HUMAN AND ORGANIZATIONAL PERFORMANCE ON THE WATERFRONT

Jeffery Lyth

NMSA 2023

December 2, 2010

Investigations underway in Vancouver after two workers killed in separate incidents

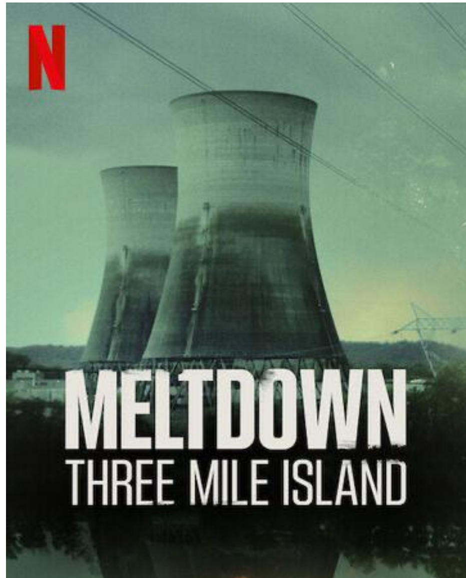
Construction accidents overshadow declining injury rate

January 20, 2012

Explosion and fire decimates Babine Forest Products sawmill

April 23, 2012

Two dead, 22 injured after massive explosion destroys Prince George sawmill



(March 28, 1979)

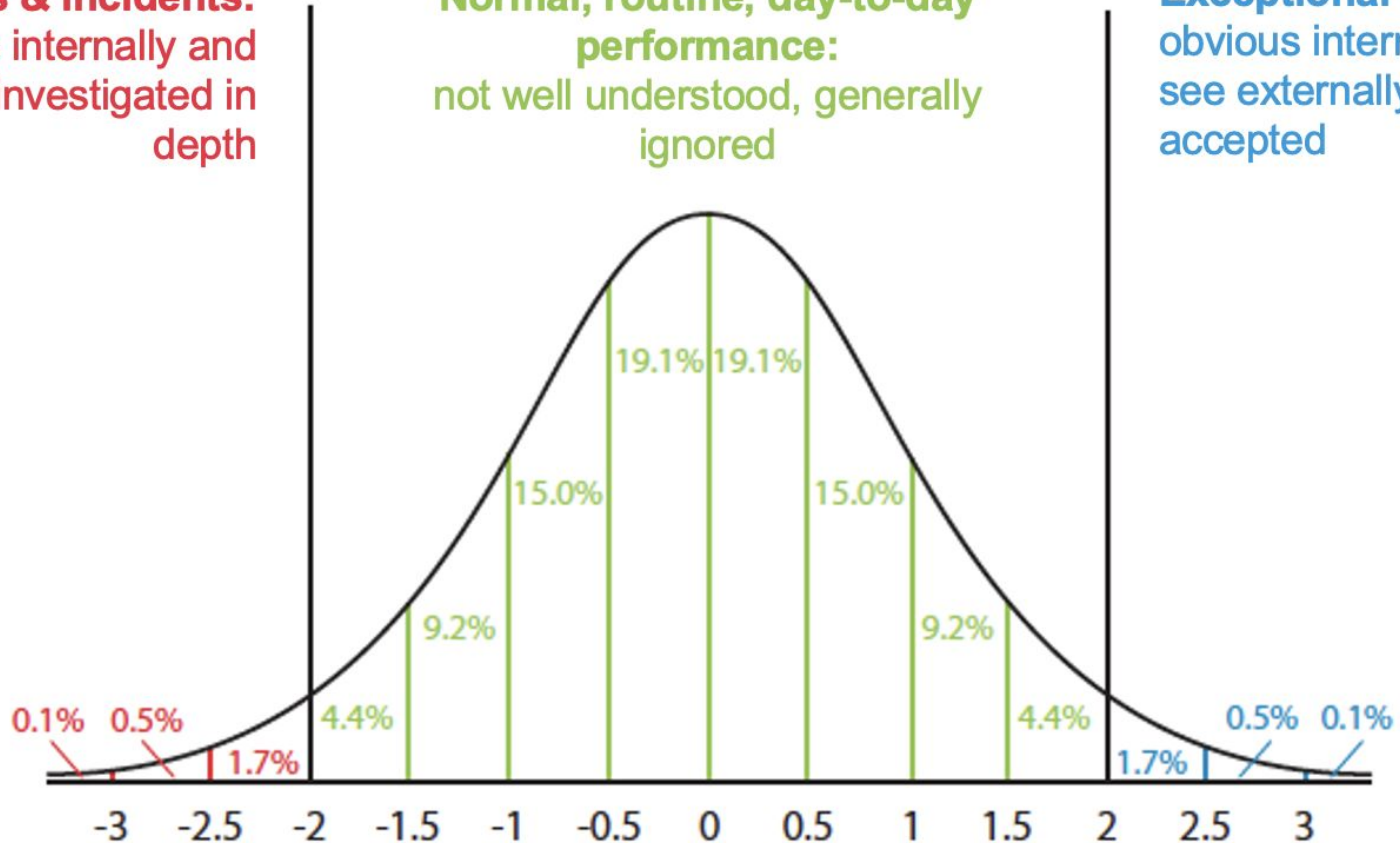
(January 28, 1986)

