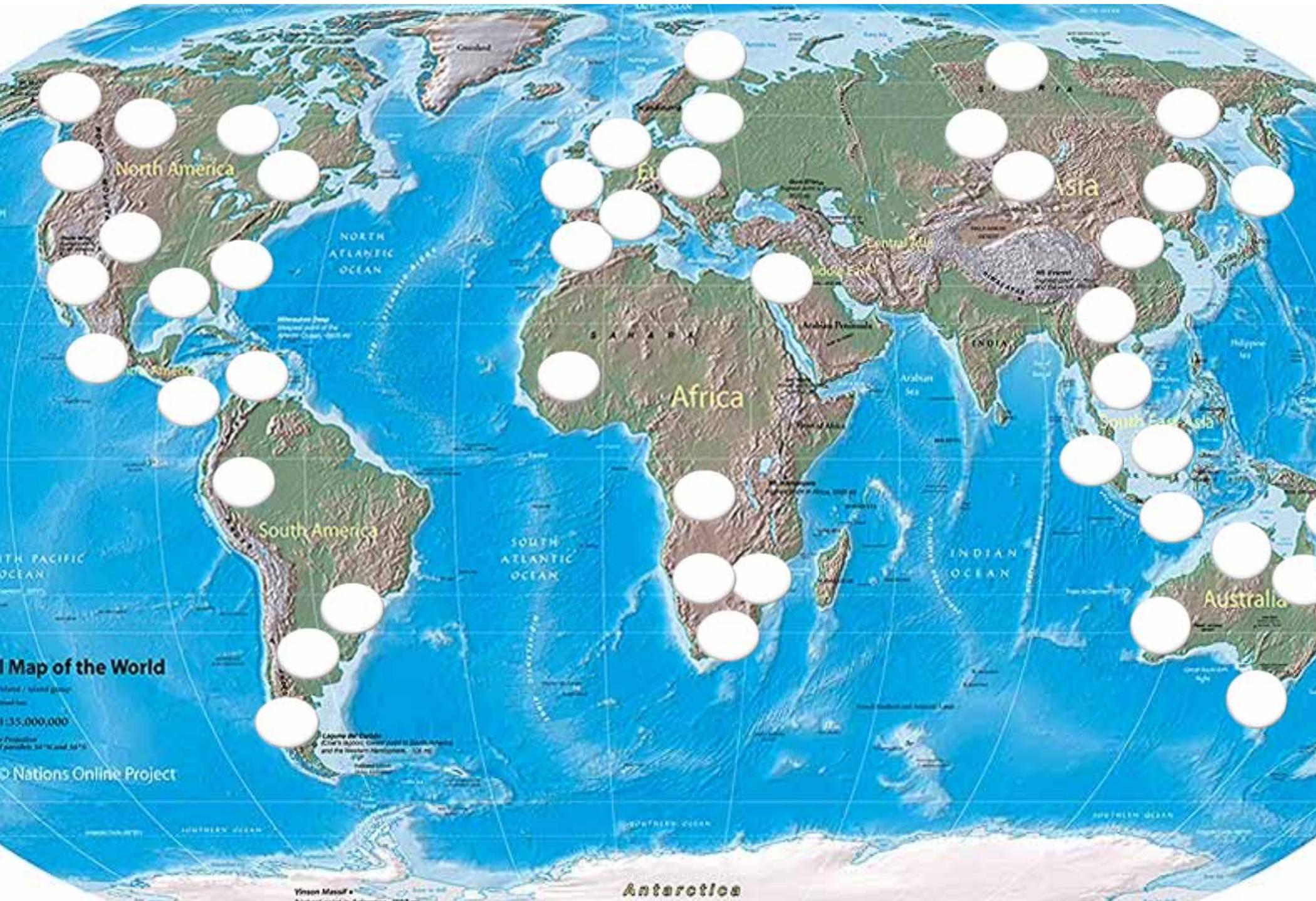


Why Organizations Fail

Kimm Barker





North America

South America

Africa

Asia

Australia

Antarctica

World Map of the World

Scale: 1:35,000,000
© Nations Online Project

Disasters at ...'safe' organizations



6246 deaths



Captain EJ Smith

Titanic!

15 April 1912...





Quantun

Southampton

Cherbourg

“We believe our ship is safe..it is unsinkable”

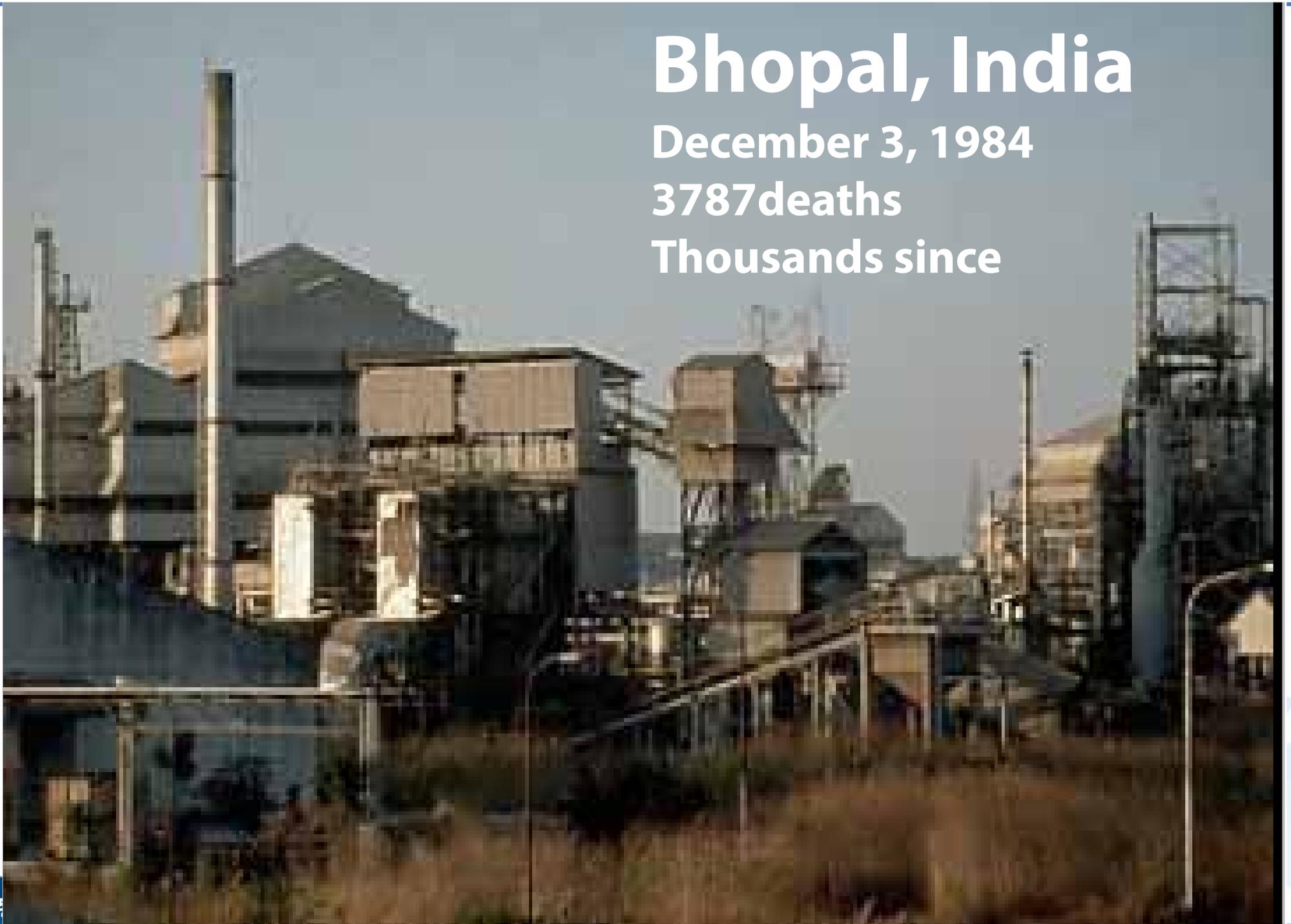


Bhopal, India

December 3, 1984

3787 deaths

Thousands since



DuPont's La Porte, Texas Plant, Kills 4 Workers and Leaves a Fifth Worker Hospitalized

🕒 NOVEMBER 25, 2014 👤 TOXICSCOALITION



On Saturday, November 15, a deadly chemical gas leak at DuPont's La Porte, Texas plant claimed the lives of four workers and injured a fifth worker who is currently hospitalized.

It was reported that an estimated 100 pounds of methyl mercaptan was released. Mercaptan is a chemical used to make insecticides and is also

used in the processing plastics and in jet fuel.



They focused strongly on safety as a 'core value' and proud of their achievements...

Their safety approach was on technology, systems, audits and enforcement...

They were fixated on compliance and elimination of the 'at-risk' behaviors of...

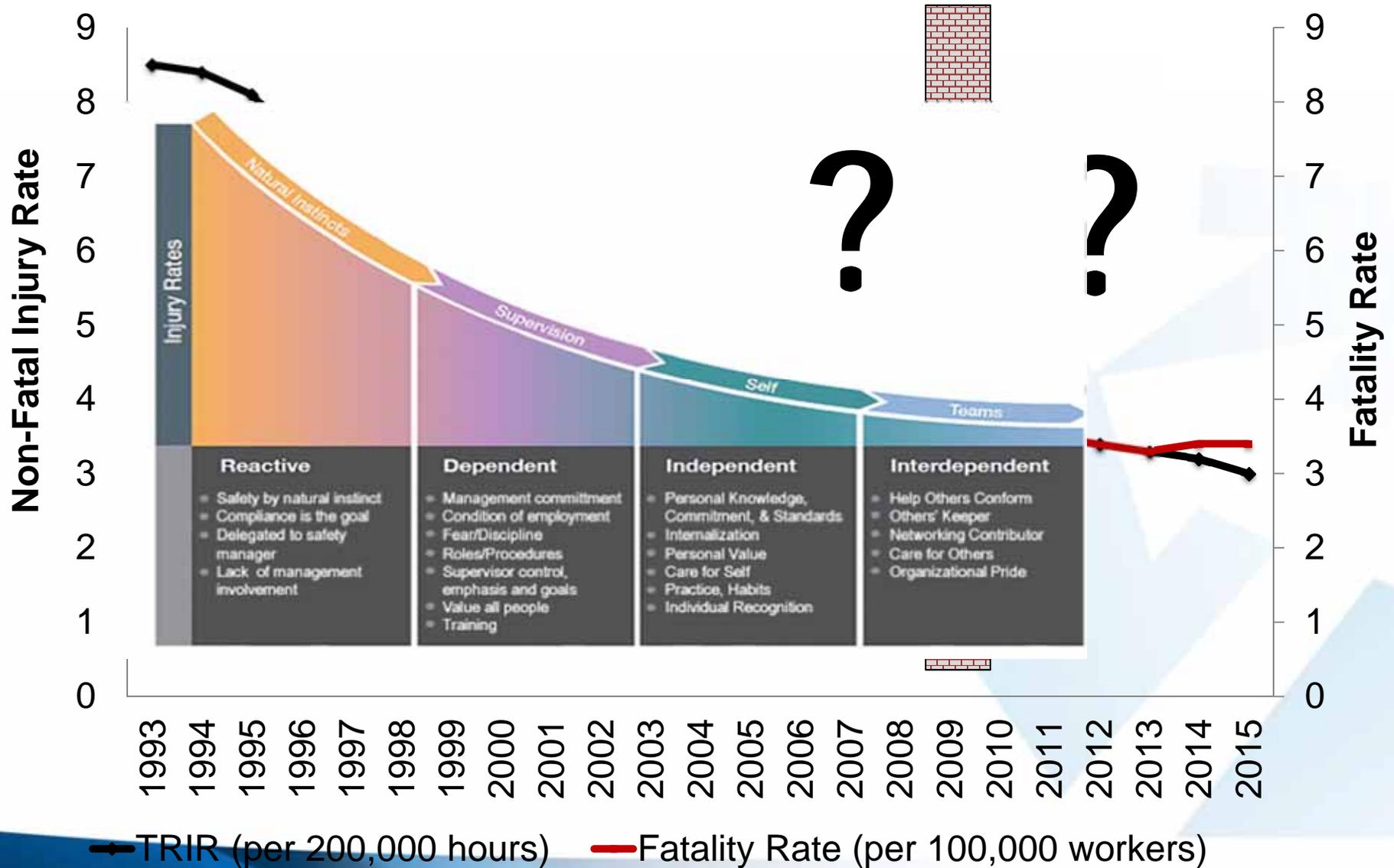
Leaders were committed to achieve "best-in-class" safety performance...

