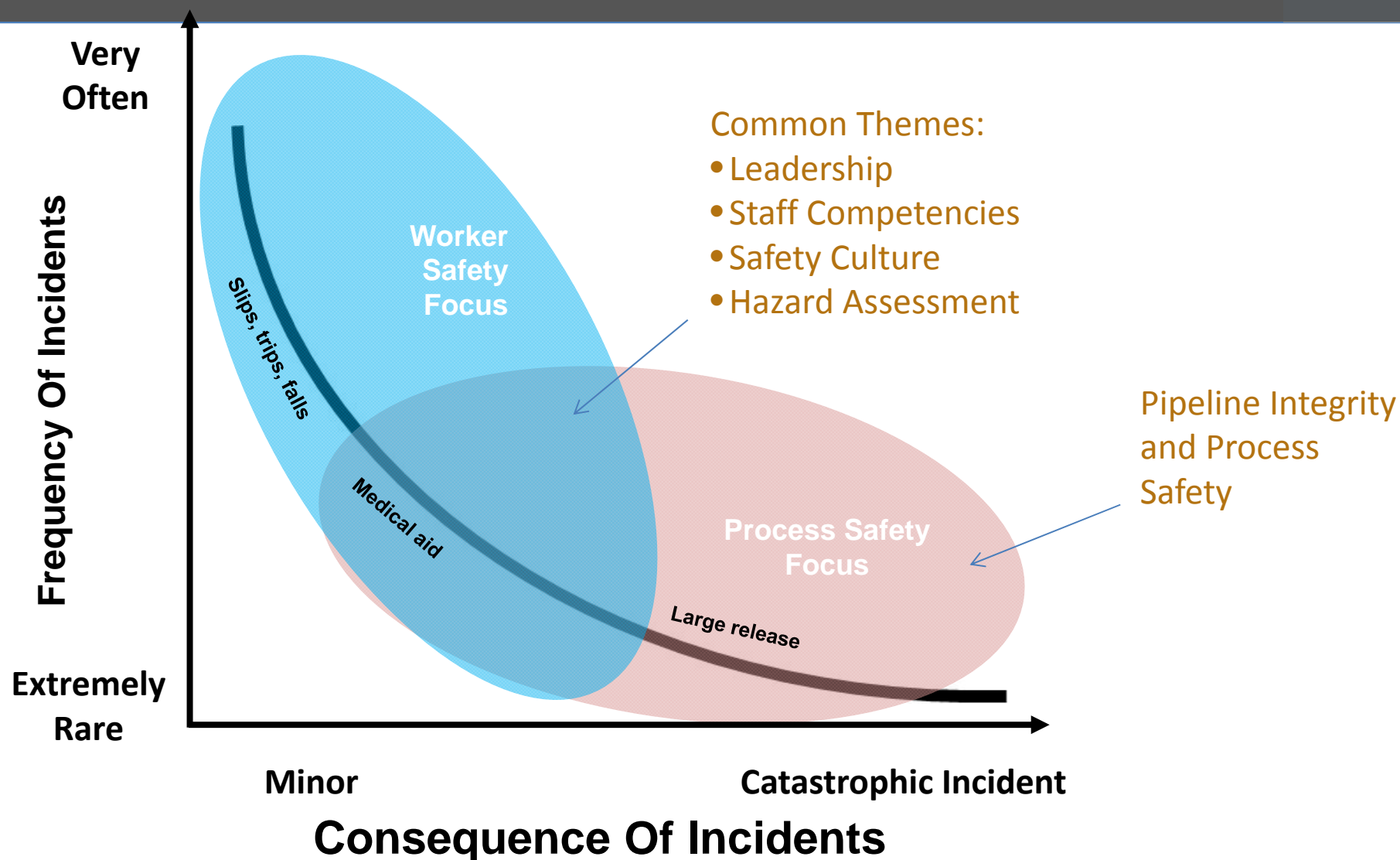
- 5-6 learners with industry experience of 50-55 years.
- Supervisors and direct reports, same department separated.
- Optimal class length.
- Nature of case studies.
- Instructor/learner ratio

“Building up the menu”

- Process Safety 201: Management of Change
- Process Safety 202: Risk Management



Personal Safety Vs. Process Safety



Adapted from Martin Sedgwick., Bill Fulton "Scottishpower's Asset Management & Process Safety Journey". 2011, p. 11.

Some results:

- 8-fold increase in “Operational” MOCs in 2013-2016.
- Revalidation PHAs: 6-fold increase from 2014 to 2016.
- Improvements to the incident investigation process: minor, medium and high impact.

Question and Answer Period