(April 26, 1986)

(Feb 1, 2003)

(April 20, 2010)

(October ’18/March ’19)



Shorrock

Injury/Claims Rate

Safety Officer Requirement

Safety Program Incentive Audit

Injury Management Programs

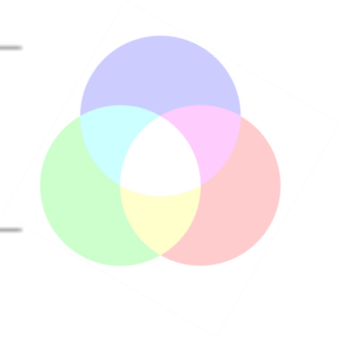
Serious/Fatality Rate

INJURY RATE (per 100 Person years)

14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0

1986 1996 2006 2016

YEAR



Parametric and non-parametric statistical analysis data revealed that:

01. There is no discernible association between Total Recordable Incident Rate (TRIR) and fatalities;

02. The occurrence of recordable injuries is almost entirely random;

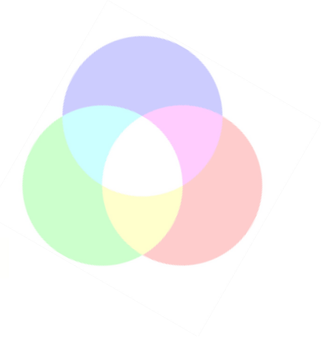
03. TRIR is not precise and should not be communicated to multiple decimal points of precision; and

04. In nearly every practical circumstance, it is statistically invalid to use TRIR to compare companies, business units, projects, or teams.

17 YEARS OF

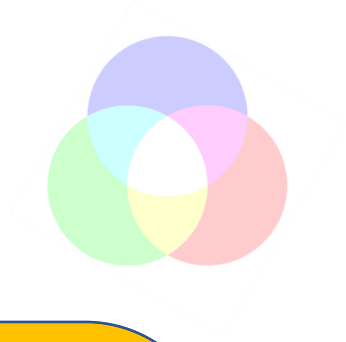
DATA &

TRILLION WORKER HOURS



‘The Statistical Invalidity of TRIR as a Measure of Safety Performance’ from the CRSA–University of Colorado Boulder

Safety I



Insurance

The pursuit of lower claims costs leads to:

- Separation from critical risk
- A withholding of good care
- TRIFR and ‘zero’ studies

Enforcement

The pursuit of compliance leads to:

- Separation from complex risk
- People judged and blamed
- Concealment

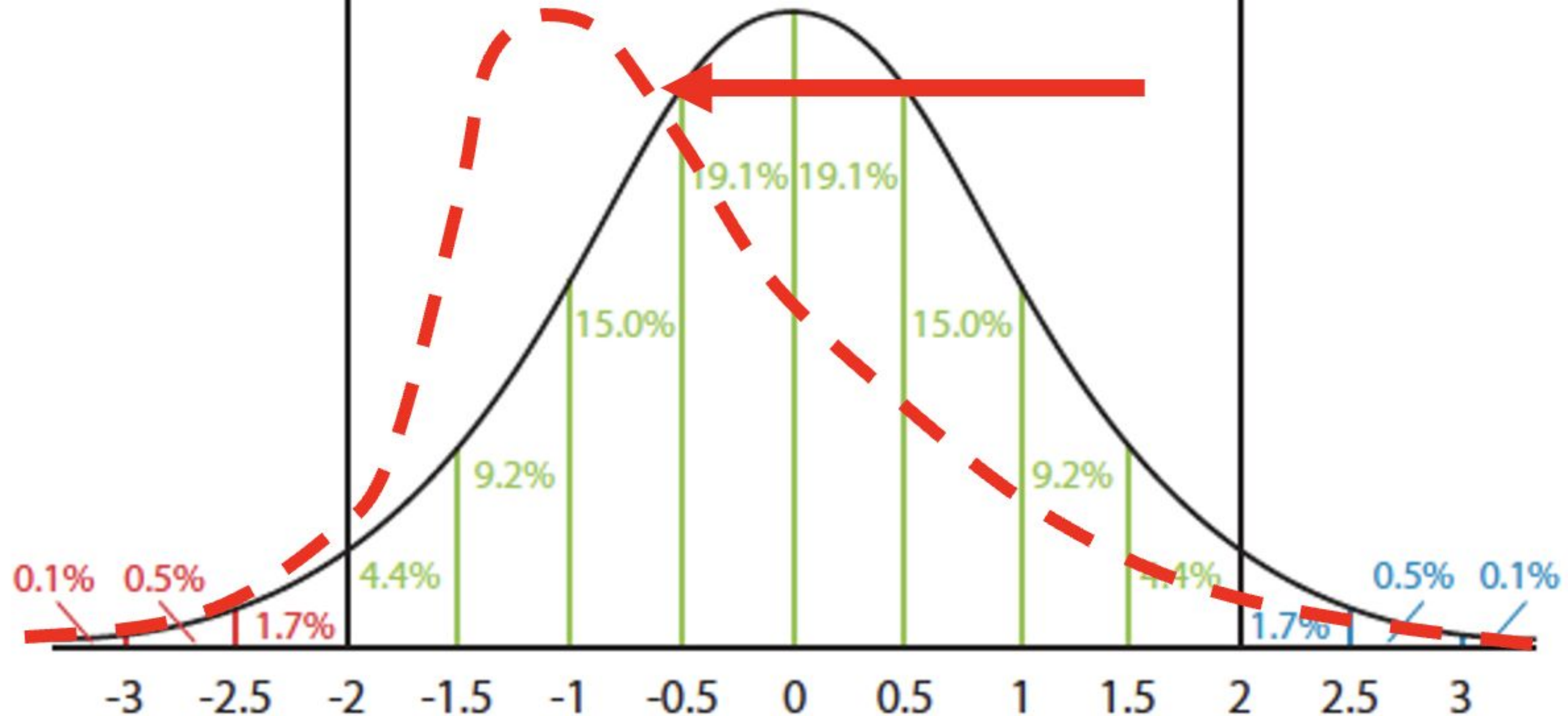
Investigation

- When required
- ‘Prevent reoccurrence’:
- We seek to find fault
- Counterfactual conclusions
- Internalized retribution
- Use ‘proxy measures’

Accidents & incidents: obvious internally and externally, investigated in depth

Normal, routine, day-to-day performance: not well understood, generally ignored

Exceptional performance: obvious internally, hard to see externally, gratefully accepted



Shorrock

1982 J. Reason on error

1992 K. Weick High Reliability Organizing

2002 IAEA Techdoc 1329

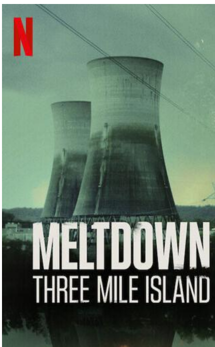
2004 S. Dekker "The Field Guide to 'Human Error'"

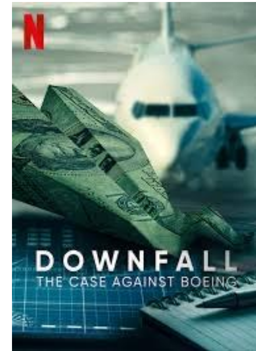
2009 DOE HPI Manual VI&II

2012 E. Hollnagel Safety-II, RE

2019 T. Conklin, "5 Principles of Human Performance"

2022 "Do Safety Differently" "Learning Teams"





