Chemical Safety and Hazard Investigation Board

Refinery and Chemical Industry Emissions Symposium

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CSB Board Member

San Francisco, CA
November 6, 2019

CONSEQUENCES OF A POOR SAFETY CULTURE

BP TEXAS CITY, TX
March 23, 2005

15 – FATALITIES
180 - INJURIES

Inherent in our Mission
PERSERVE LIFE SAFETY

To prevent loss of life we have to determine, understand, and explain root cause data

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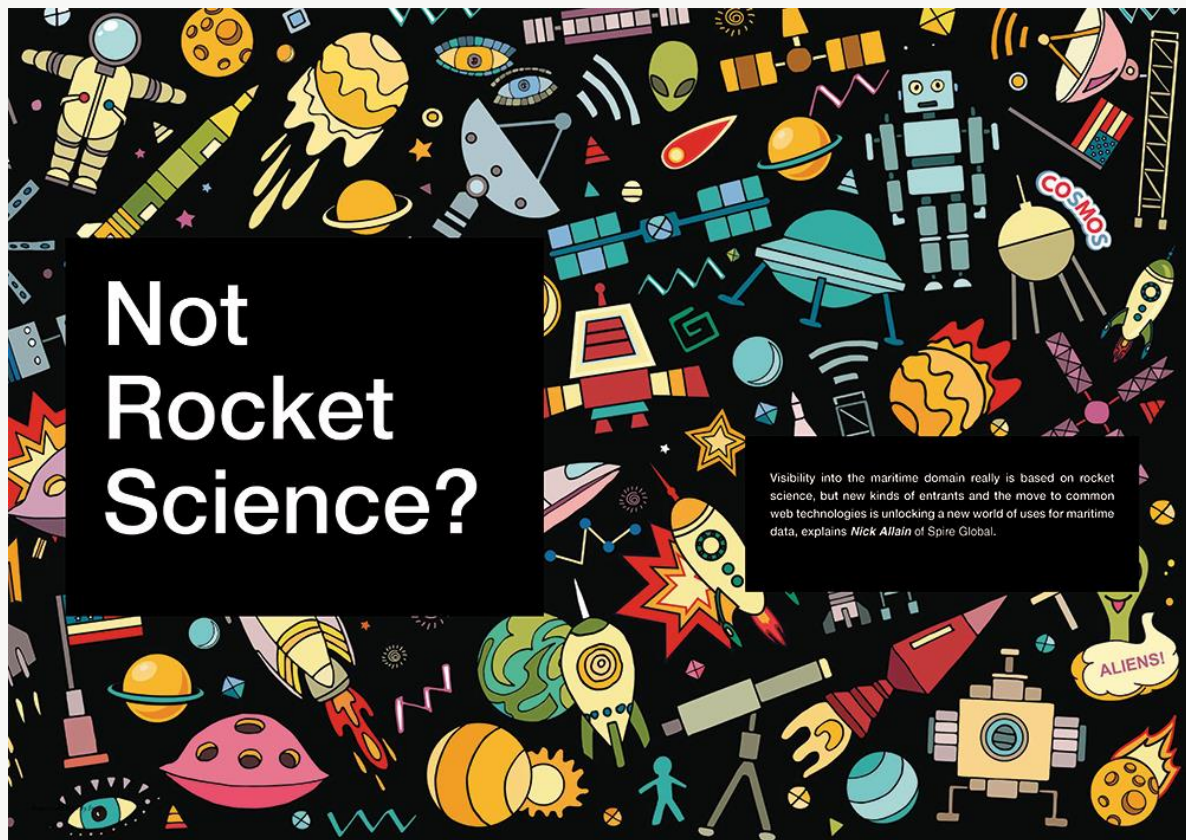# Inherent in our Mission
PERSERVE LIFE SAFETY