They targeted and achieved low accident rates as a measure of safety...and got nearer and nearer to zero

"Well managed" companies!

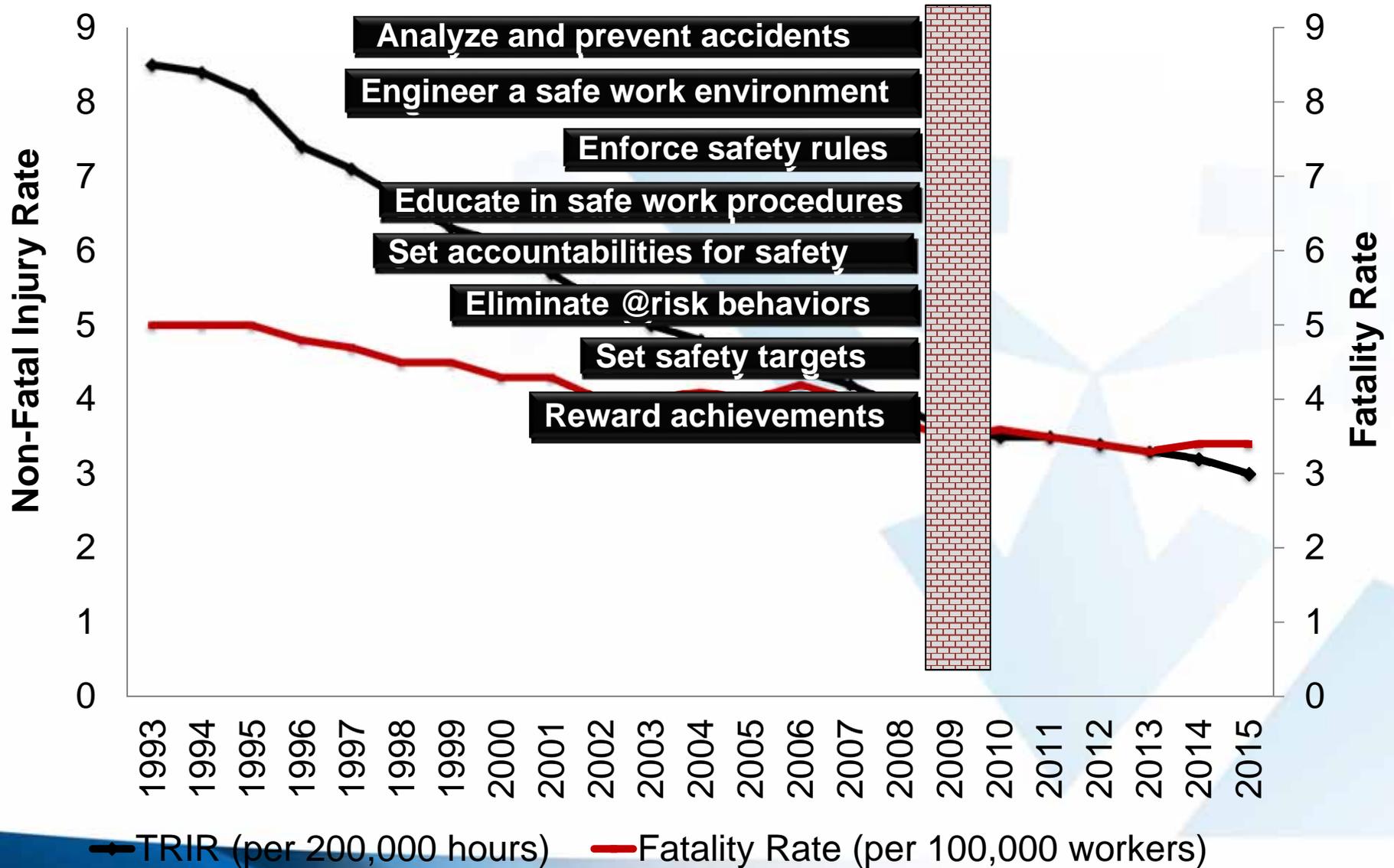
USA Incident Rate Trends: Non-Fatal vs. Fatal

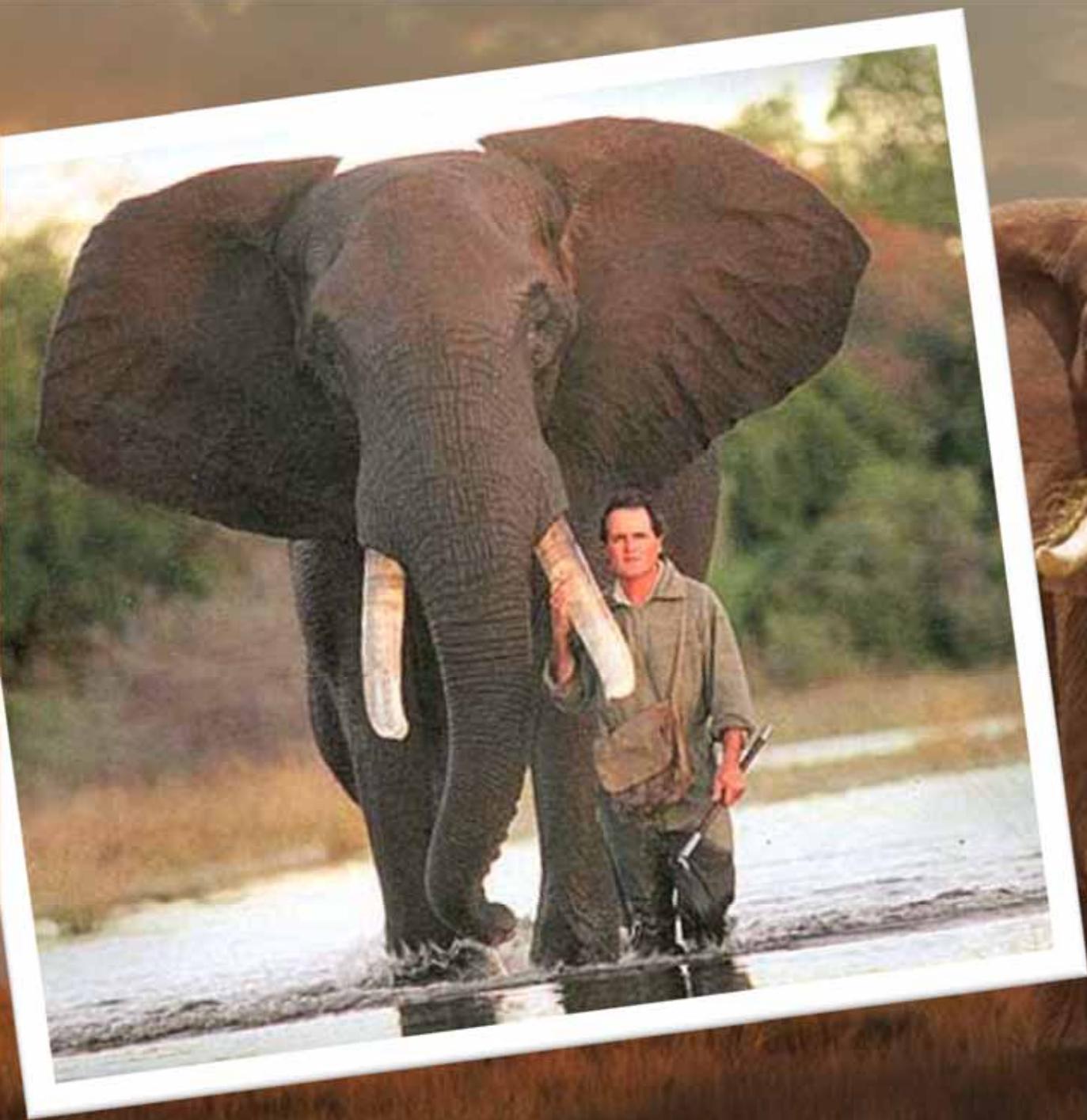
Source: US BLS



USA Incident Rate Trends: Non-Fatal vs. Fatal

Source: US BLS

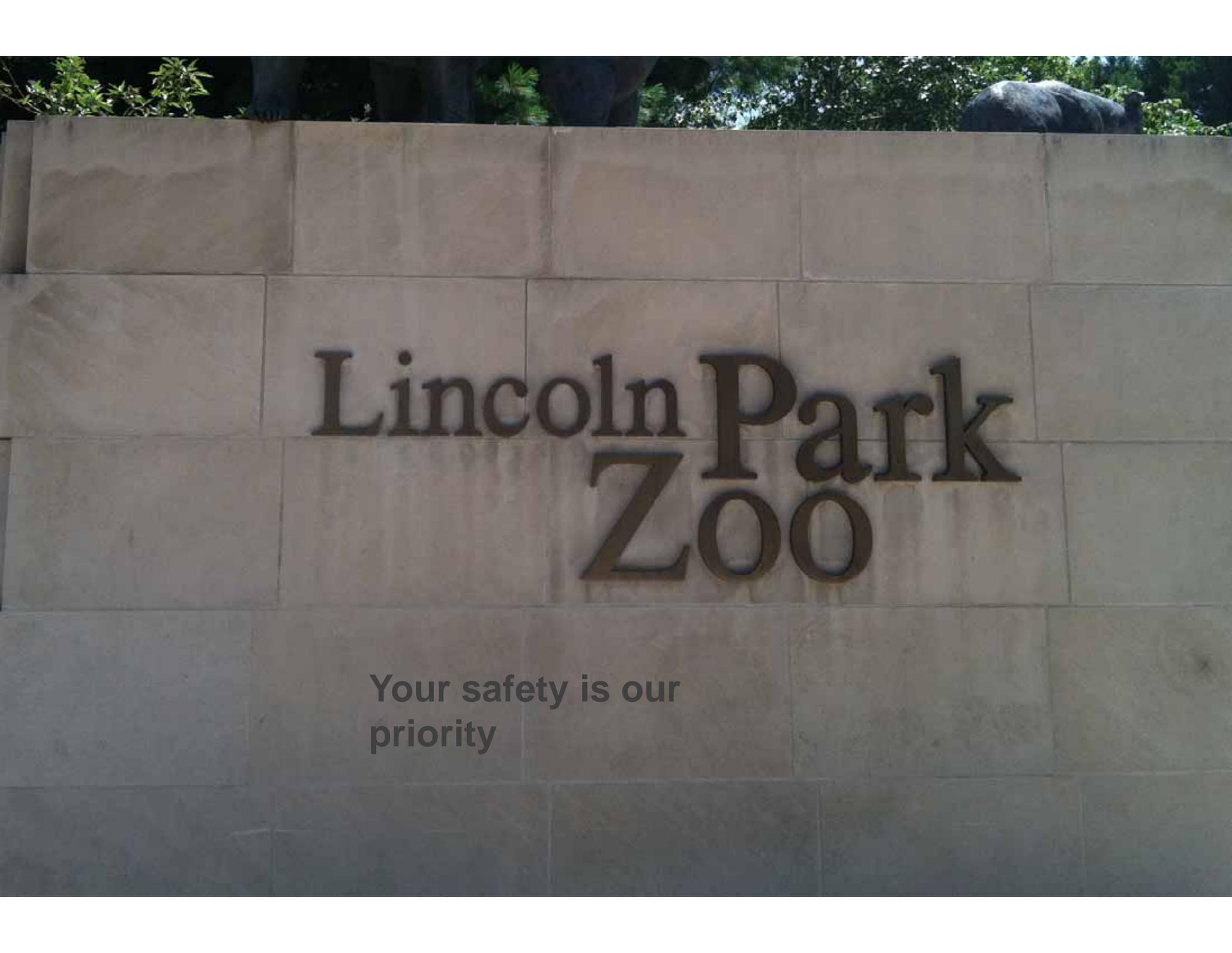










A stone wall with the Lincoln Park Zoo logo. The logo consists of the words "Lincoln Park" in a serif font above the word "ZOO" in a larger, bold, sans-serif font. The wall is made of large, light-colored stone blocks. In the background, there are green trees and a large, dark, rounded object, possibly a sculpture or a large rock.