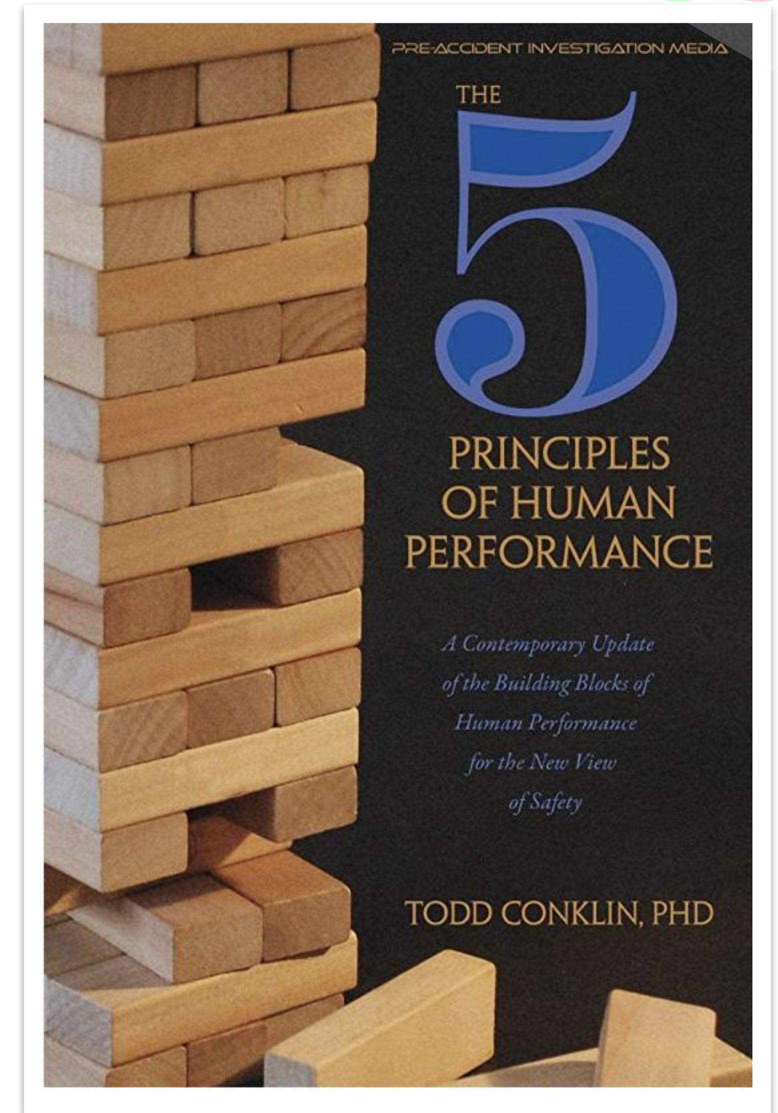
Instructive Disasters

1. Speaking truth to power
   - The leader's ability to hear bad news
2. Risk complacency
   - Successful experience moves closer to risk
3. Internal v external risk
   - It's easier to perceive risk to self than risk to the common cause
4. The 'business decision' fallacy
   - These are ethical decisions!

Prof. J. Mark Maier

The 5 Principles of HOP

1. Error is normal
2. Blame fixes nothing
3. Context drives behaviour
4. Learning and improving is vital
5. Your response to failure matters



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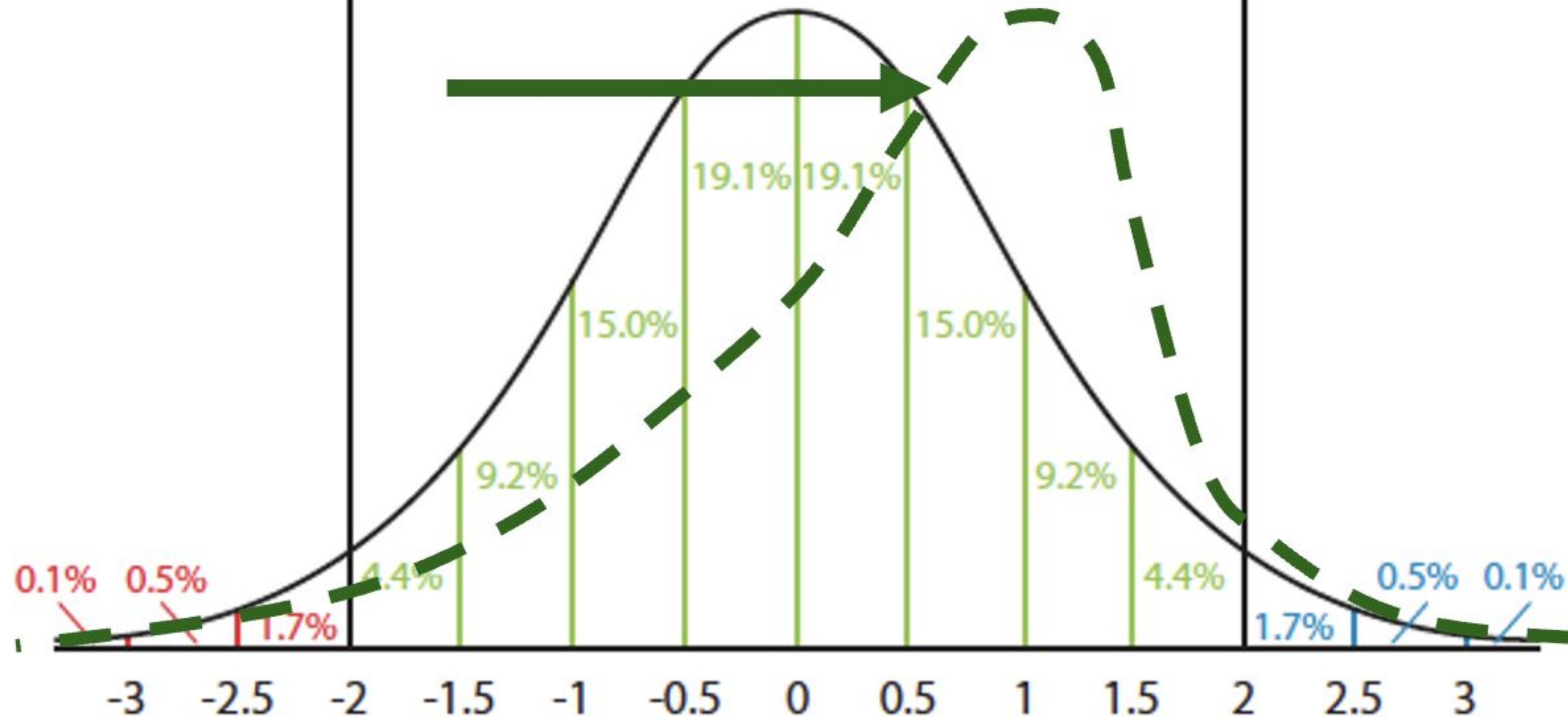