What we know…what we did

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Investigation	Date	Deficiency Code
West Fertilizer Explosion/Fire	17 April 2013	1,2,3,4,5,6,7,8
Hoeganaes Corp. Fatal Flash Fire	31 Jan 2011	1
Little General Store –Propane Exp.	30 Jan 2007	1,2,5,6
Herrig Brothers Farms-BLEVE	9 April 1998	1,5
DPC Enterprises –Glendale Release	17 Nov 2003	1
Citco Refinery – HF Release/Fire	19 July 2009	2
Bayer Crop Sciences – Waste Tank	28 Aug 2008	2
DPC Enterprises –Festus Release	14 Aug 2002	1,2,3,6
Honeywell Chemical	20 July 2003	3
First Chemical Reactive Explosion	13 Oct. 2002	3
MFG Toxic Gas Release	12 April 2004	5,8
EQ Haz Waste Fire-Explosion	5 Oct. 2006	8

Inadequate/poor training	1	Lack of ER Exercises	5
Inadequate/poor planning	2	Lack of communications	6
Improper notifications	3	No community/facility ties	7
No IMS/ICS	4	No responder ties	8

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-Most root causes DON'T involve rocket science issues

Not
Rocket
Science?

Visibility into the maritime domain really is based on rocket science, but new kinds of entrants and the move to common web technologies is unlocking a new world of uses for maritime data, explains *Nick Allain* of Spire Global.

-Many repeat or repetitive causes

The issue becomes one of, in many cases repetitive findings, related to deviation from basics even though

there is full understanding of what deviation from them could mean.
What factors then are at play?

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Typical repetitive issues

- **Permit required confined space violations**
  - **Hot work practice violations**
  - **Improper handling hazardous materials**
    - **Flammables**
    - **Combustibles**
    - **Toxins**
    - **Corrosives**
    - **Explosives (or capable of exploding)**
    - **Poor utilization or lack of proper PPE**
    - **Poor utilization or lack of proper RPE**

Over and over and over again

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Deviation from basic fundamentals of acceptable safety practices:

- **Why?**

- **Why are we seeing repeat "violations" involving issues that we know to be problematic?**

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THOUGHTS….

Is it a competence issue?
Is it a personnel issue?
Is it a individual/organizational issue?
Is it attitudinal in nature?
Is it behavioral in nature?
Is it related to risk?
Is it an ownership problem?
Is it a lack of commitment issue?
Is it a normalization issue?
Is it a matter of beliefs?

THOUGHTS….

It is believed that the intersection of all of these issues in aggregate constitutes "the culture"…
More commonly referred to as
CULTURE
or in this case
SAFETY CULTURE

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U.S. Chemical Safety and Hazard Investigation Board

Safety Culture-

What is it and why is it important

Per The American Institute of Chemical Engineers

AIChE ----Why is it important

Management systems and their associated policies and procedures depend upon the actions of individuals and groups for their successful implementation?

Merriam Webster, 1983

The **product of the individual / group values, attitudes, competencies and patterns of behavior** that determine the commitment to, and the style and proficiency of, an organization's health and safety management.

Barnes, 2009

The **values, attitudes, motivations and knowledge that effect the extent to which safety is emphasized over competing goals in decisions and behavior.**

Health and Safety Executive, UK,

A healthy safety culture consists of shared beliefs, sound philosophy, healthy attitudes and practices.

AIChE---What it is

A more succinct definition has been suggested: "Safety culture is how the organization behaves when no one is watching."
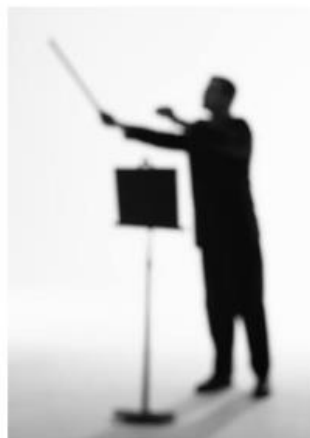
Identifying your type of safety culture [2]