Lincoln Park ZOO

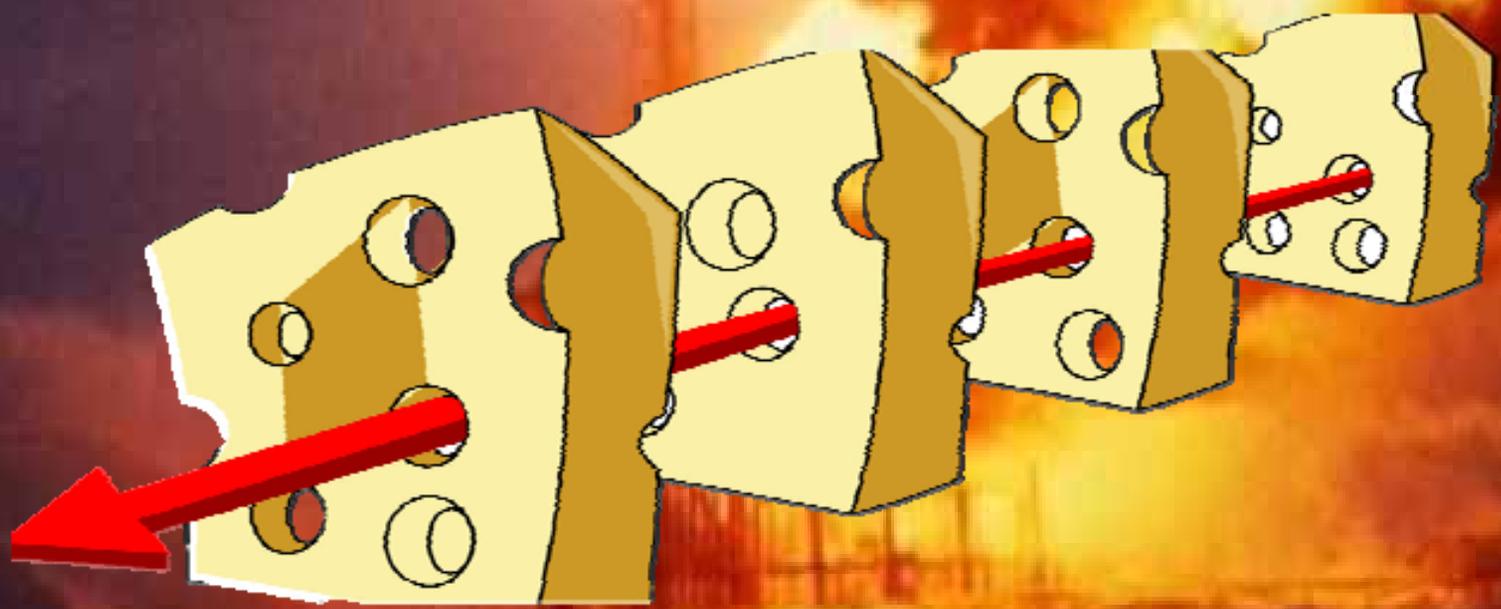
**Your safety is our
priority**





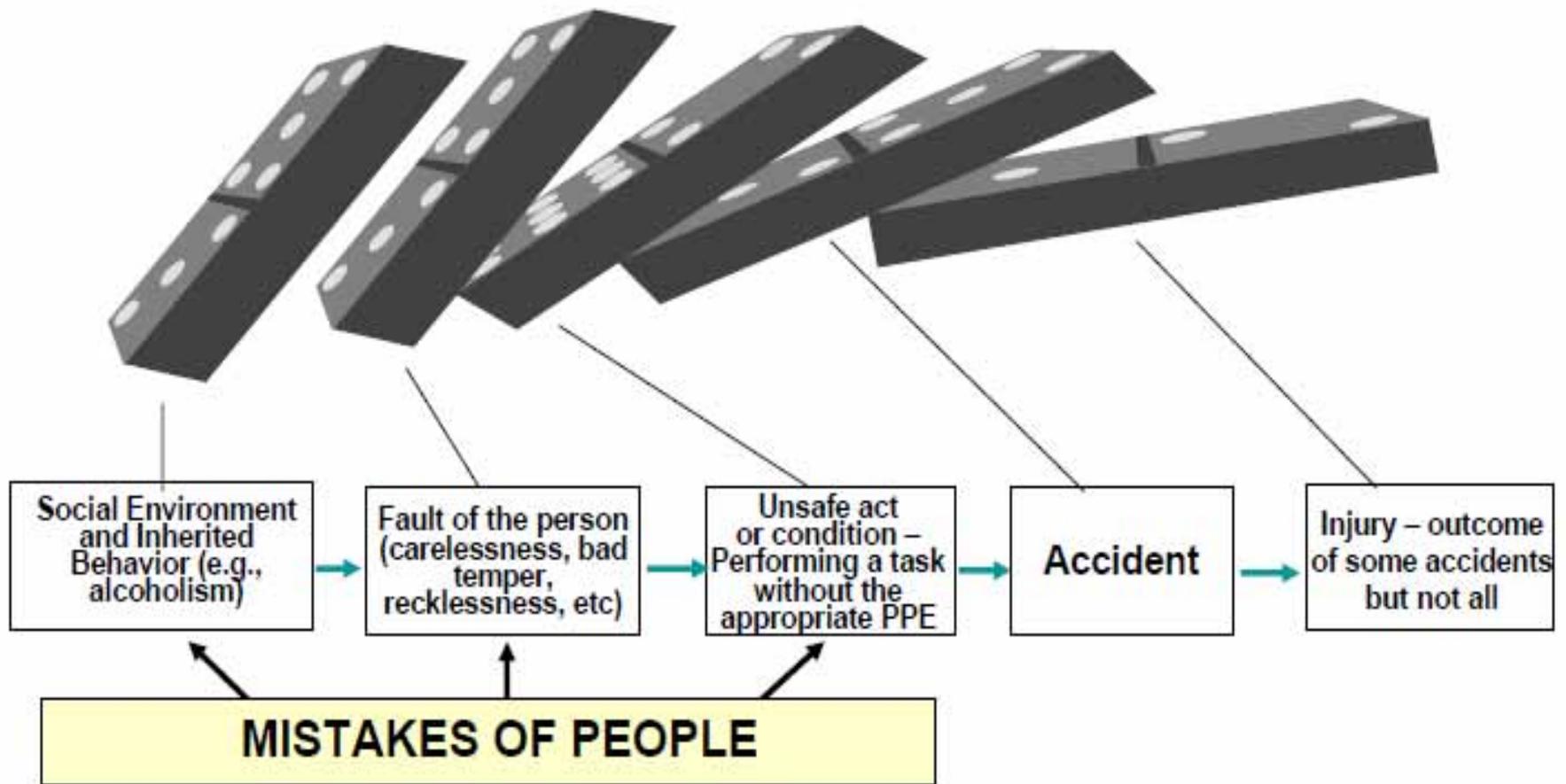


The Swiss cheese model?



1
ST

Most dangerous ideas in safety





**“...accident
waiting
to happen...”**





BOOM!

1000 40

1000 30

1000 20

1000 10

4000 100

4100



Explosive mixture in Tank 1

Critical level exceeded

Too much inflow from Tank 2

Control failed

Human Error

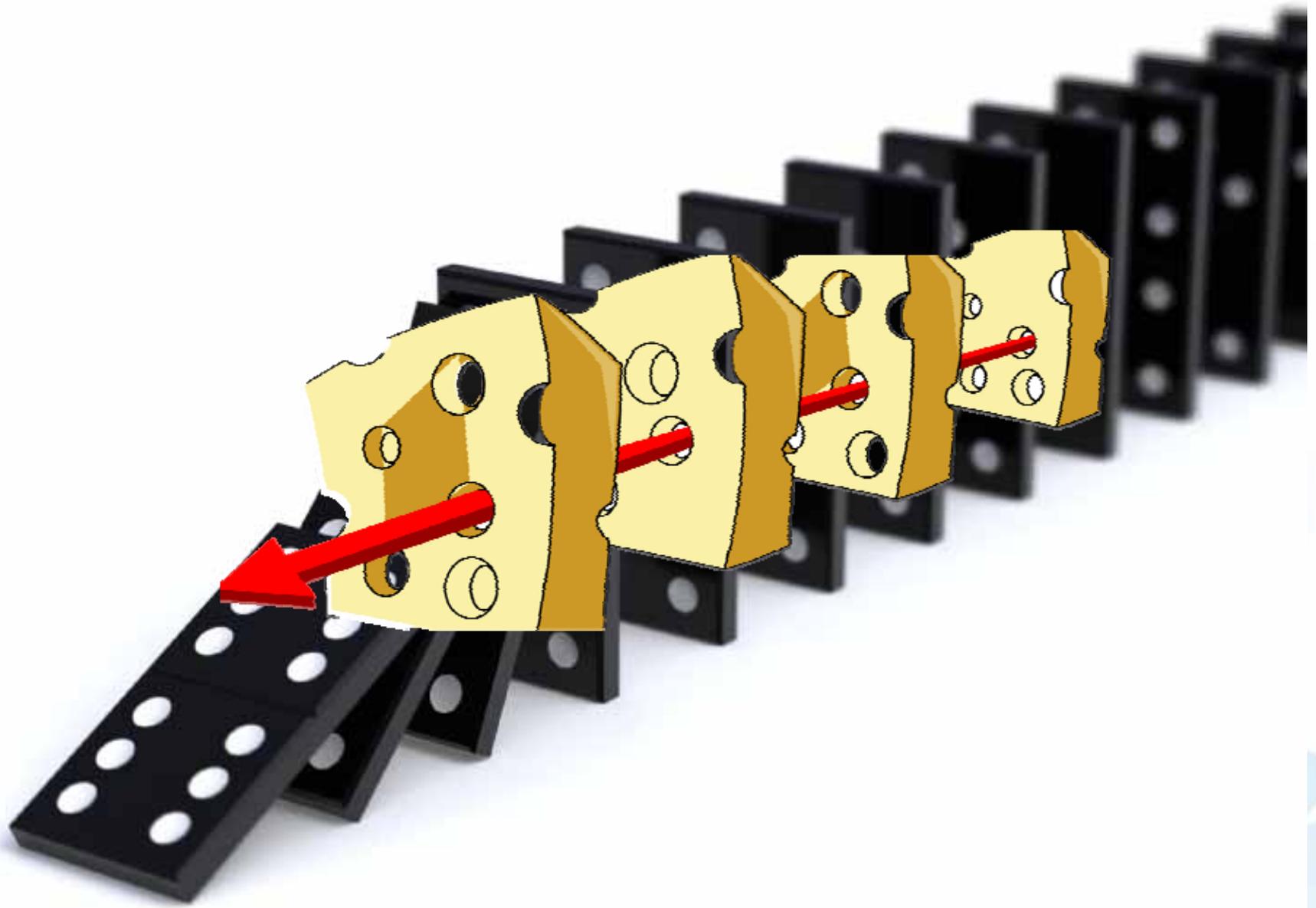
1 2 3 4
5 Why's

CHERNOBYL



**Safety is not rocket science...
It's far more complicated than that!**





1. The myth of simple causation



The Risk Matrix?

