SAFETY Is Common Sense

But is it all that Common

Presented by Darrel Nickerson, BBA, MS, CRSP
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Introduction

Hazards and Risks

Human Performance Improvement

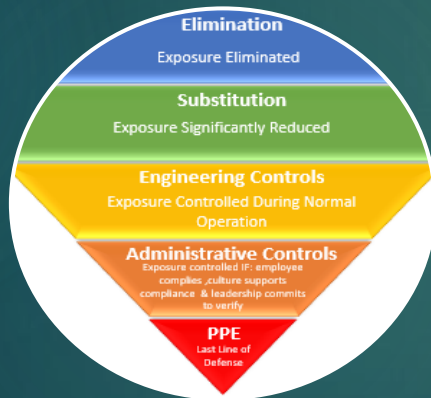Common sense is not always common practice.

— Stephen Covey —

AZ QUOTES

SAFETY is Common Sense
But is it all that Common

Let's get started with

Hazards and Risks

Hazards versus Risks

A Hazard is a **potential** source of harm or adverse health effect on a person or persons.

Risk is the **likelihood** that a person may be harmed or suffers adverse health effects if exposed to a hazard.

Controlling Hazards

Hazard Control is the steps put in place to protect workers from exposure to hazards

Hazard Identification process

Scan for Hazards
- Look for what can cause harm and to who
- Focus on Critical Injury Precursors (High Risk Tasks)

Discuss and Capture Hazards
- Discuss hazards that are present
- Use pre job form
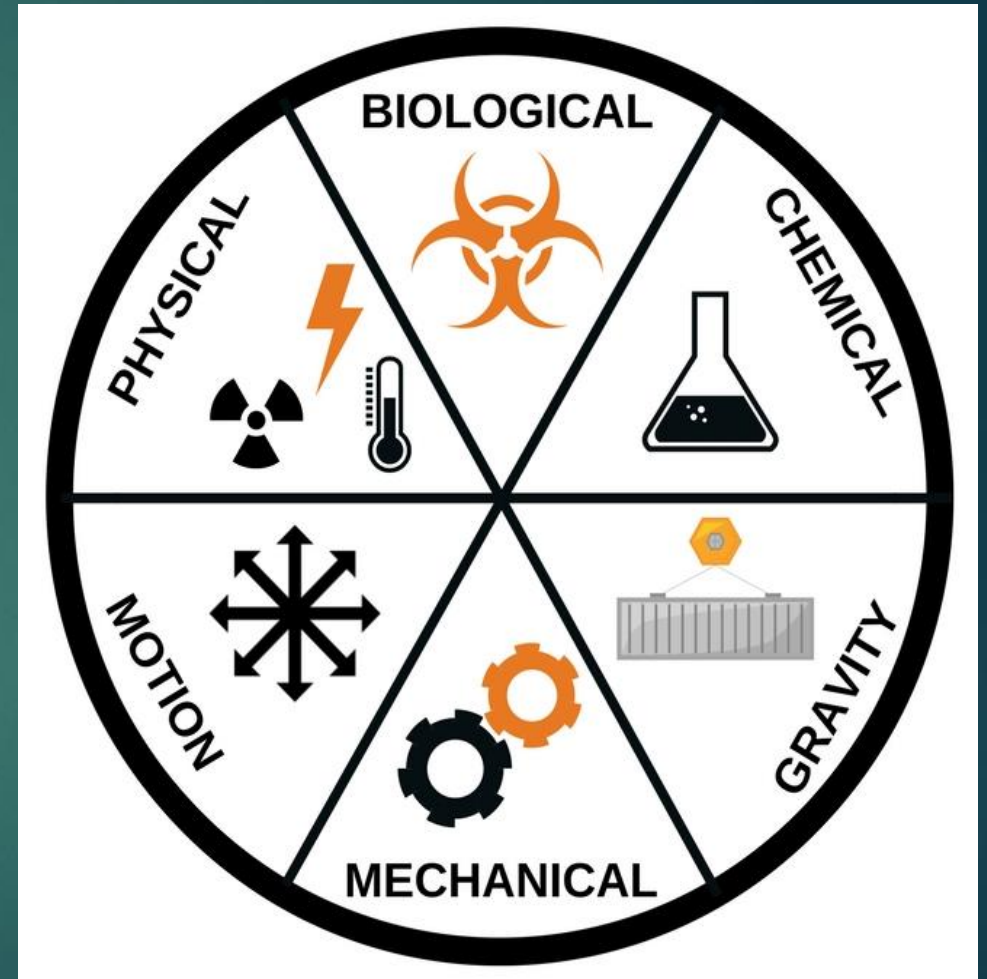
Identify Control Measures
- Use Hierarchy of Controls as a guide
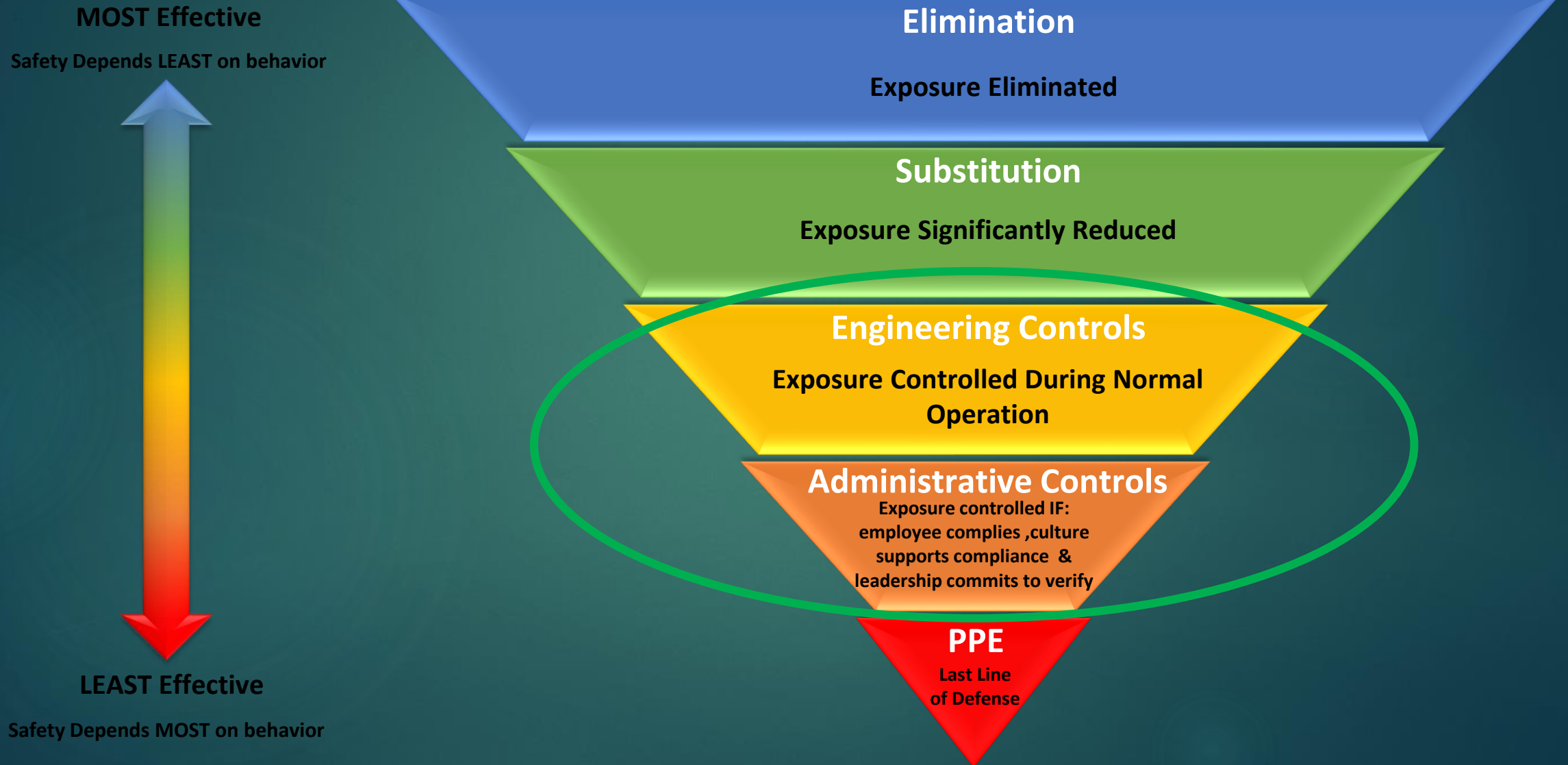- Implement controls