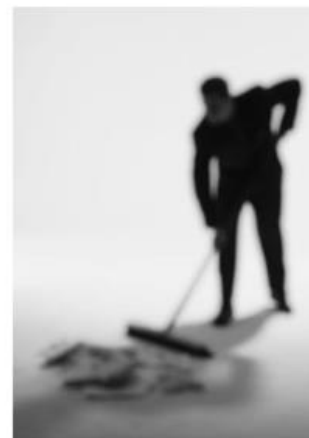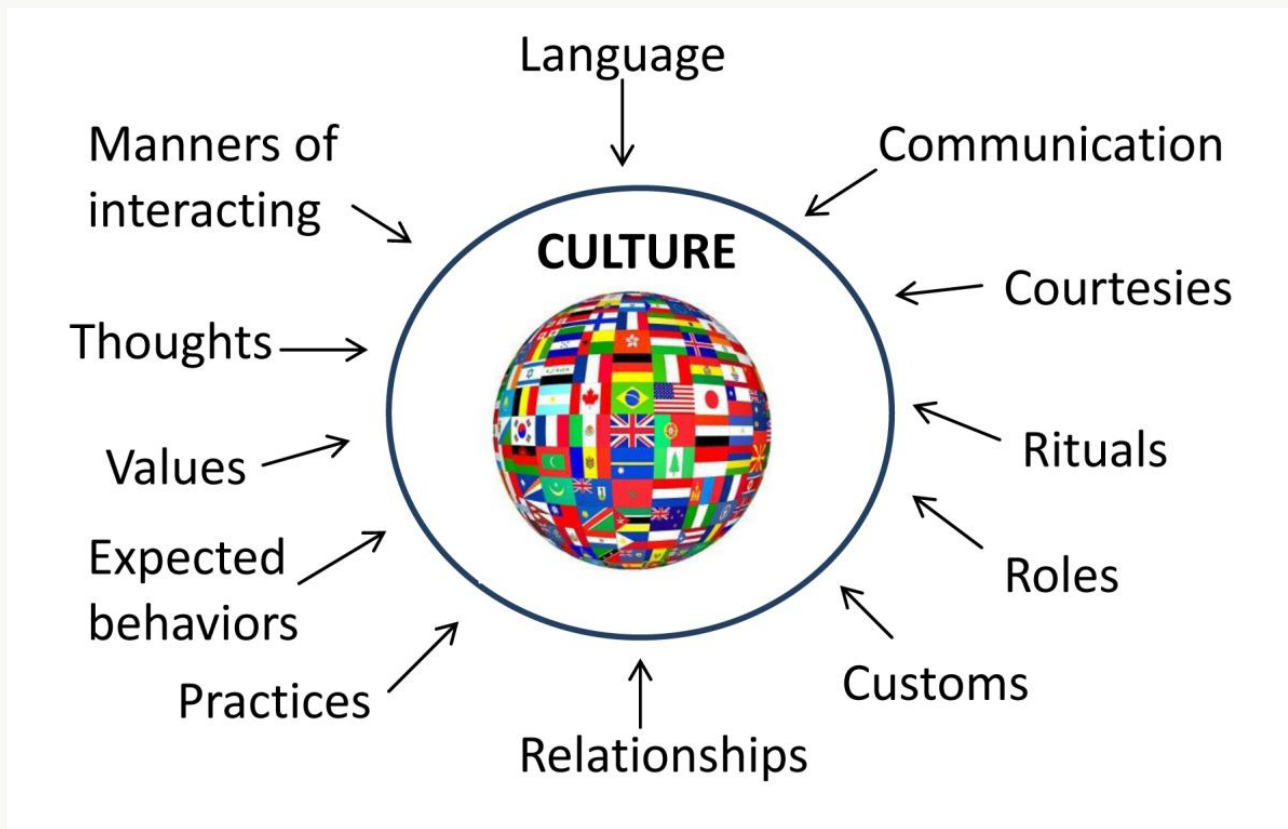| Generative	Proactive	Calculative	Reactive	Pathological
"Safety is how the business is run"	"Safety is managed by workforce involvement"	"Safety is managed by procedures & documentation"	"Safety is only an issue if something happens"	"Who cares as long as you don't get caught"

WESTERN

Root Cause Analyses Aggregated

Safety Culture-

THOUGHTS….