		Risk				
		1 Near Impossible	2 Unlikely	3 Notable Chance	4 Likely	5 Almost Certain
Severity	1 Insignificant	1	2	3	4	5
	2 Minor Injuries	2	4	6	8	10
	3 Notable Injuries	3	6	9	12	15
	4 Major Injuries	4	8	12	16	20
	5 Death	5	10	15	20	25

2ND

Most dangerous ideas in safety

1

		Risk				
		1 Near Impossible	2 Unlikely	3 Notable Chance	4 Likely	5 Almost Certain
Severity	1 Insignificant	1	2	3	4	5
	2 Minor Injuries	2	4	6	8	10
	3 Notable Injuries	3	6	9	12	15
	4 Major Injuries	4	8	12	16	20
	5 Death	5	10	15	20	25

RISK MATRIX

LIKELIHOOD		CONSEQUENCE				
Rating	Definition	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Common Occurrence	Significant	Significant	High	High	High
Likely	Known to Occur	Medium	Significant	Significant	High	High
Possible	Could Occur	Low	Medium	Significant	High	High
Unlikely	Not likely to Occur	Low	Low	Medium	Significant	High
Rare	Almost Impossible	Low	Low	Medium	Significant	Significant

CONSEQUENCE	INJURY	ENVIRONMENTAL	PRODUCTION	FINANCE
Insignificant	Not likely to cause injury.	Minor localised spill.	Zero effect on schedule.	Low financial loss (<\$1,000).
Minor	First Aid Case.	On-site release immediately contained.	Minor schedule adjustment.	Medium financial loss (>\$1,000-<\$10,000)
Moderate	Medical treatment or Restricted duties incident.	On-site release with detrimental short term effects. Off-site release immediately	Significant effect on schedule.	High financial loss (>\$10,000-<\$50,000)
Major	Lost time injury.	Off-site release with detrimental short term effects.	Major effect on schedule.	Major financial loss (>\$50,000-<\$100,000)
Catastrophic	Fatality or Permanent disability.	On or Off-site release with detrimental long term effects.	Production ceased.	Huge financial loss (>\$100,000)

RISK RATING	REQUIRED ACTIONS	JHEA APPROVALS
Insignificant	JHEA reviewed by Supervisor or leading hand.	Supervisor or L/Hand
Minor	Hazard controls reviewed by Supervisor.	Supervisor
Moderate	Hazard controls to be reassessed by Supervisor to reduce risk rating. Involvement by Operations Manager.	Supervisor
Major	Additional planning and risk assessment by Supervisor required. Involvement by Operations Manager / HSEQ Manager.	Operations Manager



the hazards or risks of the work.

the likelihood and consequences from the hazards or risks.

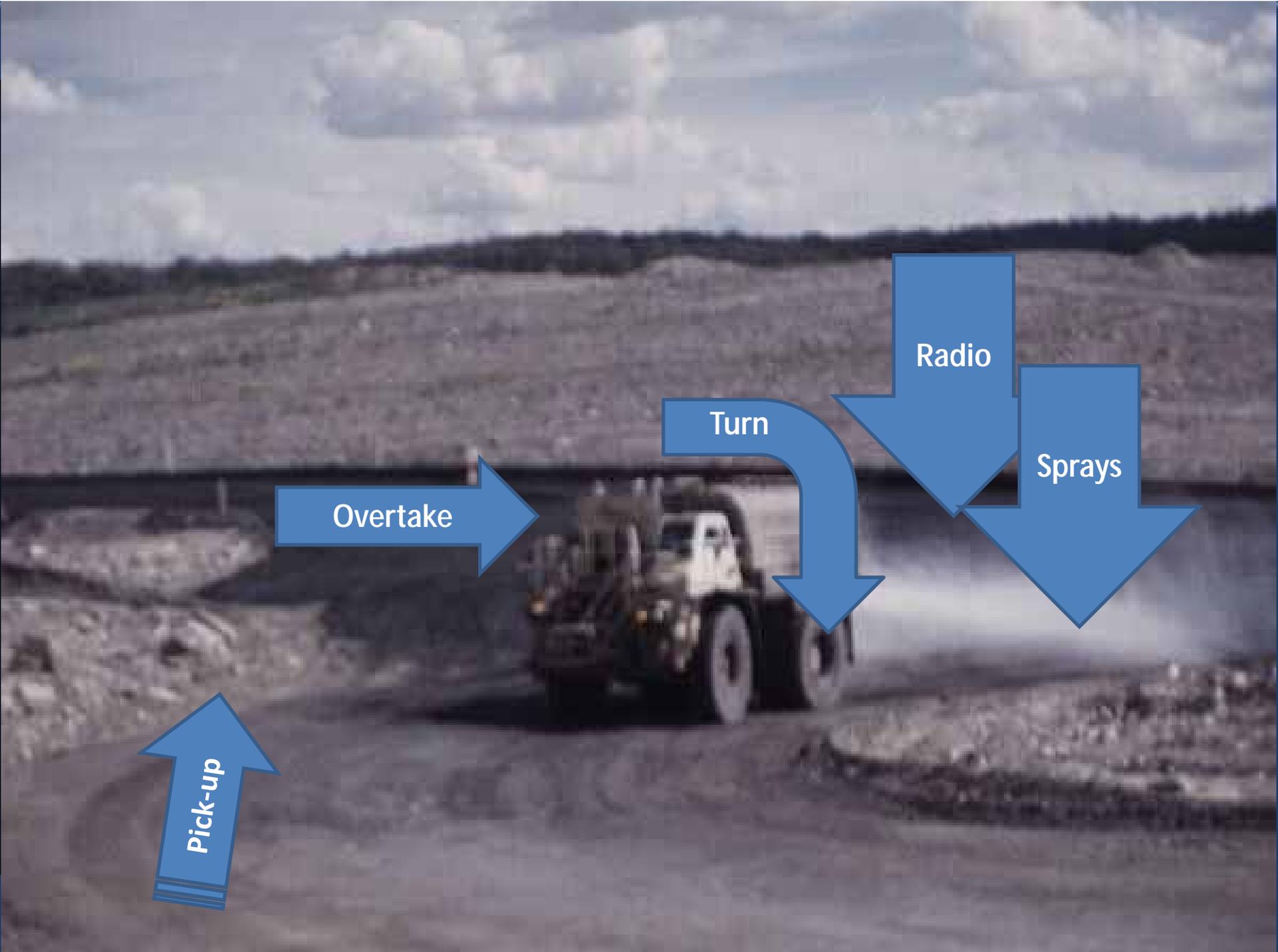
the hazards or risks using the Control Options.

LEGEND		CONSEQUENCE					
		Insignificant No Injury 0 - Low \$ Loss	Minor First Aid Injury Low - Medium \$ Loss	Moderate Medical Treatment Medium - High \$ Loss	Major Serious Injuries Major \$ Loss	Catastrophic Death Huge \$ Loss	
E	Extreme risk, immediate action required	ALIKELIHOOD					
		Almost Certain is expected to occur at most times 1 in 10	H - 40	H - 48	E - 72	E - 84	E - 100
H	High risk, prioritised action required	Likely will probably occur at most times 1 in 100	M - 24	H - 44	H - 56	E - 80	E - 96
		Possible might occur at some time 1 in 1,000	L - 12	M - 28	H - 52	E - 76	E - 92
M	Moderate risk, planned action required	Unlikely could occur at some time 1 in 10,000	L - 8	L - 20	M - 36	H - 64	E - 88
		Rare May occur in rare circumstances 1 in 100,000	L - 4	L - 16	M - 32	H - 60	H - 68
L	Low risk, actioned by routine procedures						

The problem of 'risk migration'

Risk Migration





Pick-up

Overtake

Turn

Radio

Sprays



A large, billowing plume of white smoke or ash rises from a dark base against a black background. The plume is composed of many smaller, rounded clouds that merge together, creating a dense, textured appearance. Several thin, dark lines, possibly ash or smoke, trail downwards from the base of the plume.

1. The myth of simple causation

2. The illusion of risk control

Behavior-Based Safety?



3

RD
B

Most dangerous ideas in safety



Fatigue

Complacent

Careless

Rushing

Attitude

Distraction

Frustration



It's all about human behavior!

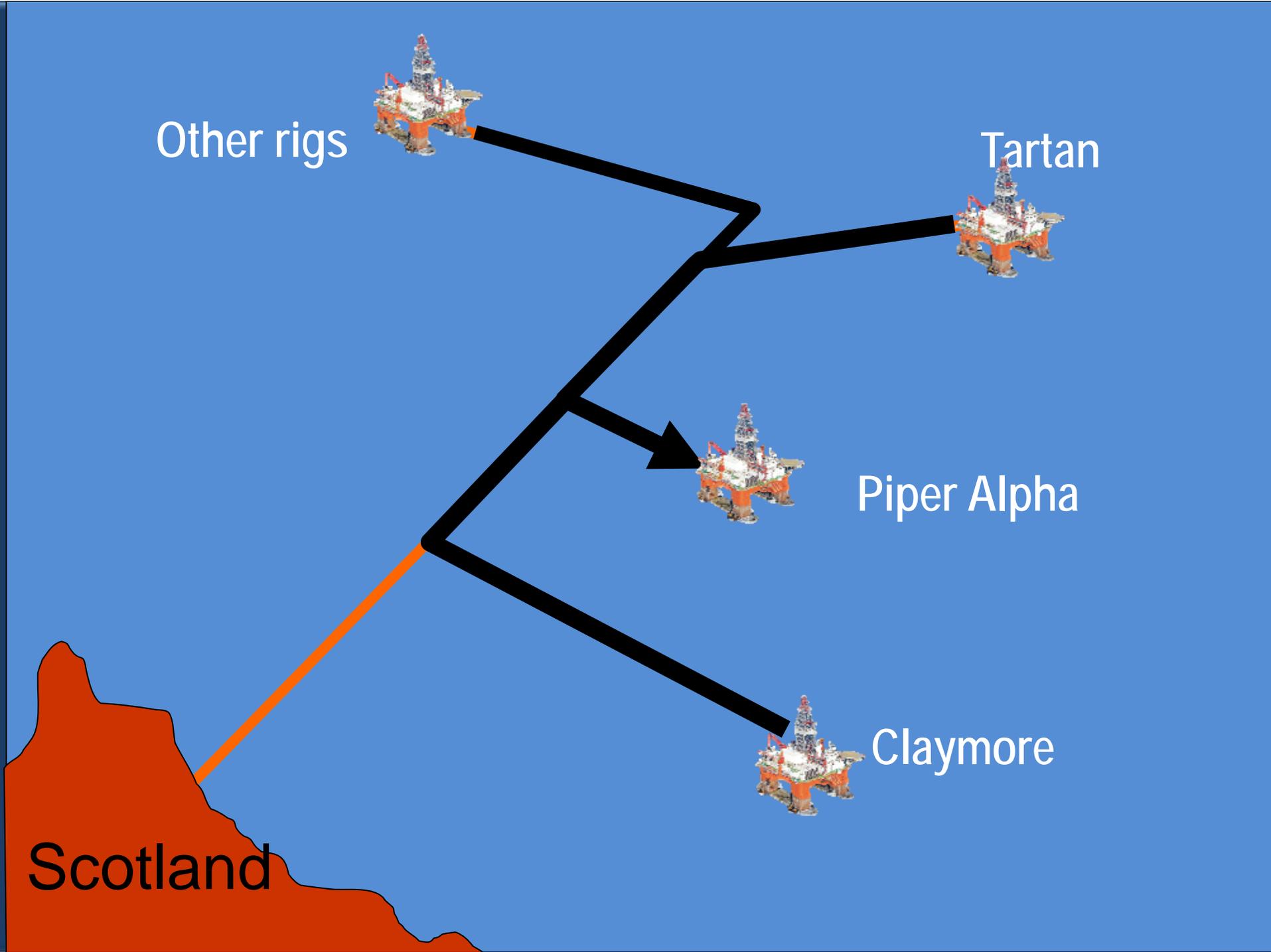
- Inattentive
- Incompetent
- Erratic
- Biased
- Violating

- Lapsing
- Forgetful
- Unreliable
- Inconsistent
- Rigid









Other rigs

Tartan

Piper Alpha

Claymore

Scotland

Why

Reasons for risk-taking:

. Overlooked

Risk not seen, visible or recognized

. Underestimated

Misjudged likelihood, exposure or potential impact

. Rewarded/Penalized

Incentives to take short cuts, easier, quicker etc.