Communicate
- Discuss controls with all present and in area
- Document and communicate any actions

What are the hazards?

Unguarded equipment

Missing or improper PPE

Improper Body Mechanics

Defective tools

Manual handling

Excessive noise

Slippery surfaces

Engineering Controls

Exposure Controlled During Normal Operation

Passive
Active

Active – Person must do something for control to be in place

Passive – Person does not need to do something for control to be in place

Safety Gates

A moveable device that provides a barrier between you and the point of operation.

Devices: Presence-Sensing

Stops the machine from operating when someone or something enters the sensing field or when a set amount of weight is applied.

Administrative Controls

Exposure controlled IF:
<u>employee complies</u>,
<u>culture supports</u>
<u>compliance</u> , &
<u>leadership commits to</u>
<u>verify</u>

Dual Path Safety Risk Strategy

Hazard Recognition

Low Severity
Outcome or Potential

Conduct Risk Assessment:
Occurrence / probability
X Severity

Apply Lower Levels of Control
Engineering, Administrative, PPE

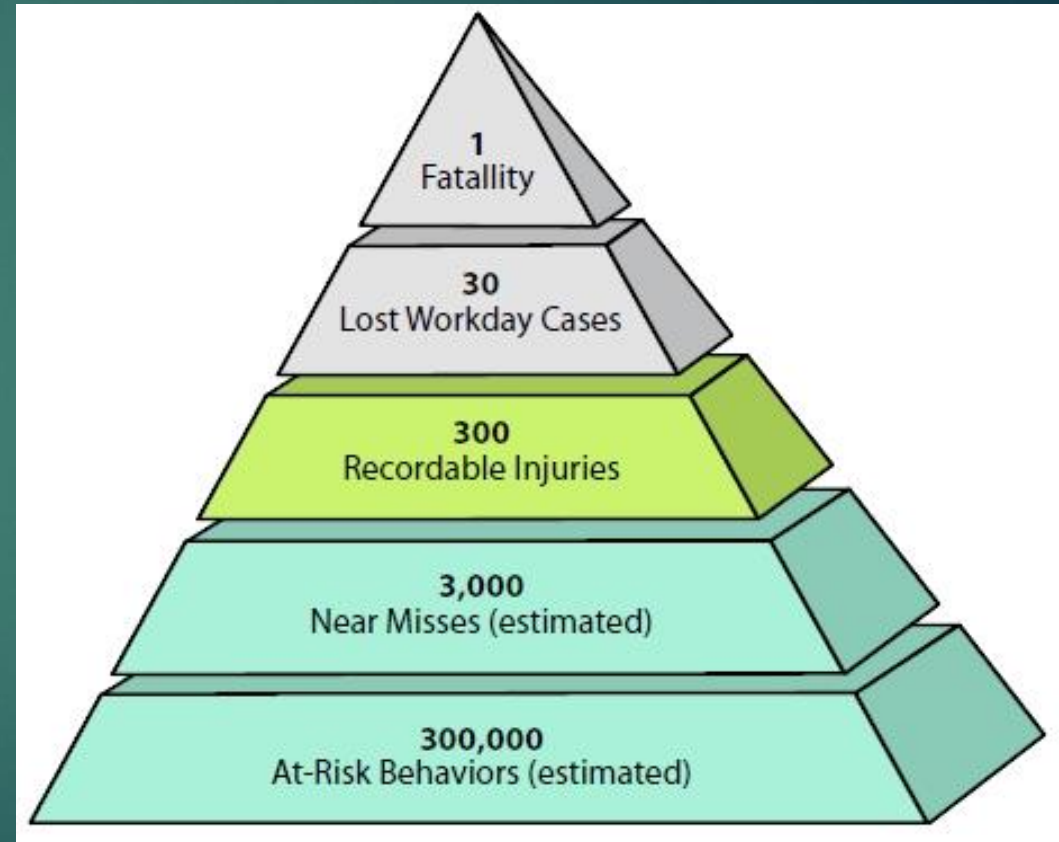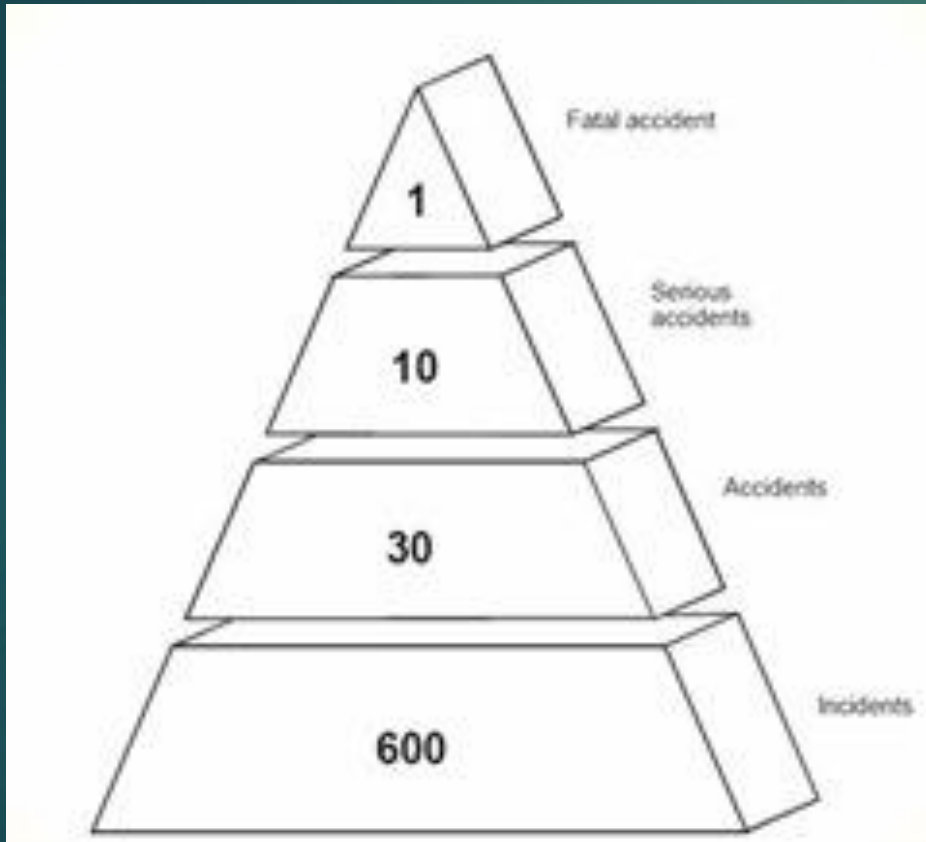### Likely Precursor to Critical Injury or fatality

Conduct Risk Assessment:
((Occurrence + Exposure)
X Severity)

Apply Higher Levels of Control
Elimination, Substitution, Engineering

MOST Effective
Safety Depends LEAST on behavior

LEAST Effective
Safety Depends MOST on behavior

Elimination
Exposure Eliminated

Substitution
Exposure Significantly Reduced

Engineering Controls
Exposure Controlled During Normal Operation

Administrative Controls
Exposure controlled by employee compliance, surveillance audits, etc. During normal operation

PPE
Last Level of Defence

Adapted from source: https://www.ishn.com/articles/108505-getting-serious-about-preventing-fatalities-serious-injuries

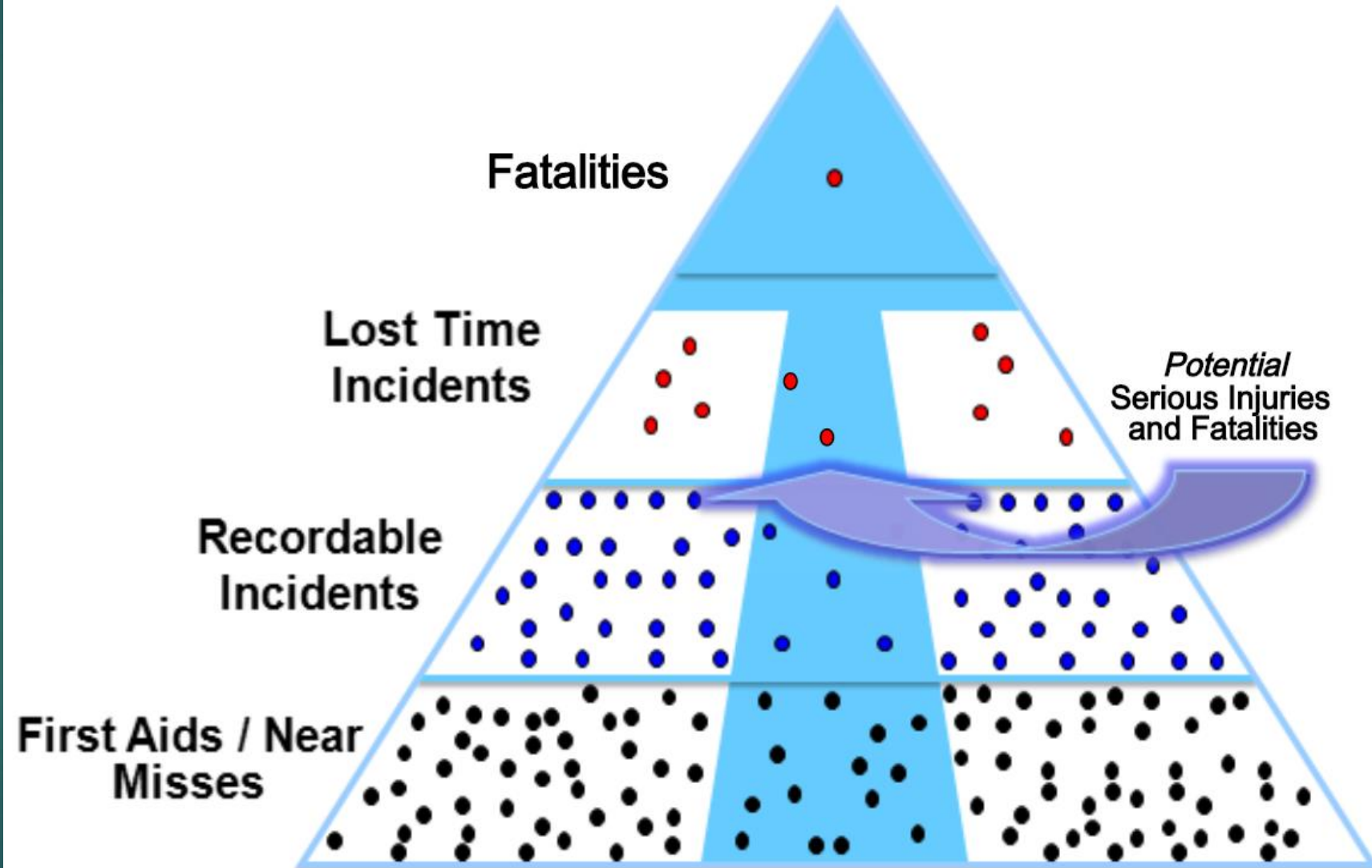10.2.1—Pulp and Paper Division Approach to Risk Management v2