© Process Improvement Institute, Inc. 2005-2014
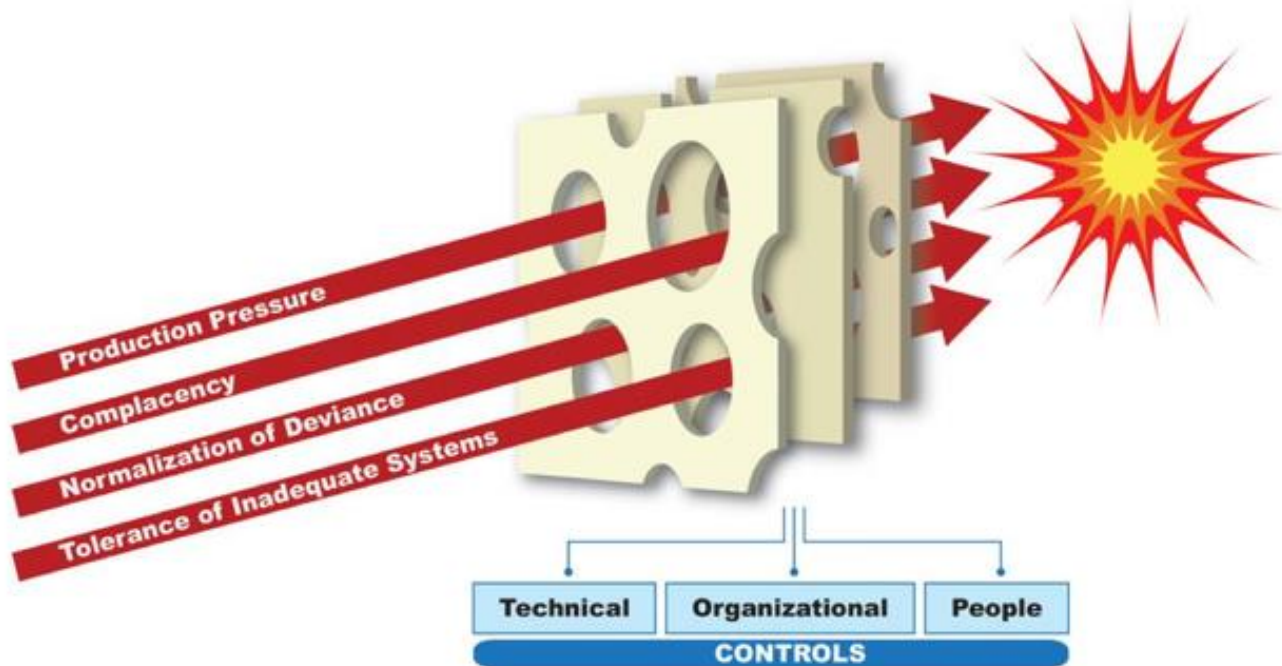
An argument for...

Management doesn't know, what they don't know

- Few top business leaders can tell you how to **develop and enhance their safety culture.**

- And more importantly why they should even want a safety culture in the first place.

Safety culture threats

Production Pressure
Complacency
Normalization of Deviance
Tolerance of Inadequate Systems

Technical | Organizational | People
CONTROLS

Graphic courtesy of the NEB

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…who appreciate that taking an obviously simplifying but potentially unsafe shortcut would be, quite simply, wrong.