. Inherent

The risk is inherent to process, system, resource constraints

. Balanced

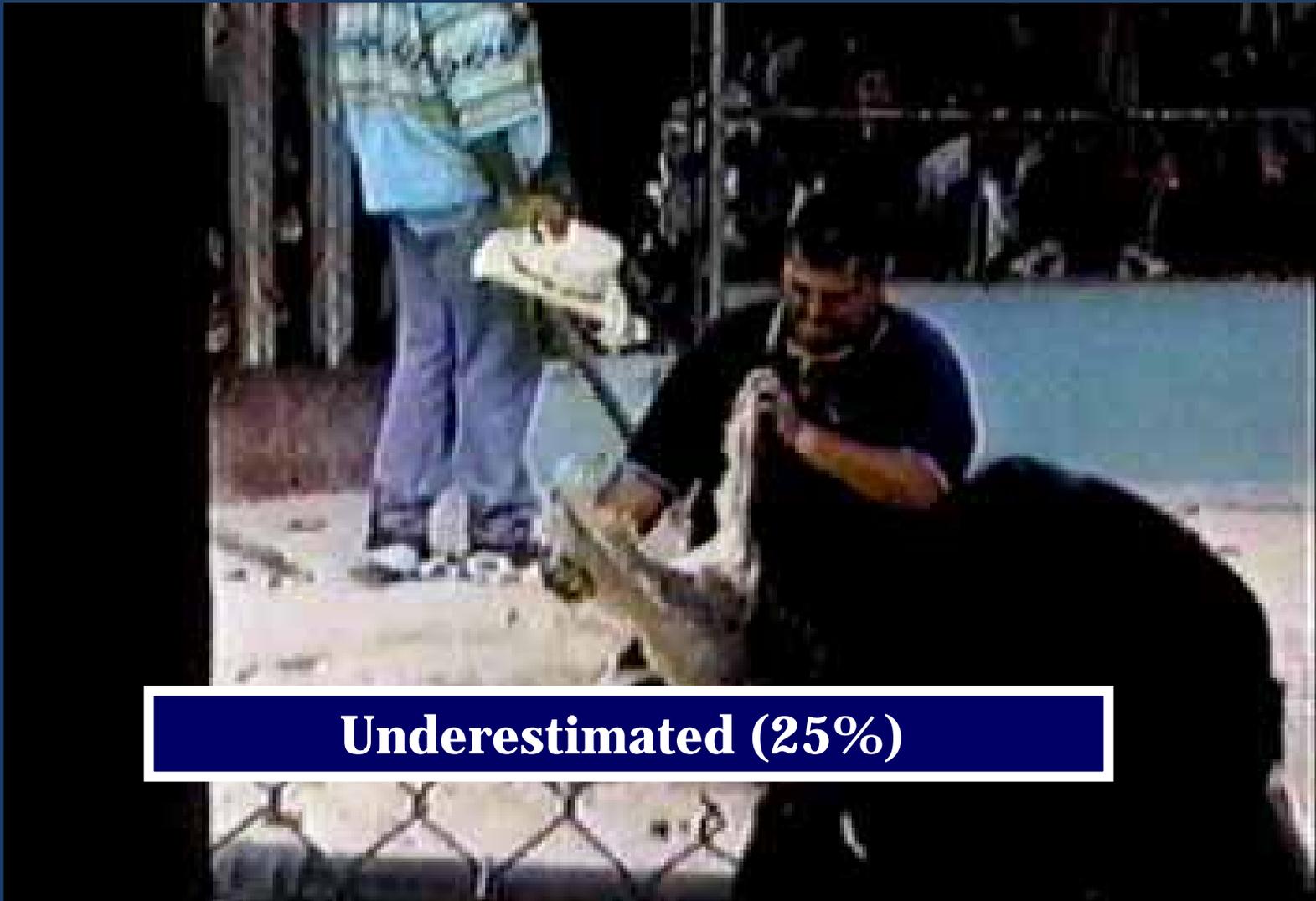
Consequence of production pressure, necessary

. Tolerated

Person(s) accept, tolerate and ignore risks



Overlooked (12%)



Underestimated (25%)



Rewarded/Penalized (6%)

Inherent (14%)

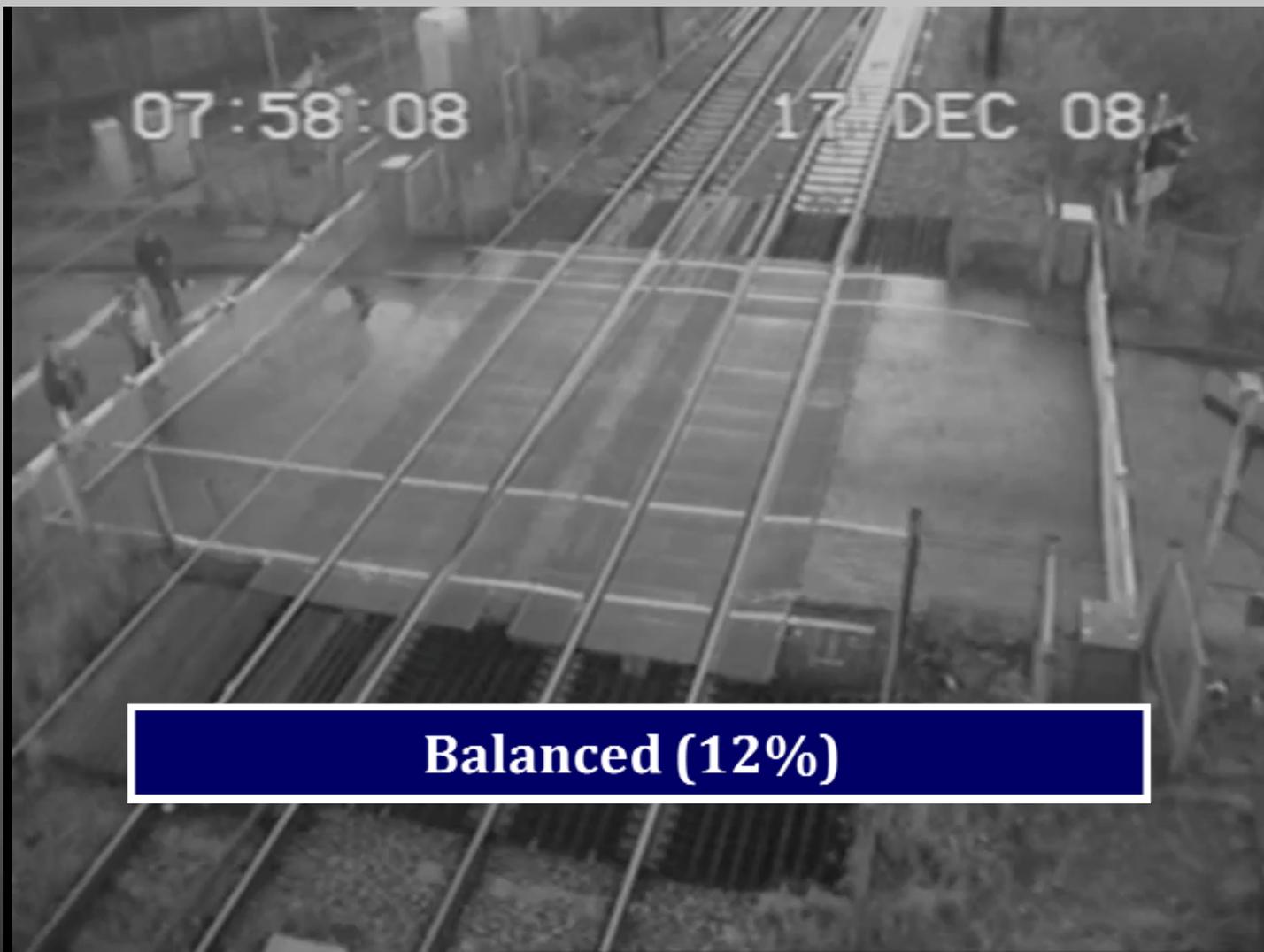


HOSTED AT
NOTHINGTOXIC.COM

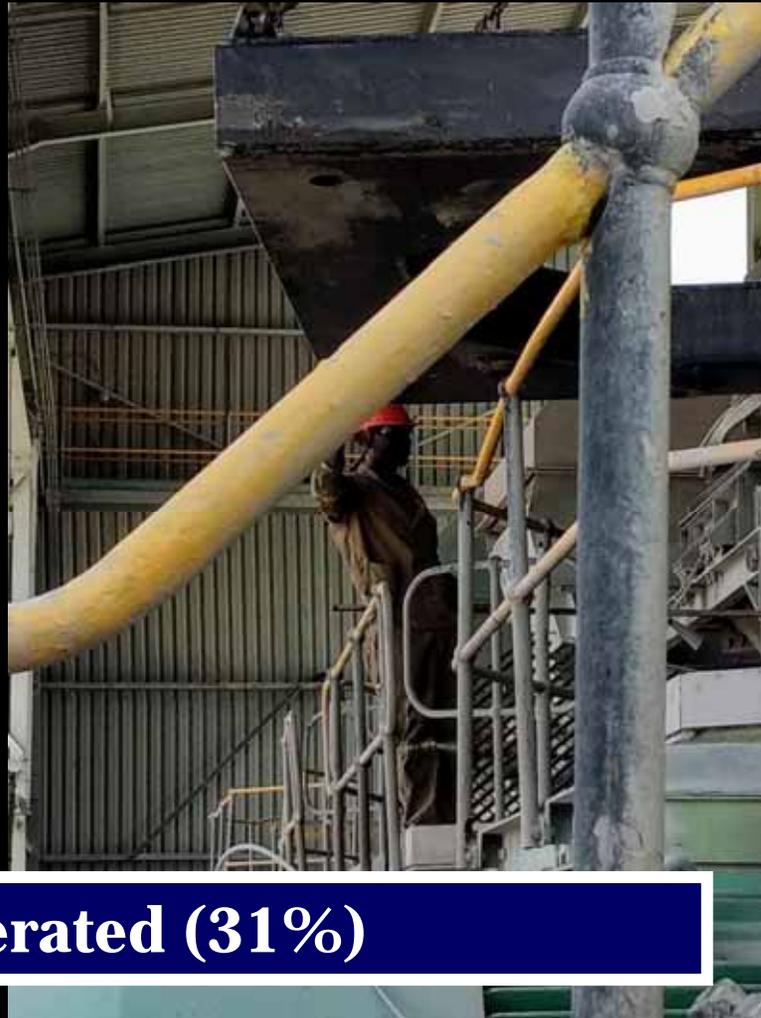
07:58:08

17 DEC 08

Balanced (12%)



Lifting



Tolerated (31%)

6 Why

Reasons for risk-taking:	Frequency
1. Overlooked <i>Risk not seen, visible or recognized</i>	12%
2. Underestimated <i>Misjudged likelihood, exposure or potential impact</i>	25%
3. Rewarded/Penalized <i>Incentives to take short cuts, easier, quicker etc.</i>	6%
4. Inherent <i>The risk is inherent to process, system, resource constraints</i>	14%
5. Balanced <i>Consequence of production pressure, necessary</i>	12%
6. Tolerated Person(s) accept, tolerate and ignore risks	31%

All Carpet Company



Darryl





What should Darryl do?...





1. The myth of simple causation

2. The illusion of risk control

3. The error of human error

Humans:



The WEAKEST link in the safety chain

A 3D rendered image of a chain with several silver links and one prominent gold link in the center. The chain is set against a white, rounded rectangular background with a soft shadow. The gold link is significantly larger and more detailed than the silver links, symbolizing strength or a critical component.

Humans:

The STRONGEST link in the safety chain

As humans, we can (uniquely) be:

- Enduring
- Compassionate
- Imaginative
- Sacrificing
- Conquering

- Heroic
- Inventive
- Inspirational
- Intuitive
- Adaptive

Standard Operating Procedure?