Traditional Safety Pyramids

Serious Injury and Fatality (SIF)

Not all injuries are the same

There is a subset of injuries that have the potential for a SIF

They need a different Prevention Strategy

An Enhanced Paradigm

Fatalities

Lost Time Incidents

Potential Serious Injuries and Fatalities

Recordable Incidents

First Aids / Near Misses

Sponsored by Indiana University of Pennsylvania Safety Sciences Department in cooperation with Alcoa Foundation

Identify your Potential SIFs

Eliminate Serious Injuries while reducing all injuries

Hazards Present

Mechanical

Electrical

Stored Energy

Chemicals

Flammables

→

High - Risk Exposure

Process Instability

Unexpected Changes

High-Risk Event Combinations

→

Precursors

A High-Risk situation where management controls are either absent, ineffective, or not complied with, and may result in a serious or fatal injury if allowed to continue

→

Outcomes

Serious Injury or Fatality (SIF)

Identify your High-Risk Activities

➤ Contact with uncontrolled / unguarded energy source

- Machine Guarding
- Lock Out / Tag Out

➤ Falls from elevated surfaces

➤ Interaction / Struck by mobile equipment

➤ Working in confined spaces

➤ Cranes, Hoists and Slings

➤ Fire or explosion

- Hot Work
- Fires

➤ Hazardous materials release

Identify High Risk Exposure

High- Risk Exposure

Process Instability

Unexpected Changes

High-Risk Event Combinations

Dual Path Safety Risk Strategy

Hazard Recognition

Low Severity Outcome or Potential

Likely Precursor to Critical Injury or fatality

Conduct Risk Assessment: Occurrence / probability X Severity

Conduct Risk Assessment: ((Occurrence + Exposure) X Severity)

Apply Lower Levels of Control Engineering, Administrative, PPE

Apply Higher Levels of Control Elimination, Substitution, Engineering

MOST Effective
Safety Depends LEAST on Behavior

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Safety Depends MOST on Behavior

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Exposure Eliminated

Substitution
Exposure Significantly Reduced

Engineering Controls
Exposure Controlled During Normal Operation

Administrative Controls

PPE

Adapted from source: https://www.iahm.com/articles/106505-getting-serious-about-preventing-fatalities-serious-injuries

10.2.1—Pulp and Paper Division Approach to Risk Management v2

Dual Path Safety Risk Strategy

Hazard Recognition

Low Severity
Outcome or Potential

Conduct Risk Assessment:
Occurrence / probability
X Severity

Apply Lower Levels of Control
Engineering, Administrative, PPE

Sprain / Strain

Pushing / Pulling

Slip trip or fall from same level

Risk Assessment:
Probability x Severity

Controls:
Updated Procedures
Training
Manual handling Devices

Dual Path Safety Risk Strategy

Hazard Recognition

Likely Precursor to Critical Injury or fatality

Identified High Risk Activity

Upset Condition

Combination of High-Risk Activities

Conduct Risk Assessment:

$$((Occurrence + Exposure) \times Severity)$$

Risk Assessment:

(Probability + Exposure) x Severity

Apply Higher Levels of Control
Elimination, Substitution, Engineering

Controls:
Eliminate the Hazard
Substitute with less harmful substance
Passive Guards put in place

SAFETY is Common Sense
But is it all that Common

Let's shift gears

Human Performance Improvement

Where is Safety Going?

HPI - Human Performance Improvement

HOP - Human and Organizational Performance

Safety Differently   Safety II

The New View

"You weren't listening. I said, 'Don't fall.'"

New View of Safety

1. People matter more than anything else
2. A workplace is a complex environment
3. Employees don't come to work to get hurt
4. Accidents are not a choice
5. People make mistakes
6. Error is normal
7. Punishment is not a tool for improvement
8. "How" is more useful than "why"
9. Learning is everything
10. Plan for failure