And yet it happens all of the time. **Why?**

Human beings take shortcuts for a variety of reasons and may do so without unacceptable consequences. What does
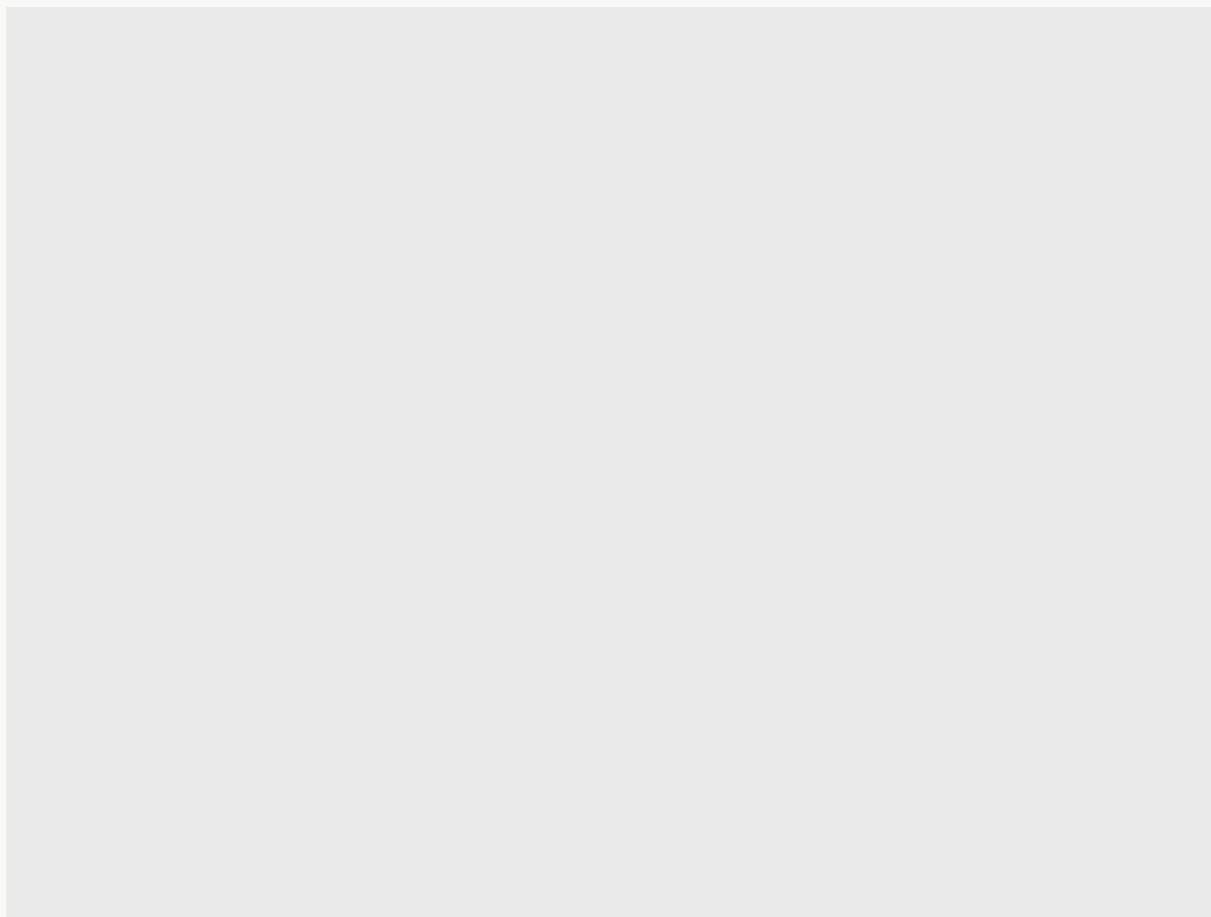
NORMALIZATION OF DEVIANCE

Normalization of Deviance

Comparison of safety behaviors that establish the "culture"

The next series of slides and video clips point out consequences of a poor safety culture

Data has been taken from agency investigations to help clarify certain issues.

BP FAILURES:

BP executive management / refinery management did not create a positive learning and reporting culture, which emphasizes the importance of reporting safety threats and effectively investigating accidents.

BP FAILURES:

Provide management oversight

Provide human and economic resources

Provide or model adherence to safety rules and procedures.

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Cultural Analysis

BP America Refinery
Texas City, TX
March 23, 2005
15 Fatalities
180 Injured
43,000 Citizens at Risk
Isom Unit

Comparison of safety behaviors that establish the "culture"

The next series of slides and video clips point out consequences of a poor safety culture

Data has been taken from agency investigations to help clarify certain issues.

AIChE---Why it is important

…the successful execution of the procedure requires the actions of properly trained individuals who understand the importance of the underlying intent, who accept their responsibility for the task, and

A Poor Safety Culture…Scott

Safety planning…

- **Little or none**

- **That which exists focuses on quick and cheap**

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A Poor Safety Culture…Scott

Safety planning…

- **Little or none**

- **That which exists focuses on quick and cheap**

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Exposed to fire

High risk area

Massive fires killed 15

A Poor Safety Culture…Scott

No balance between safety and profitability

- **Profitability only concern in organization**

- **Health and safety seen as cost and only priority is avoid extra costs**

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25% Reduction fixed costs

Forgo training

Decreased mechanical integrity

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A Poor Safety Culture…Scott

Lack of training

- **Only conducted when regulations required it**

- **Safety training seen as inconvenience expense – not an investment**

**Did not understand hi level alarm
Vented to 50's era atmospheric stack**

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A Poor Safety Culture…Scott

No reporting of hazards

- **Only happen after serious events**

- **Analysis does not consider human factors or go beyond legal requirements**

- **Protect the company and its profits becomes the mantra**

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Massive potential hazards-no warning