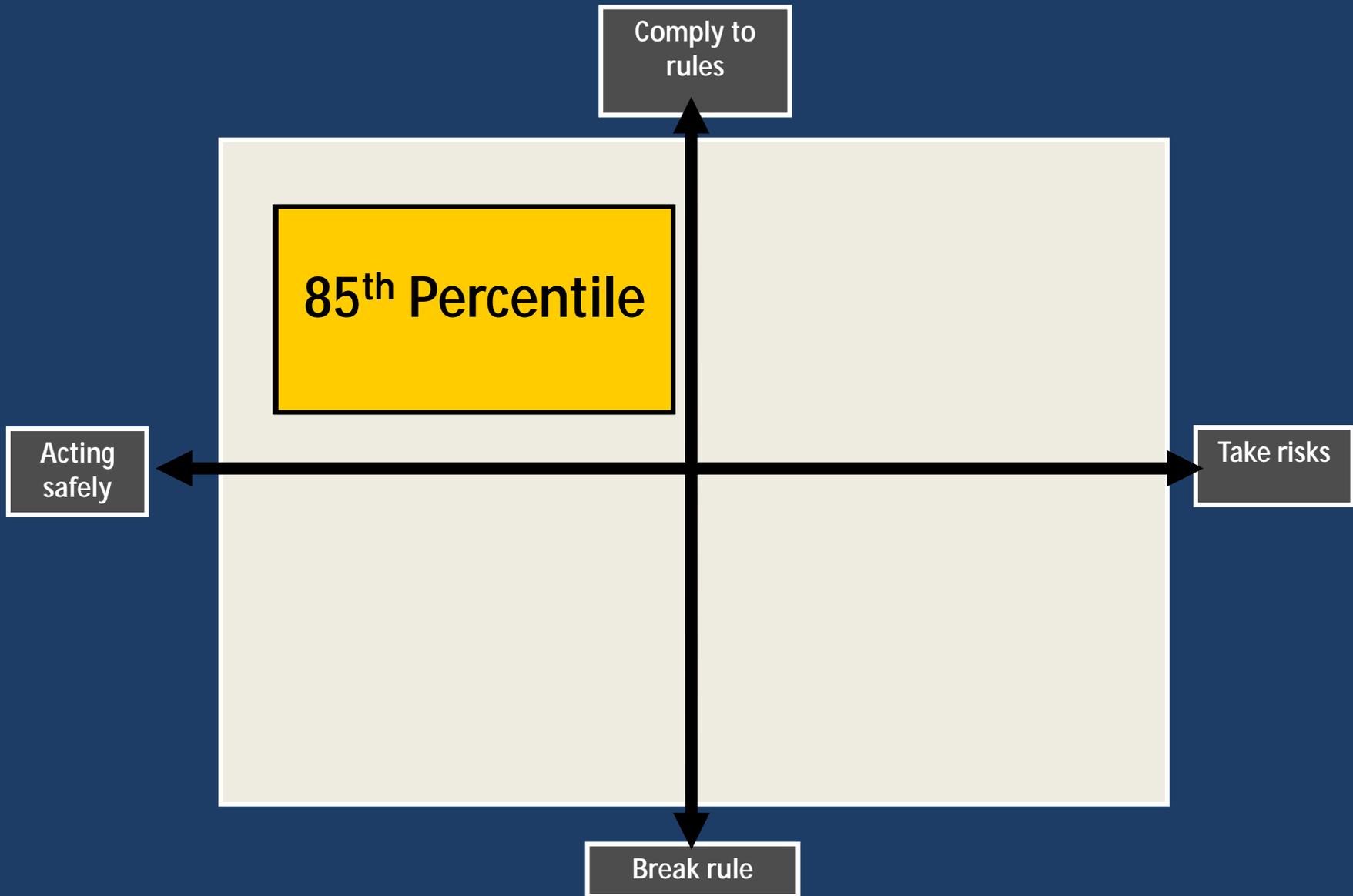


4TH

Most dangerous ideas in safety

Cambridgeshire Police Road Safety







“The quickest way to get you killed on a manned space flight is to not follow standard operating procedure”

Karol Joseph "Bo" Bobko
Space Shuttle Pilot on 3 missions

“The second quickest way to get you killed... is to always follow standard operating procedure”





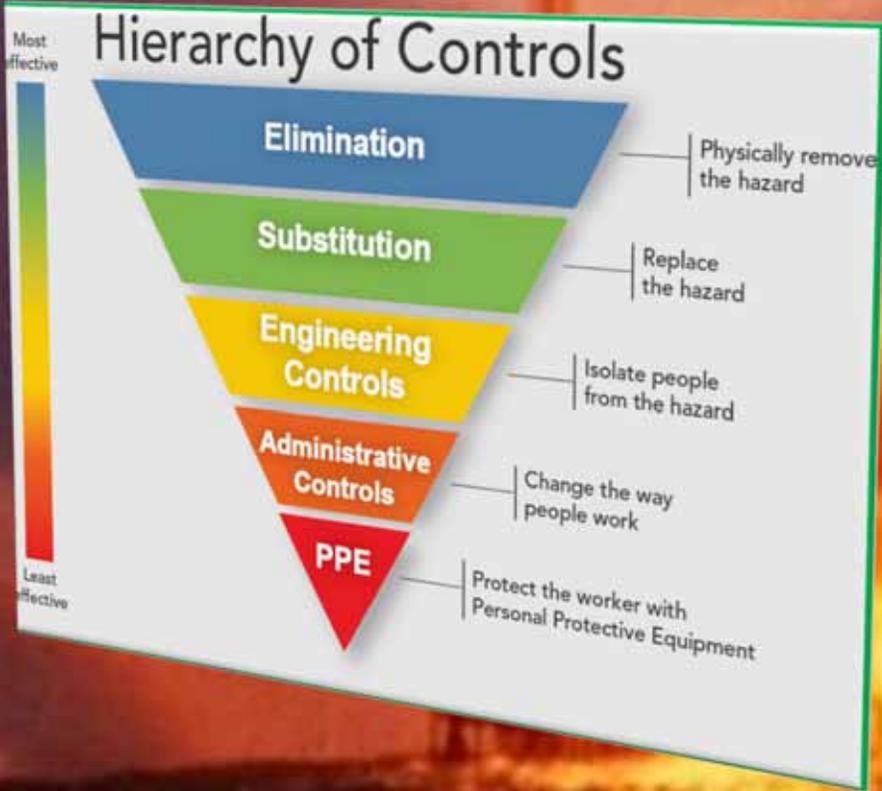
1. The myth of simple causation

2. The illusion of risk control

3. The error of human error

4. The cult of compliance

Hierarchy of Control?



5

TH

Most dangerous ideas in safety

Swedish Switchover 3 September 1967



50
45
40
35
30
25
20
15
10
5



1960 1965 **1967** 1975 1980 1990



RISK HOMEOSTASIS THEORY (RHT)

"Homeo" - Similar to

"Stasis" - Equilibrium from opposing forces

- sometimes called Risk Compensation

Risk homeostasis was proposed in 1982 by Gerald J. S. Wilde, who introduced the idea of the target level of risk.



EXPECTED BENEFITS OF SAFE BEHAVIOUR

insurance discounts, all good things

EXPECTED BENEFITS OF RISKY BEHAVIOUR

gaining time, fighting boredom, increasing mobility

TARGET RISK
(driving)

EXPECTED COSTS OF SAFE BEHAVIOUR

uncomfortable seat belt, called a coward, time loss

EXPECTED COSTS OF RISKY BEHAVIOUR

spending tickets, car repairs, insurance surcharges



Risk Homeostasis

23% Closer



23% Closer

Yogi Berra

The future...
...ain't what it used to be



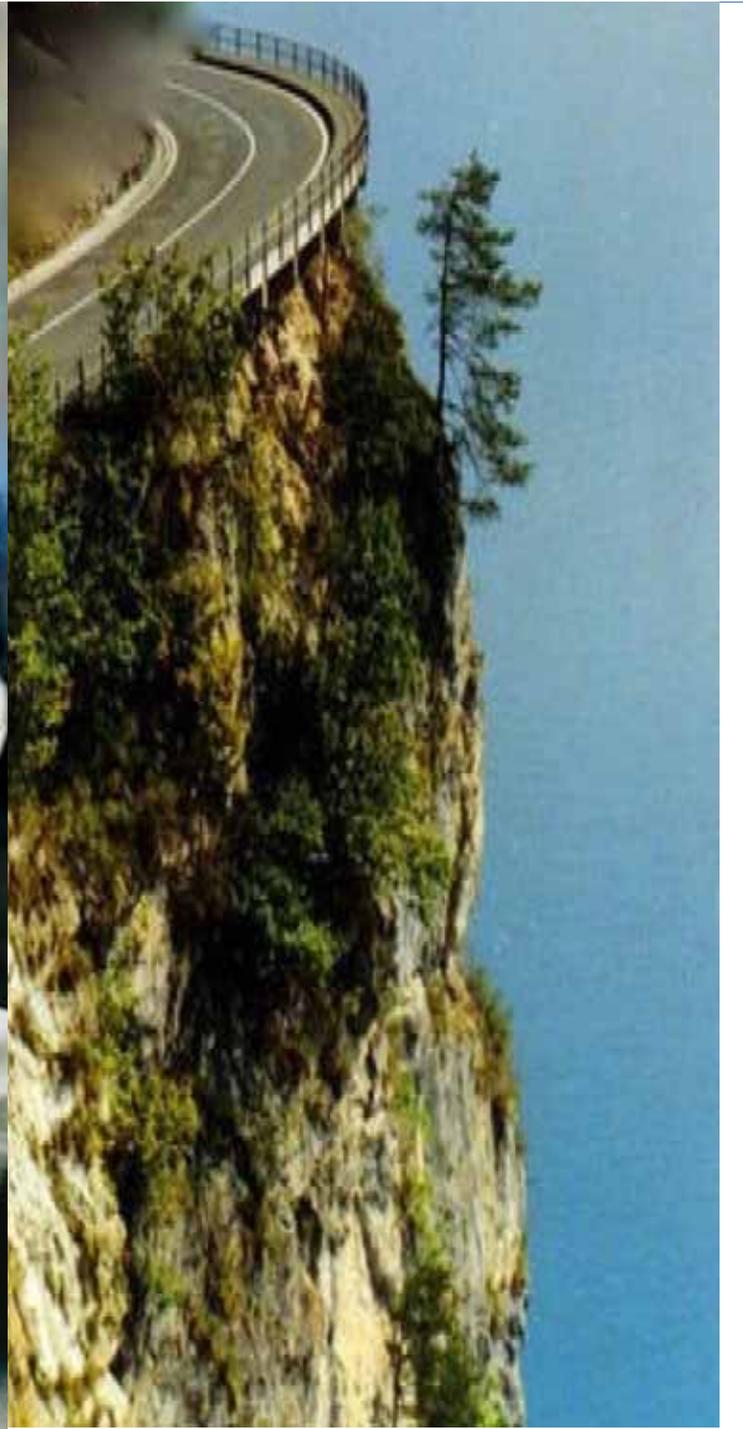
Drive

Volvo promises deathproof cars by 2020





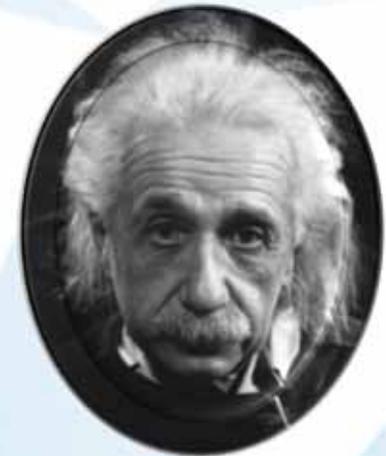








I fear the day that technology will surpass our human interaction. The world will have a generation of idiots."