Shorrock

Safety as **CAPACITIES**

Operational Learning/Improvement

- Begins with trust and the candor of those who do the work
- Asking better questions to detect error traps and weak signals
- Finding better solutions in ‘local’, ‘lateral’, and ‘level-up’ spheres of control

Control of Critical Risk

- Verification and validation that critical controls are effective and known
- Preoccupation with failure, keeping the discussion of critical risk alive
- Start when safe – Cardinal Controls

Controls

Mitigations

Barriers

Risk Reduction to create Work As Imagined/Black Line

Risk Transfer to frontline for Work As Done/Blue Line

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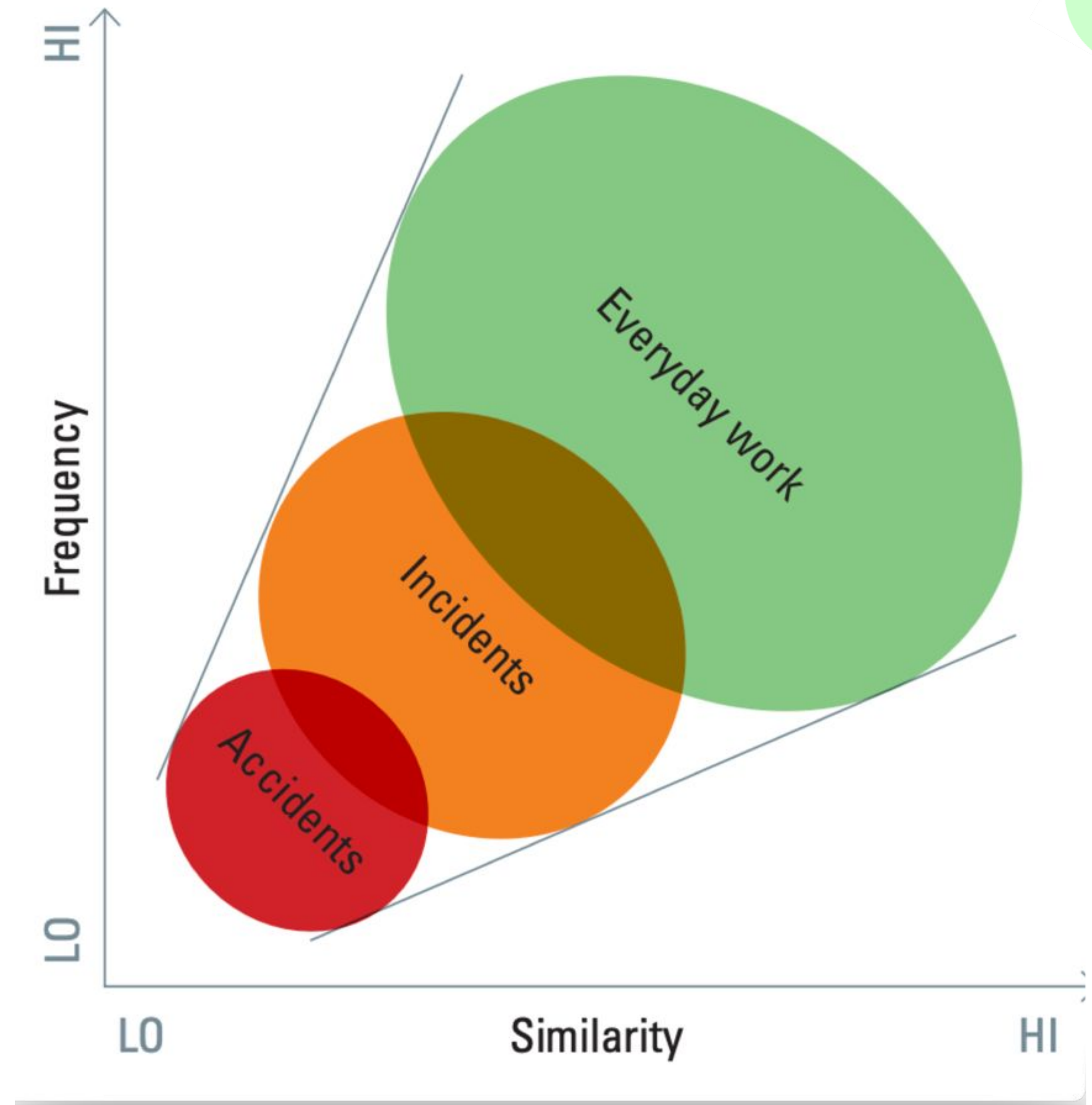
"Everyday work provides the best basis for learning, while accidents provide the worst."