Human Error

Human Errors

Occurrences

70% Latent Organization Weaknesses

80% Human Error

20% Equipment Failures
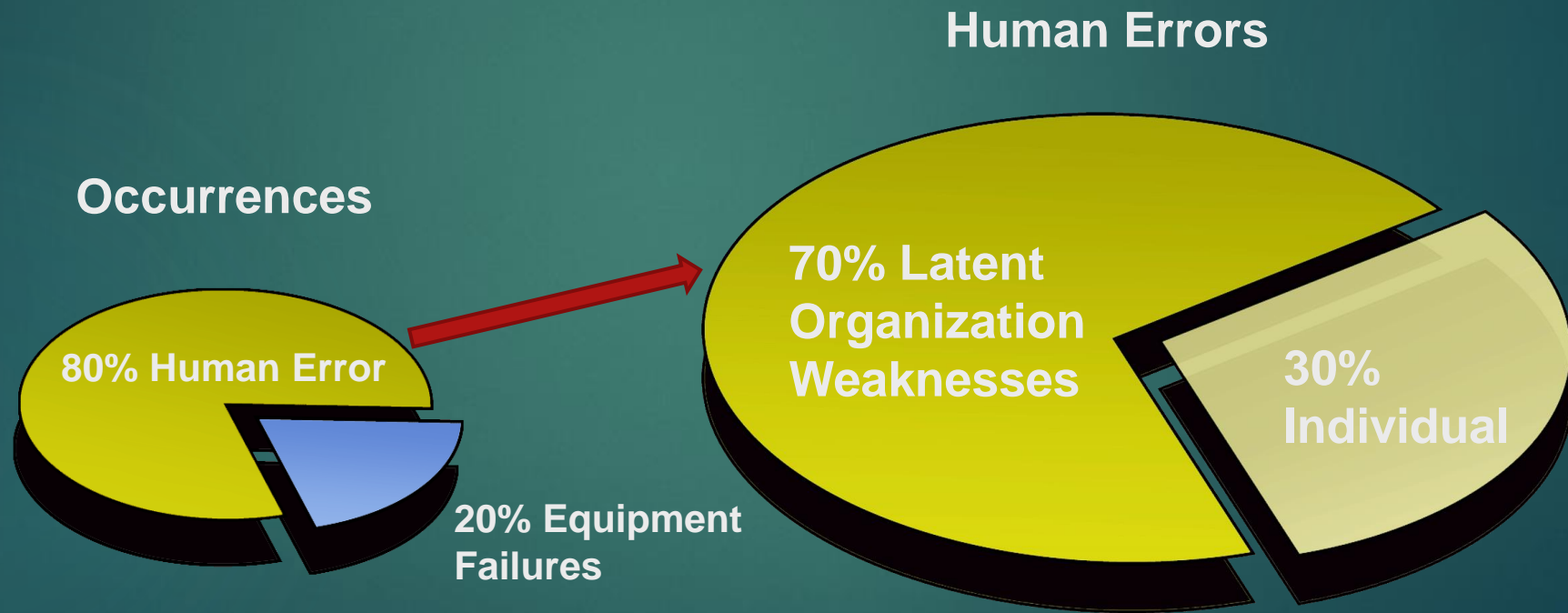
30% Individual

Types of Errors:

Active Error – An obvious mistake that has immediate, visible consequences. i.e. Pushing the wrong button

Latent Error –

 A hidden mistake that has consequences that are <u>not</u> immediate. *
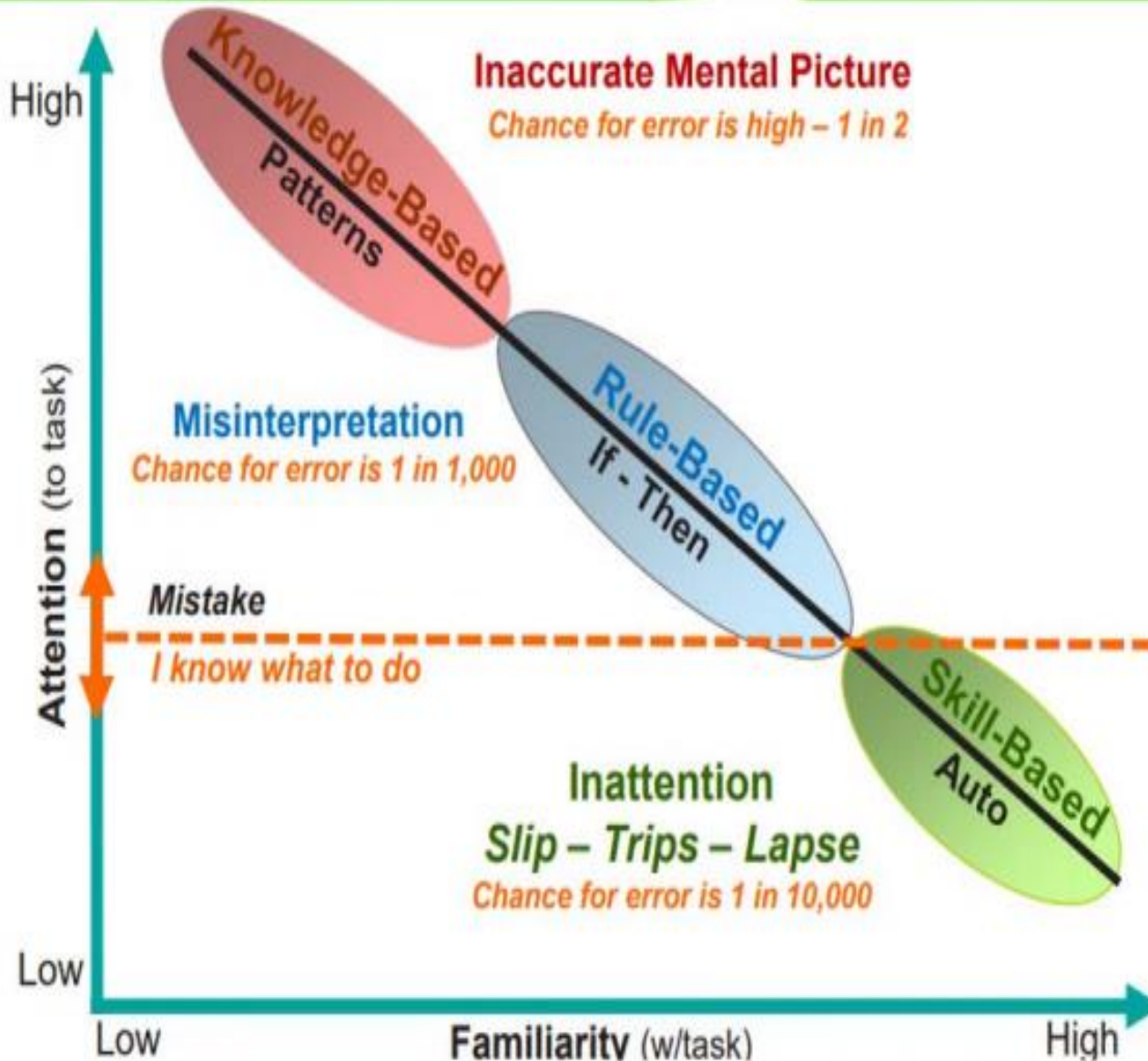
Error Precursors