1. The myth of simple causation

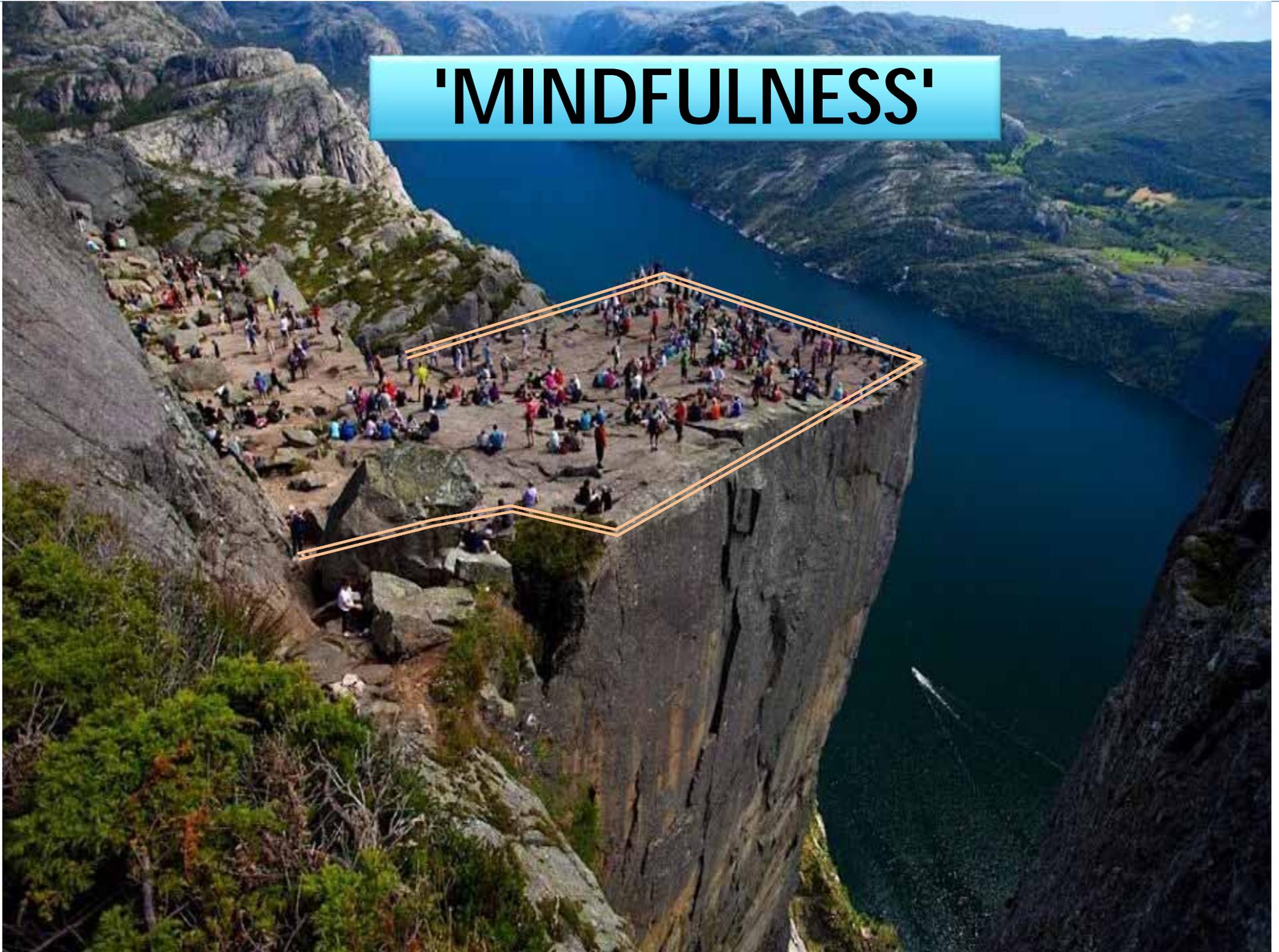
2. The illusion of risk control

3. The error of human error

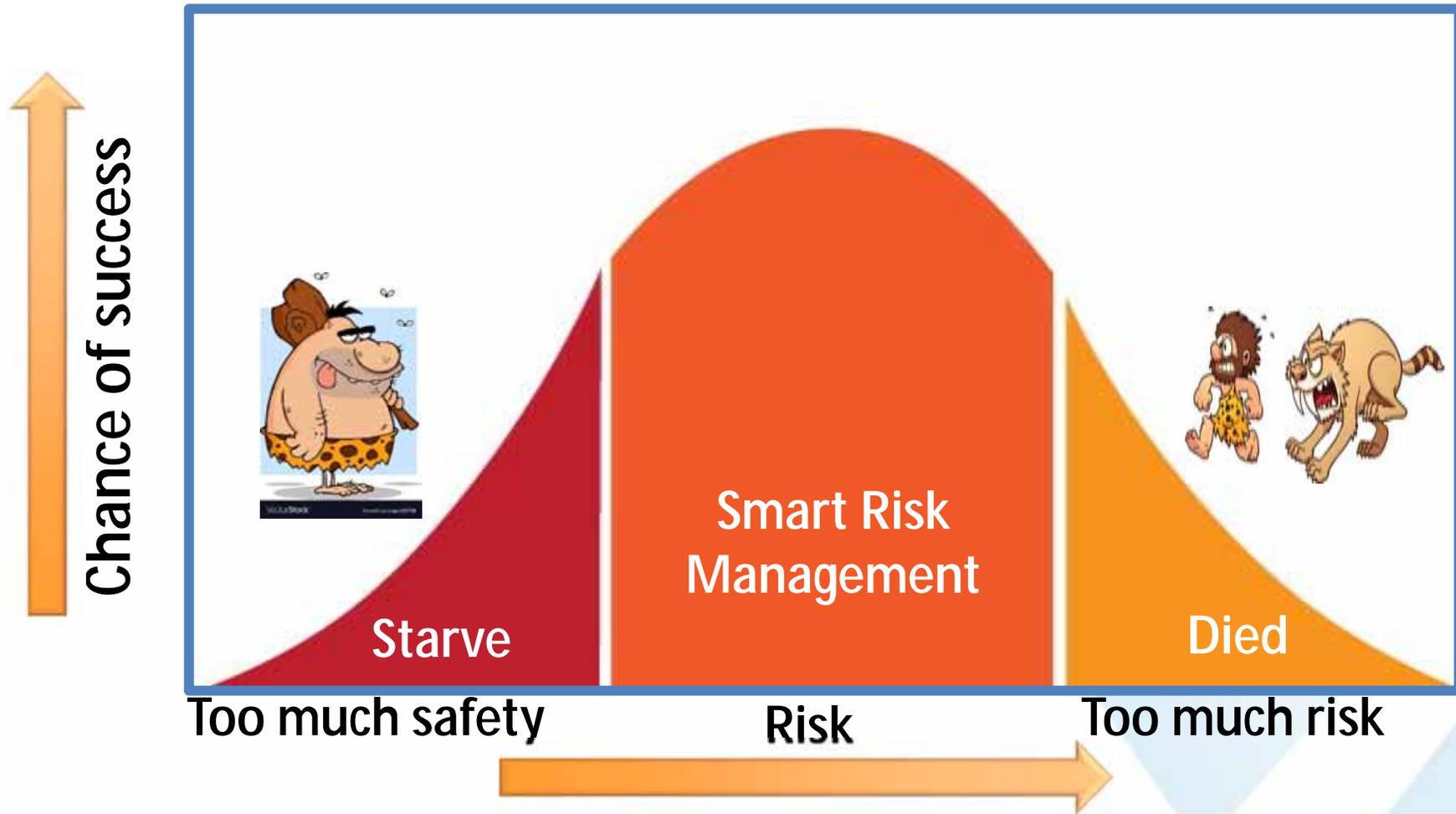
4. The cult of compliance

5. The paralysis of protection

'MINDFULNESS'



Human Behavior in Hazardous Situations



**Paralyzed
by their
protection**

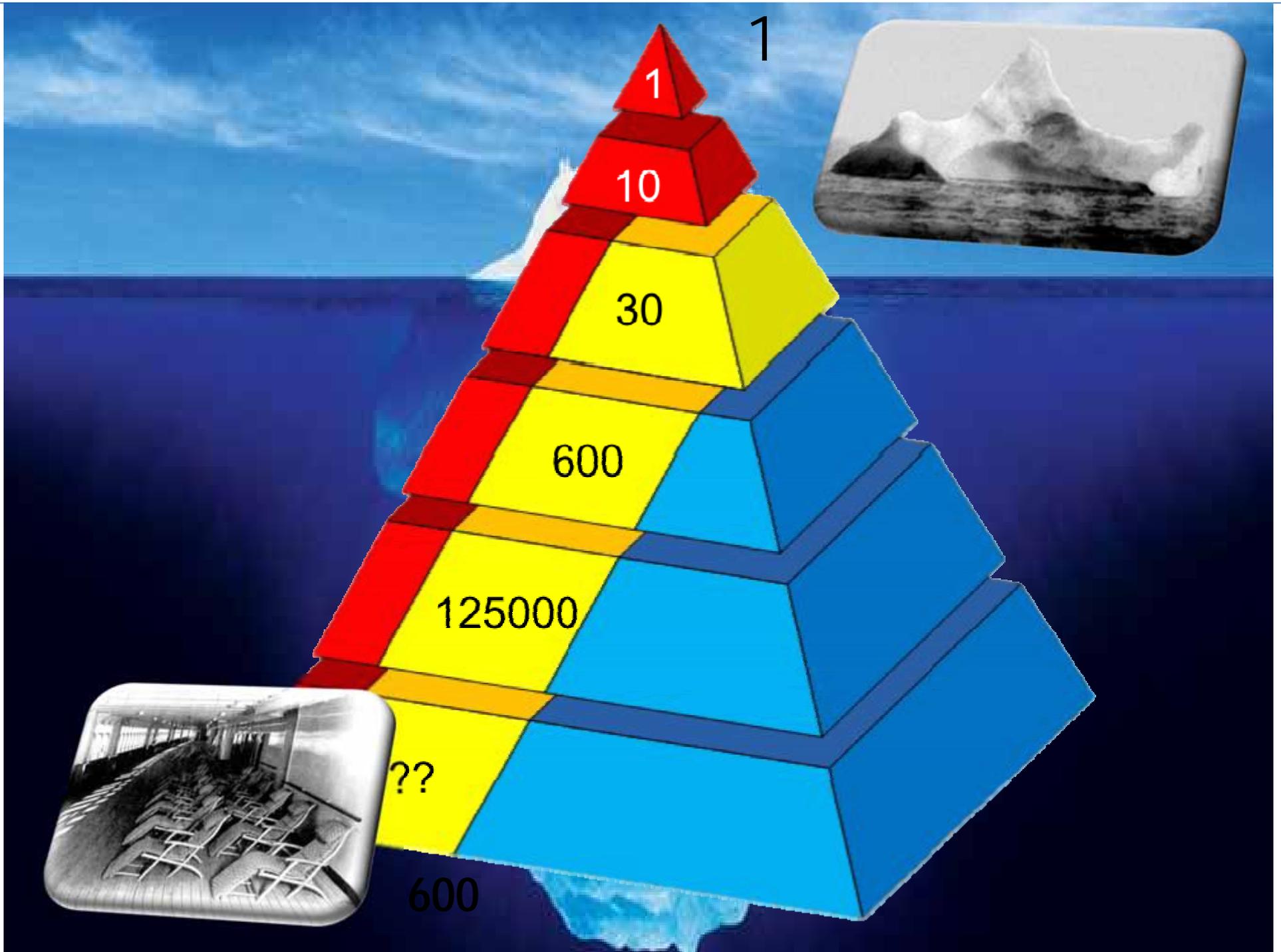
The target of ZERO?