Erik Hollnagel



Conditions before bad outcomes

Equipment not available

Guidelines not followed

Organizational frustrations

User-unfriendly technology

Shortcuts

Failure

Violations

Workarounds

Errors and mistakes

People not available

Supervisory shortcomings

Unreliable measurements

Dekker

Conditions before good outcomes

Equipment not available

Guidelines not followed

Organizational frustrations

Shortcuts

User-unfriendly technology

Workarounds

Violations

Errors and mistakes

People not available

Supervisory shortcomings

Unreliable measurements

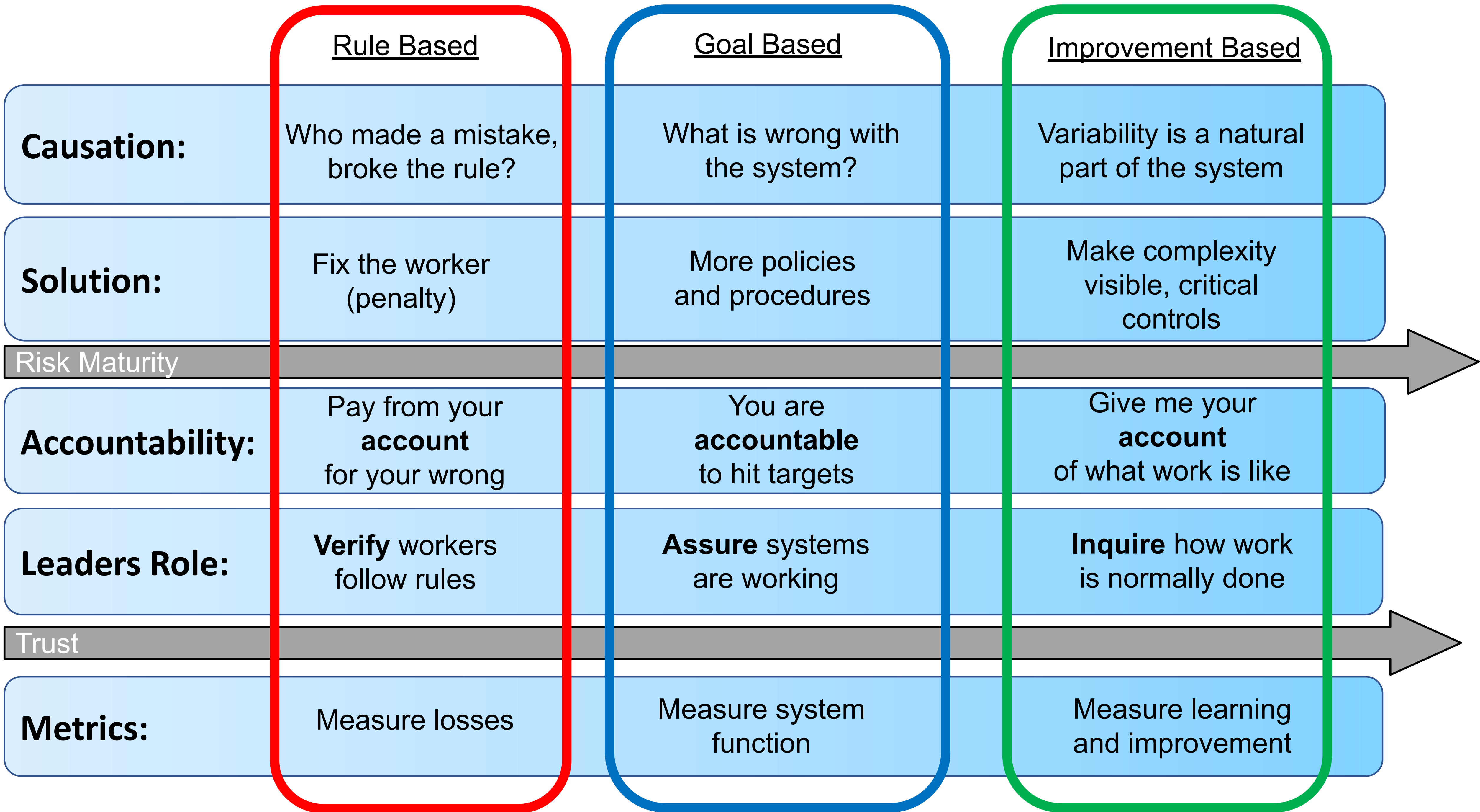
Succes
s

Dekker

Good outcomes had this in common:

- Diversity of opinions, the opportunity to voice dissent
- Keeping a discussion about risk alive
- Deference to expertise (those do the work)
- Ability to say ‘Stop!’
- Reduced barriers between silos
- Not waiting for inspections or audits to improve safety
- Pride in workmanship

Dekker



Rule Based
Goal Based
Improvement Based
Causation:
Who made a mistake, broke the rule?