Task Demands	Individual Capabilities
• Time pressure (in a hurry)	• Unfamiliarity w/ task / First time
• High Workload (memory requirements)	• Lack of knowledge (mental model)
• Simultaneous, multiple tasks	• New technique not used before
• Repetitive actions / monotonous	• Imprecise communication habits
• Irrecoverable acts	• Lack of proficiency / Inexperience
• Interpretation requirements	• Indistinct problem-solving skills
• Unclear goals, roles, & responsibilities	• "Hazardous" attitude for critical task
• Lack of or unclear standards	• Illness / Fatigue

Work Environment	Human Nature
• Distractions / Interruptions	• Stress (limits attention)
• Changes / Departures from routine	• Habit patterns
• Confusing displays or controls	• Assumptions (inaccurate mental picture)
• Workarounds / OOS instruments	• Complacency / Overconfidence
• Hidden system response	• Mindset (intentions)
• Unexpected equipment conditions	• Inaccurate risk perception (Pollyanna)
• Lack of alternative indication	• Mental shortcuts (biases)
• Confusing Procedures / Vague Guidance	• Limited short-term memory

HUMAN PERFORMANCE MODES
IMPACT OF PERFORMANCE MODE ON ERROR RATE

Knowledge-Based Patterns

Inaccurate Mental Picture
Chance for error is high – 1 in 2

Rule-Based If - Then

Misinterpretation
Chance for error is 1 in 1,000

Mistake
I know what to do

Skill-Based Auto

Inattention
Slip – Trips – Lapse
Chance for error is 1 in 10,000

Attention (to task)
High
Low

Familiarity (w/task)
Low
High

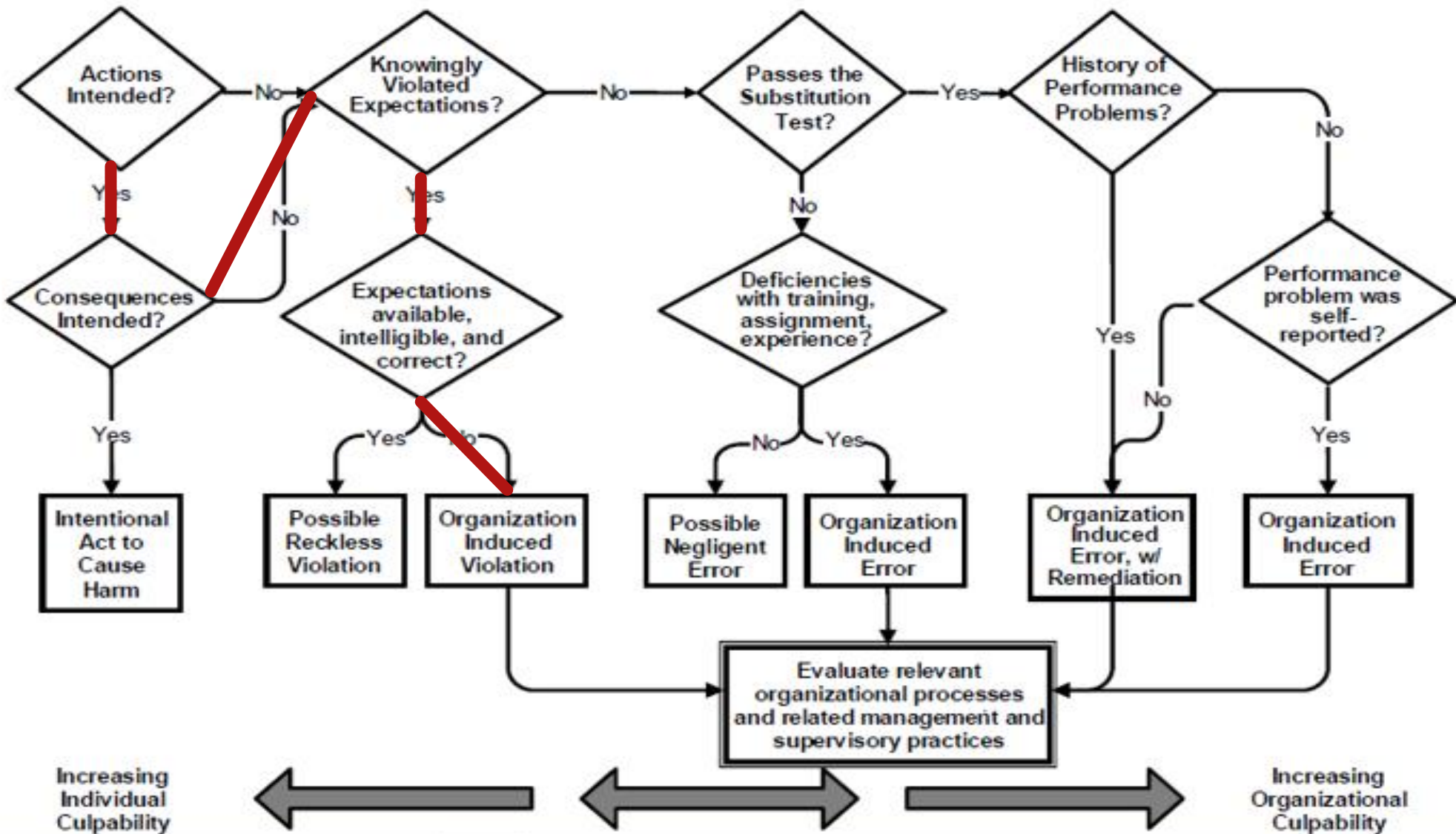Source: James Reason. *Managing the Risks of Organizational Accidents*, 1998.

Skill mode - Actions associated with highly practiced actions in a familiar situation usually executed from memory.

Rule mode - The worker is familiar with the task and is taking actions in response to the changing situation.

Knowledge mode - Actions in response to an unfamiliar situation. Rather than using known rules, the worker is trying to reason or even guess their way through the situation.