A Poor Safety Culture…Scott

No reporting of hazards

- **Hazards and unsafe acts never reported**

- **Reporting discouraged**

- **Many incidents go unreported**

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Prior incidents and near misses not communicated

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A Poor Safety Culture…Scott

General lack of awareness of consequences of actions which could lead to a catastrophic disaster

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Prior incidents and near misses not communicated

Possible catastrophic failure

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A Poor Safety Culture…Scott

Inevitable consequences of actions led to catastrophic disaster

Thick black smoke billowed Shelter in place – 43,000

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A Poor Safety Culture…Scott

No commitment from workforce

- **Lack of commitment to safety from management mirrored by work force**

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Safety culture survey

Production above all

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A Poor Safety Culture…Scott

Feedback loop is not closed after an accident

- **Following an accident the focus is on the employee, and they are often disciplined.**

- **The priority is to limit damage and get back to production.**

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A Poor Safety Culture…Scott

Management blames individuals for accident

- **Individuals blamed-accidents and injuries part of the job**
- **Responsibility for accidents belongs to those involved**
- **Procedures bypassed and violated**
- **Deviations normalized**

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Supervisor left

Violation of procedure

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BP America Texas City Refinery and Bayer Crop Sciences

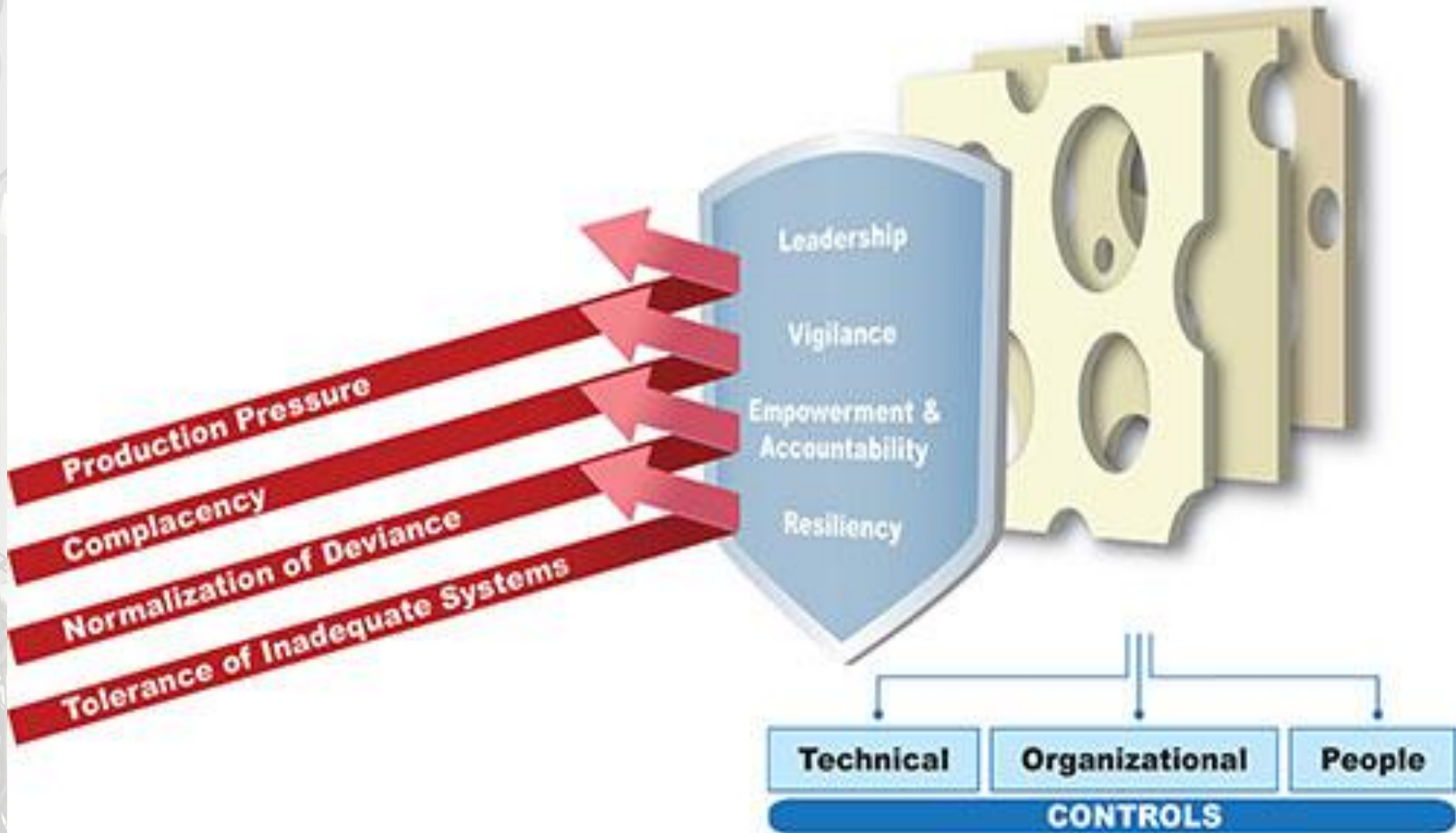**And are discussed here with an expectation of learning**