What is wrong with the system?
Variability is a natural part of the system
Solution:
Fix the worker (penalty)
More policies and procedures
Make complexity visible, critical controls
Risk Maturity
Accountability:
Pay from your account for your wrong
You are accountable to hit targets
Give me your account of what work is like
Leaders Role:
Verify workers follow rules
Assure systems are working
Inquire how work is normally done
Trust
Metrics:
Measure losses
Measure system function
Measure learning and improvement

Control

Doing Safety To People

Doing Safety For People

Doing Safety With People

Caring

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4 Rights of Employees

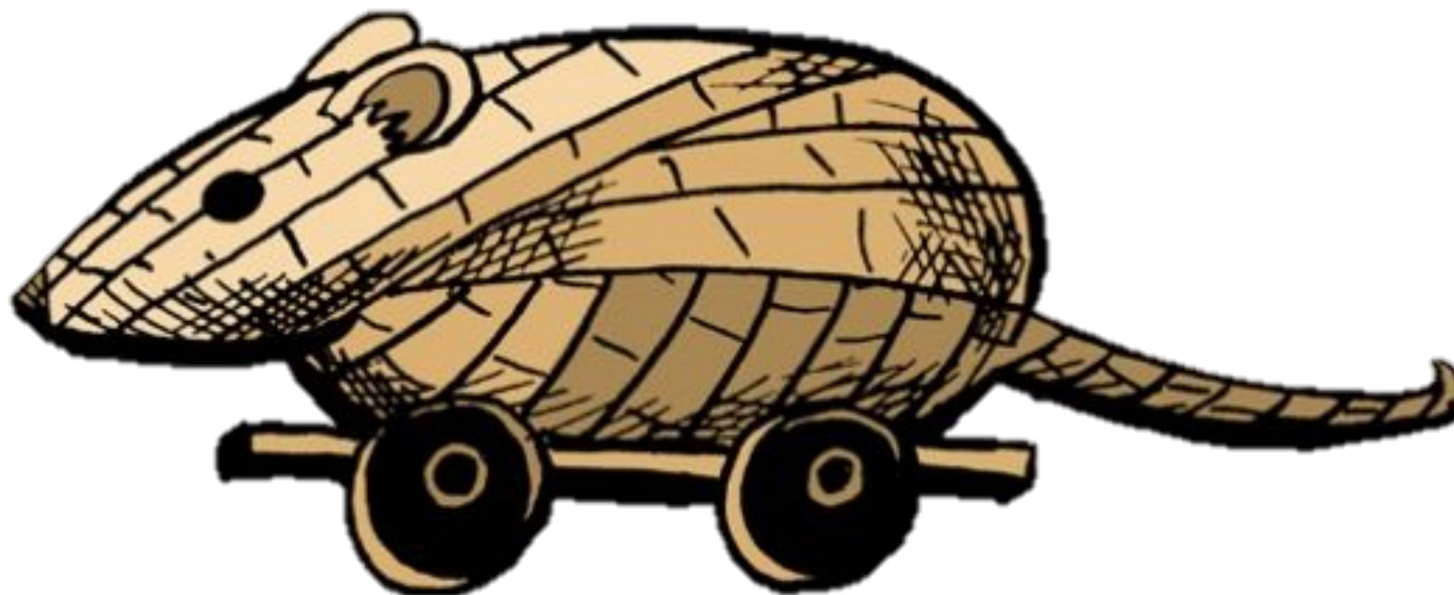
The Right to Know	WHMIS/GHS	Teaching/learning/improving environment
The Right to Participate	JHSC Requirements	Meaningful inclusion and engagement
The Right to Refuse	Work Refusal Process	Encourage STKY and 4D reports
***freedom from retaliation**	Legislated Protections	Grateful for important operational information