CULPABILITY DECISION TREE

Actions Intended? —No→ **Knowingly Violated Expectations?** —No→ **Passes the Substitution Test?** —Yes→ **History of Performance Problems?** —No→

Actions Intended? —Yes↓ **Consequences Intended?** —Yes↓ **Intentional Act to Cause Harm**

Knowingly Violated Expectations? —No→ / —Yes↓ **Expectations available, intelligible, and correct?** —Yes→ **Possible Reckless Violation** / —No→ **Organization Induced Violation**

Passes the Substitution Test? —No↓ **Deficiencies with training, assignment, experience?** —No→ **Possible Negligent Error** / —Yes→ **Organization Induced Error**

History of Performance Problems? —Yes↓ **Organization Induced Error, w/ Remediation** —No↓ **Performance problem was self-reported?** —Yes↓ **Organization Induced Error**

Evaluate relevant organizational processes and related management and supervisory practices

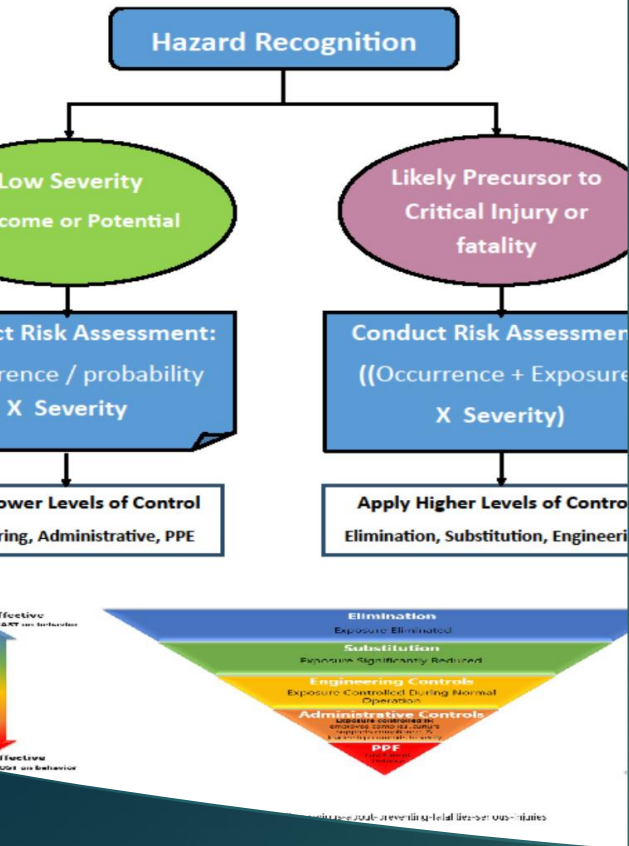Increasing Individual Culpability ←→ ←→ →→ Increasing Organizational Culpability

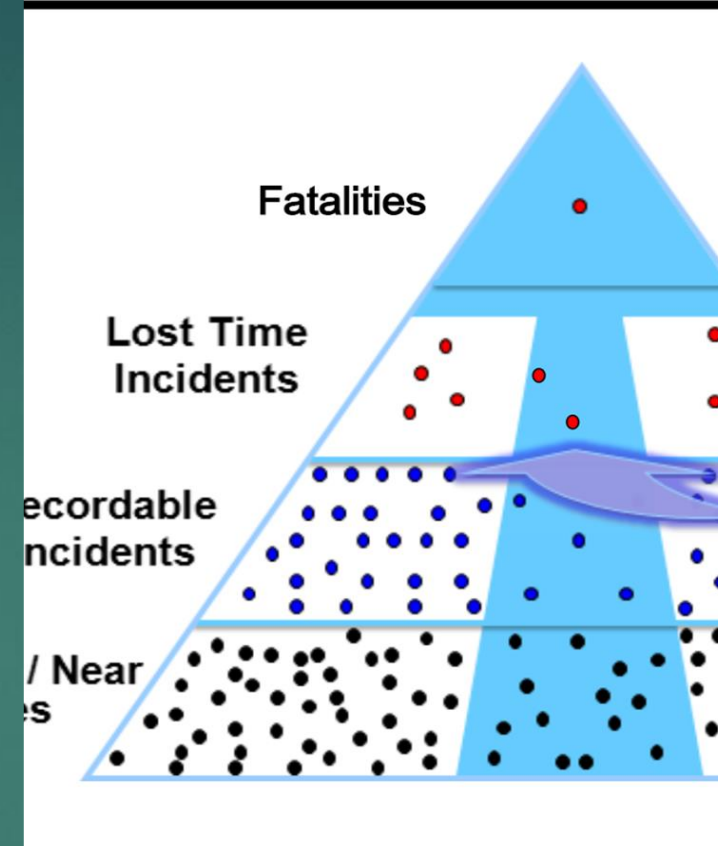# 5 Principles of Human Performance – Dr. Todd Conklin