Zero

6

TH

Most dangerous ideas in safety



The math trap

Fatalities 0

Serious injuries 0

Minor injuries 0

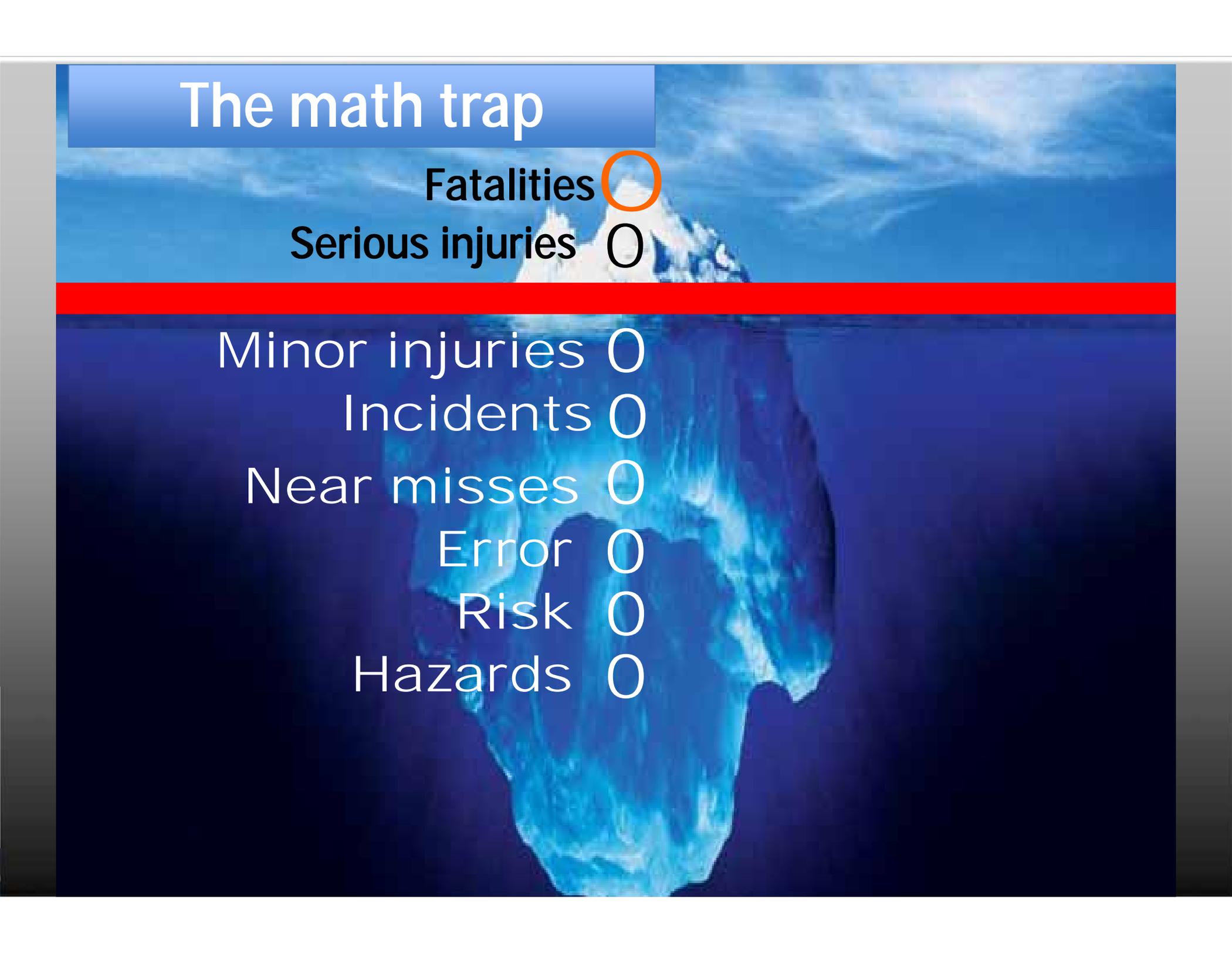
Incidents 0

Near misses 0

Error 0

Risk 0

Hazards 0



The 'safe' trap

Zero = Safe?



SA UEHA 01



SA UEHA 01



SA UEHA 01



1. The myth of simple causation

2. The illusion of risk control

3. The error of human error

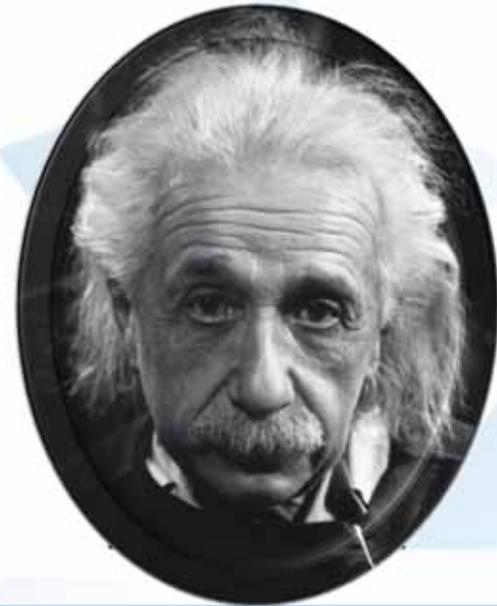
4. The cult of compliance

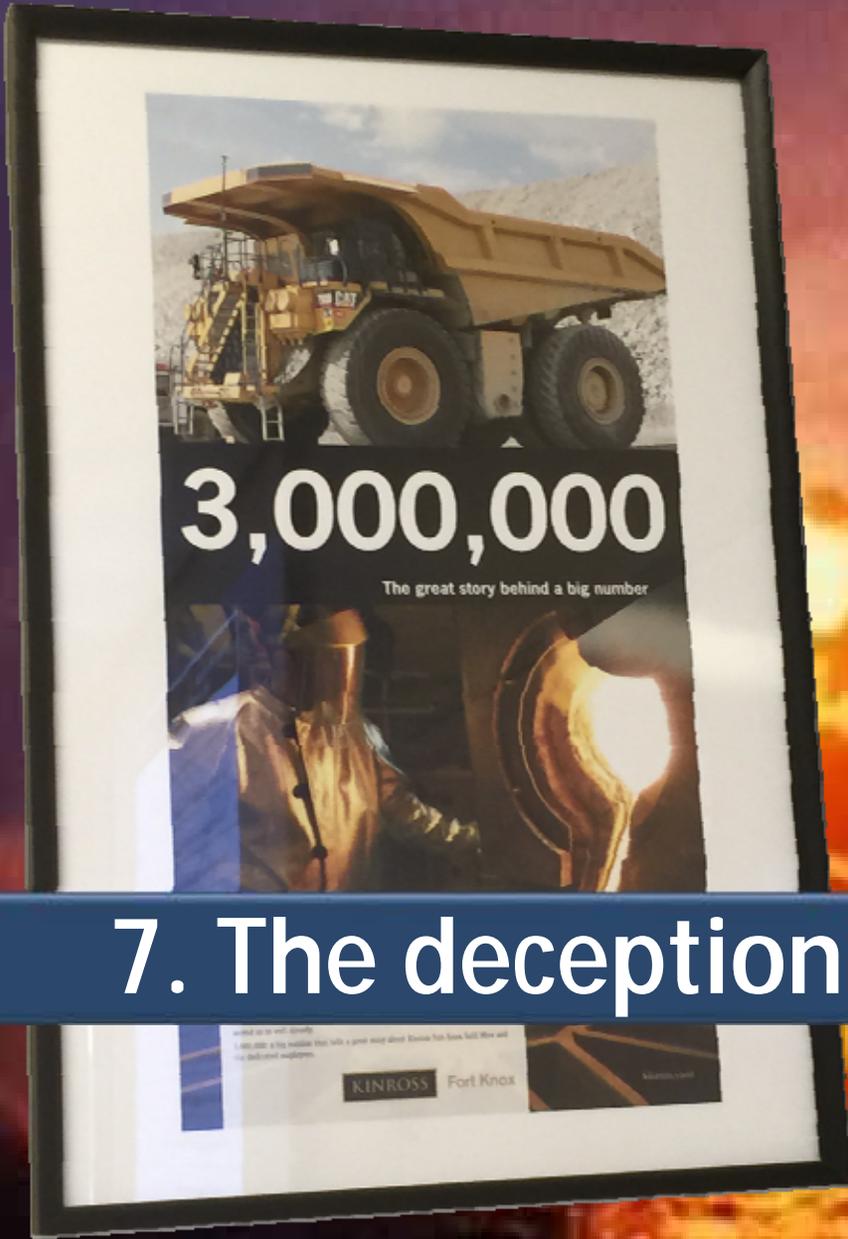
5. The paralysis of protection

6. The trap of targets

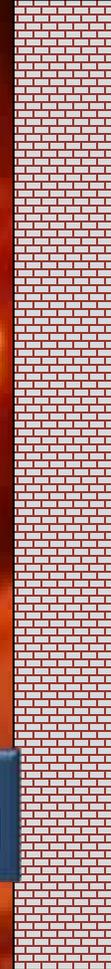
**Not everything that
can be counted, counts**

**Not everything that counts,
can be counted**





7. The deception of pretention



What gets measured gets done...



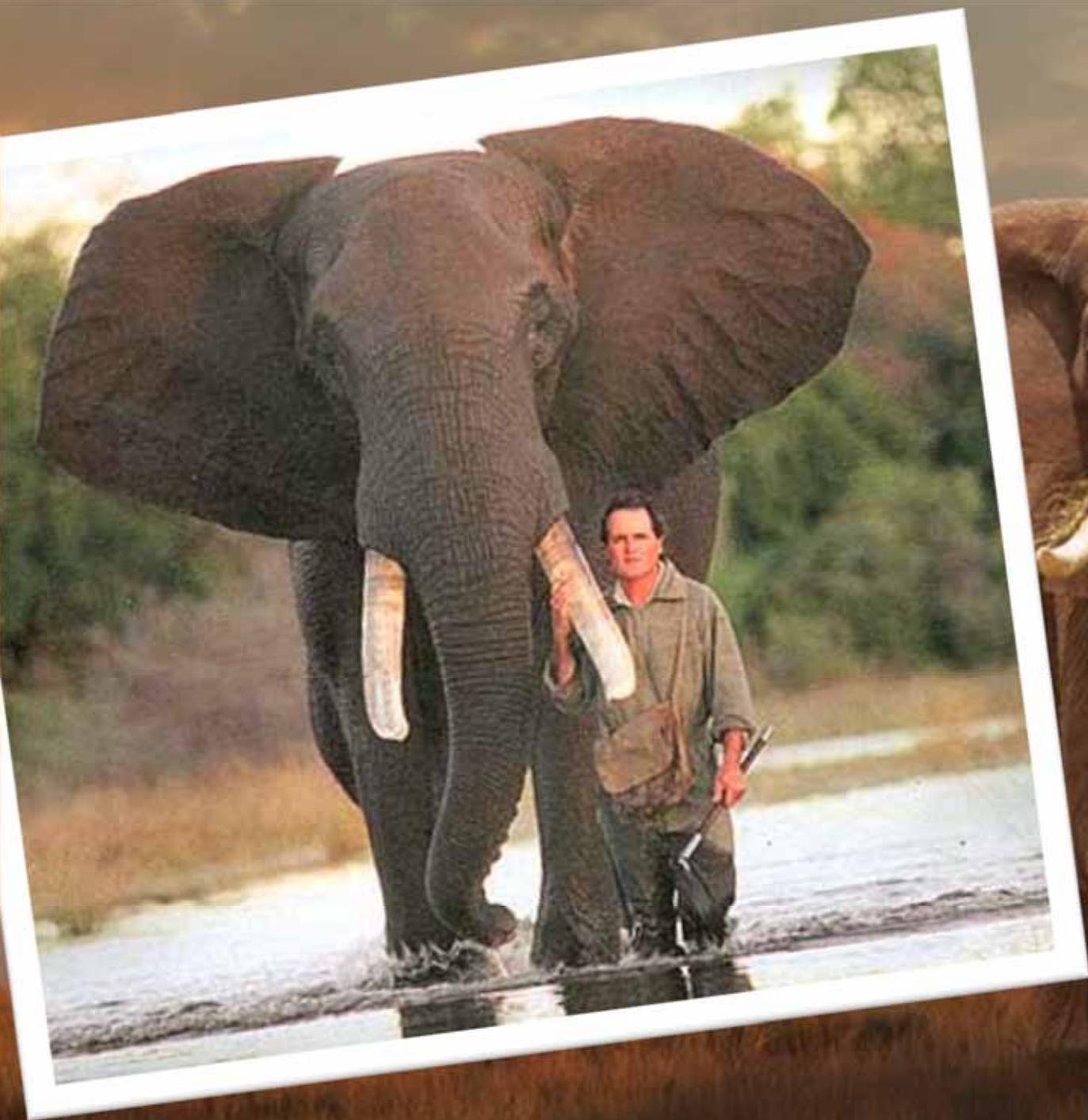


Risk secrecy

GOOD
NEWS

BAD NEWS

DISTORTED
NEWS



“I thought that everything was OK...
because I never got a report that
anything was wrong...”

--Manager: Piper Alpha

“Risk secrecy”







BP executives awarded bonuses despite Deepwater Horizon disaster

BP said the extra payments were justified because Byron Grote and Iain Conn had hit their divisional targets



Transocean Execs Get Bonuses after 'Best Year in Safety,' Despite Gulf Oil Disaster

[+ Comment Now](#) [+ Follow Comments](#)

UPDATED April 5 with apology from Transocean.

Transocean Ltd., owner of the Deepwater Horizon oil rig, awarded millions of dollars in bonuses to its executives after “the best year in safety performance in our company’s history,” according to an annual report and proxy statement released yesterday.



Image via Wikipedia



What get's measured, gets done
What gets measured...
get's manipulated.



1. The myth of simple causation

2. The illusion of risk control

3. The error of human error

4. The cult of compliance

5. The paralysis of protection

6. The trap of targets

7. The delusion of invincibility



Towards zero

1. The myth of simplicity
2. The illusion of risk control
3. The error of human error
4. The cult of compliance
5. The paralysis of protection
6. The trap of targets
7. The deception of pretention

Beyond zero

- Focus on complex exposure
- Dynamic random systems
- Humans the strongest link
- Deference to autonomy
- Create invisible safety
- Readiness to respond to risk
- Resilience through leadership

Questions and answers...