“…small, well focused changes, which are introduced on an ongoing basis in an inconspicuous way. They are small enough to be understood and owned by all concerned, but their effects can be far-reaching”

- Harold Jarche

“…make risk more approachable, run small tests, build something that isn’t necessarily grand, but rather light, lean, and quick experiments that we can send off nimbly through the gates and learn from”

- Jackie Mahendra



S-T-K-Y (stuff that'll kill you)

- What can seriously injure or kill you doing this job?
- When that thing happens, what keeps you safe?
- Is that enough?

Situation, task or process that doesn't make sense.

Dumb

Dangerous

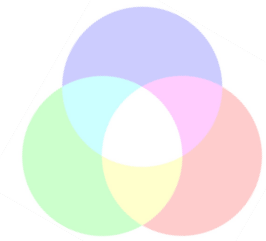
Risky task, process, situation or hazard.

A task or process that is hard to do or do well.

Difficult

Different

Changing or changed situation, activity or task.



4Ds Learning From Everyday Work – Leader Led Safety Conversation

Traditionally, 'safety' is thought to be present when the number of unacceptable outcomes (work that doesn't go well) are as low as possible. From this perspective, looking at normal work involves Leaders judging those who do the work as 'good' or 'bad' based on fixed ideas and prescriptions of how the work should be done. Leader-led Safety Conversations and different. They are about Leaders learning from those who do the work and helping to ensure the number of acceptable outcomes (work that goes well) is as high as possible. By wanting to learn and improve the work environment in this way, we create the opportunity for learning at the worker, workgroup and organizational levels.

01 Plan and prepare

You are taking time from your workday and the workday of your frontline workers. Time is valuable and must have purpose and meaning. Your engagement as a leader with the frontline to have a safety conversation should focus on part of a job, process or activity from normal everyday work that you want to learn from. It could be routine or high-risk work.

02 Focus on system and processes, not people

Going to where normal everyday successful work is performed, is not a performance evaluation for workers or contractors. A leader safety conversation is meant for engaging with the frontline, recognizing workers as the experts of normal work, asking curiosity-based questions, which makes visible the gap between Work As Imagined (What the organizational system does) and Work As Done (Normal work).

03 Ask Curious Questions (Use the 4D's)

Use the 4D's to engage storytelling with the frontline workers about the "rubs" with normal work, such as; When doing that work, can you share with me when;

- That work didn't make sense to you (**DUMB**)
- Doing that work didn't feel right (**DANGEROUS**)
- The work was harder than normal (**DIFFICULT**)
- The work was **DIFFERENT** from what it normally is.

DANGEROUS | DIFFERENT | DUMB | DIFFICULT

04 Don't suggest change or rush to a fix

The safety conversation is for engaging, listening and learning. Any improvements or actions (even if they feel obvious to you) comes later. Fixing is easy and obvious, creating sustainable change through continuous improvement is a cycle of learning and improving for workers, the workgroups and the organization.

05 Explore opportunities, share learnings, follow thru

Themes will emerge from the storytelling, give yourself some space "soak time" to reflect on what you have learnt. Continue the safety conversation about possible improvements after soak time. Then share those learnings with others, so you can explore the opportunities that could led to activities to create improvements (such as a Learning Team) and follow through with the group. Using a Learning Team with those that do the work, creates sustainable change.

06 Mix it up and repeat

Schedule these safety conversations at different times of the work-day. Mixing it up helps you to see how things change throughout the day, week or month.

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PRE-ACCIDENT INVESTIGATION MEDIA
PRESENTS

4Ds FOR HOP AND LEARNING TEAMS

A PRACTICAL HOW-TO GUIDE TO LEARN FROM EVERYDAY WORK, CRITICAL AND DYNAMIC RISKS WITH THE 4Ds.

Brent Sutton, Jeffery Lyth, Brent Robinson and Josh Bryant
Foreword by Dr Todd Conklin

QSP Leadership

Thank you!