1. People make mistakes.

2. Blame fixes nothing.

3. Learning and Improving is vital.

4. Context drives behaviour.

5. How you respond to failures matter.
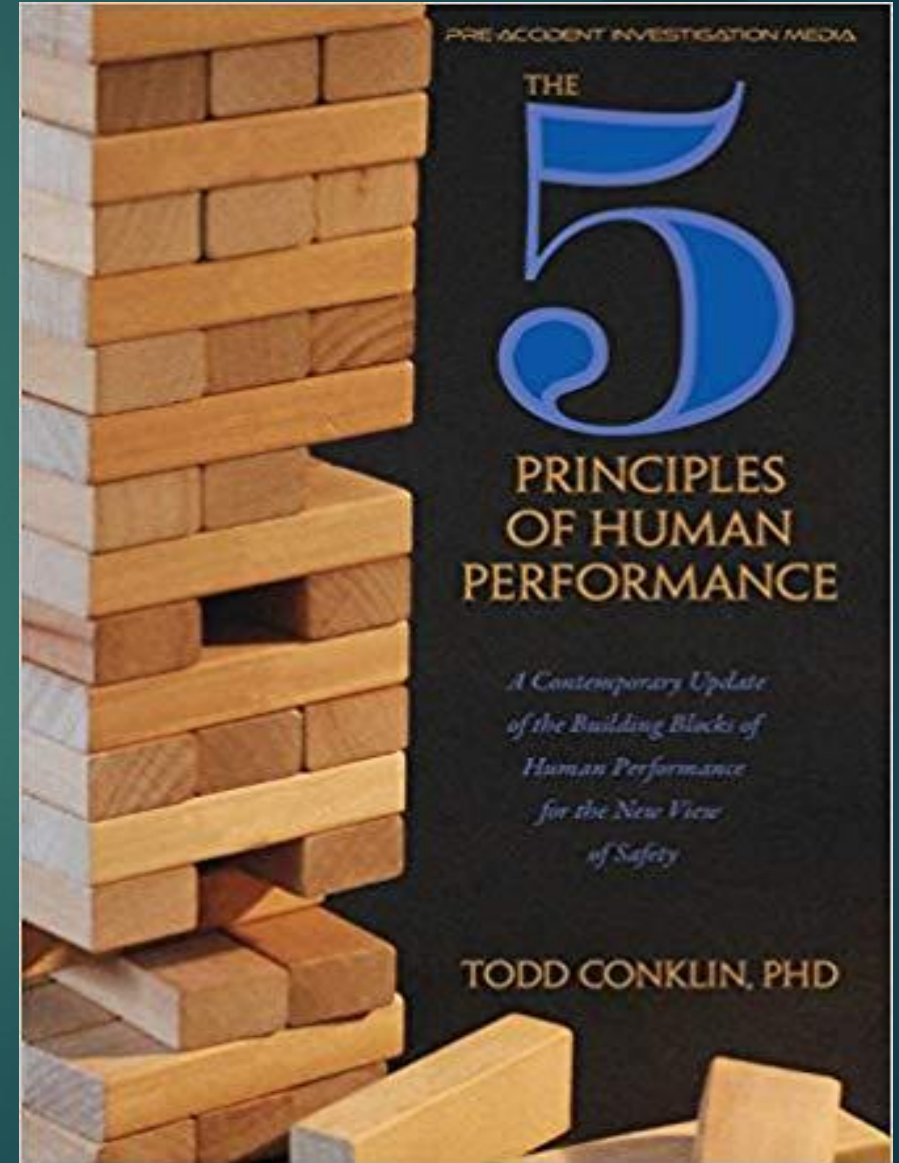
WRAP UP

WRAP UP
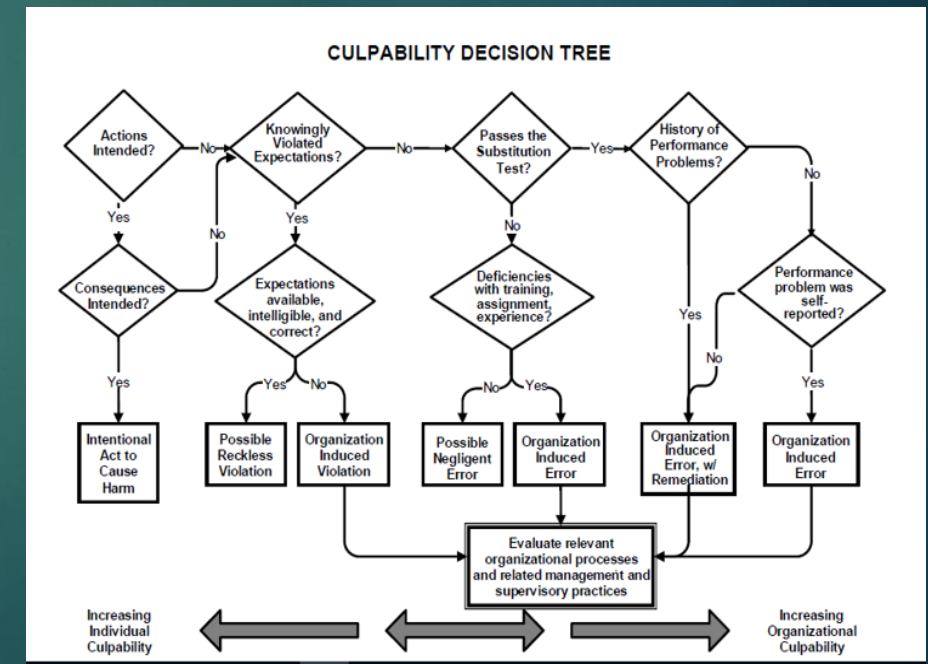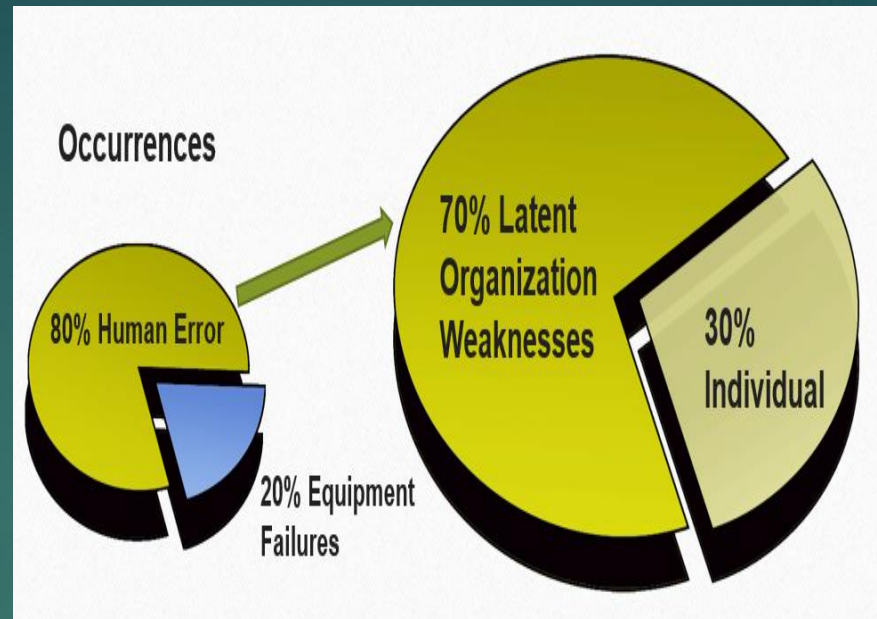
Thank you

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