Because doing the same things over and over again, without any change and expecting a different result is defined as….

...INSANTITY

Thwarting Safety Cultural Threats

Safety Culture Improvement...ABS-Group

So where do we go from here?

By defining a strong safety culture

By thinking/talking about risk

By not accepting the status quo

By providing as much information

as possible to SERCs/LEPC's

By planning. preparing. establishing

specifically PS tasked work groups

Safety Culture Improvement...ABS-Group

So where do we go from here?

By not waiting to respond

By thinking/talking about risk

By training personnel on process, procedures and risk consequences

By providing information to LEPC's

By doing what you are doing!

So where do we go from here?

We have to stop making like an ostrich, sticking our heads in the sand and believing it will Improve if we do nothing. Start talking, start doing and believing together we can move toward……

So where do we go from here?

We have to stop making like an ostrich, sticking our heads in the sand and believing it will Improve if we do nothing. Start talking, start doing and believing together we can move toward……

Why are we talking about this..

We are discussing these issues here with an expectation of learning

Because doing the same things over and over again, without any change and expecting a different result is defined as….

...INSANTITY

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THIS MUST STOP

0 Fatalities

The How…
We do it together-The Goal of Zero Harm

You…
Me…
Coworkers…
Colleagues…
Friends…
Relatives…
Anyone wh
cares about
life safety

BASIC SAFETY PHILOSOPHY FOR SUCCESS

A NEW SAFETY CULTURE

❖ All accidents are preventable.
❖ No job is worth getting hurt for.
❖ Every job will be done safely.
❖ Incidents can be managed.
❖ Safety is everyone's responsibility.
❖ Continuous improvement.
❖ Safety as a "way of life" for 24 hours/day
❖ All individuals have the responsibility and accountability to identify eliminate or manage risks associated with their workplace
❖ Legal obligations will be the minimum requirements fro our health & safety standards
❖ Individual will be trained and equipped to have the skills and facilities to ensure an accident free workplace

What's your company approach to safety?

SAFELY HOME.
EVERYONE.
EVERY DAY.™

Safety Culture Improvement...ABS-Group

1. Establish safety as a core value
2. Provide strong leadership
3. Establish and enforce high standards of performance
4. Formalize the safety culture emphasis/approach
5. Maintain a sense of vulnerability
6. Empower individuals to successfully fulfill their safety responsibilities
7. Defer to expertise
8. Ensure open and effective communications
9. Establish a questioning/learning environment
10. Foster mutual trust
11. Provide timely response to safety issues and concerns
12. Provide continuous monitoring of performance

U.S. Chemical Safety and Hazard Investigation Board

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@chemsafetyboard

U.S. Chemical
Safety Board

Thank You

https://we.tl/t-QYNcFx1ao9

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