

Introduction to Human Performance

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Operational Excellence

- Human Performance is **not just about safety**
- Can improve all areas of performance
- The most successful organizations use HP **for all** areas of performance





Views of Safety

Traditional Safety

1. Workers are the problem. We fix safety by making workers better.
2. We must tell workers what to do and what not to do.
3. Safety is the absence of accidents.

Preventing things from going wrong.

New View Safety

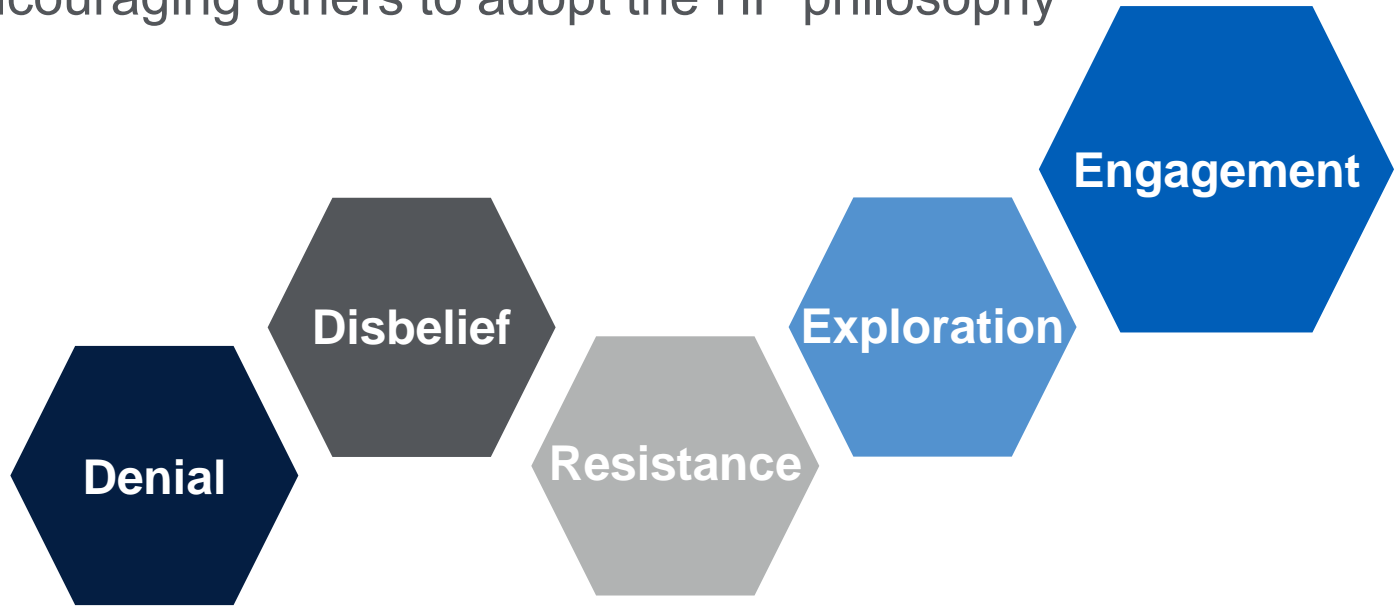
1. Workers are the problem solvers.
2. We don't tell our workers what to do – we ask them what they need.
3. Safety is the presence of defenses.

Making sure things go right.



It's a Culture Evolution

- Where are you in the Change Management process?
- You'll be encouraging others to adopt the HP philosophy



What is Human Performance?

An individual **working within** organizational **systems** to **meet expectations** set by leaders

- Understanding human error
- Managing error and behavior



Human Performance Principles





Jenga & Hazard Exposure

Managers are exposed to <10% of hazards

- Top down view
- Writing procedures/processes

Frontline employees are exposed to all hazards

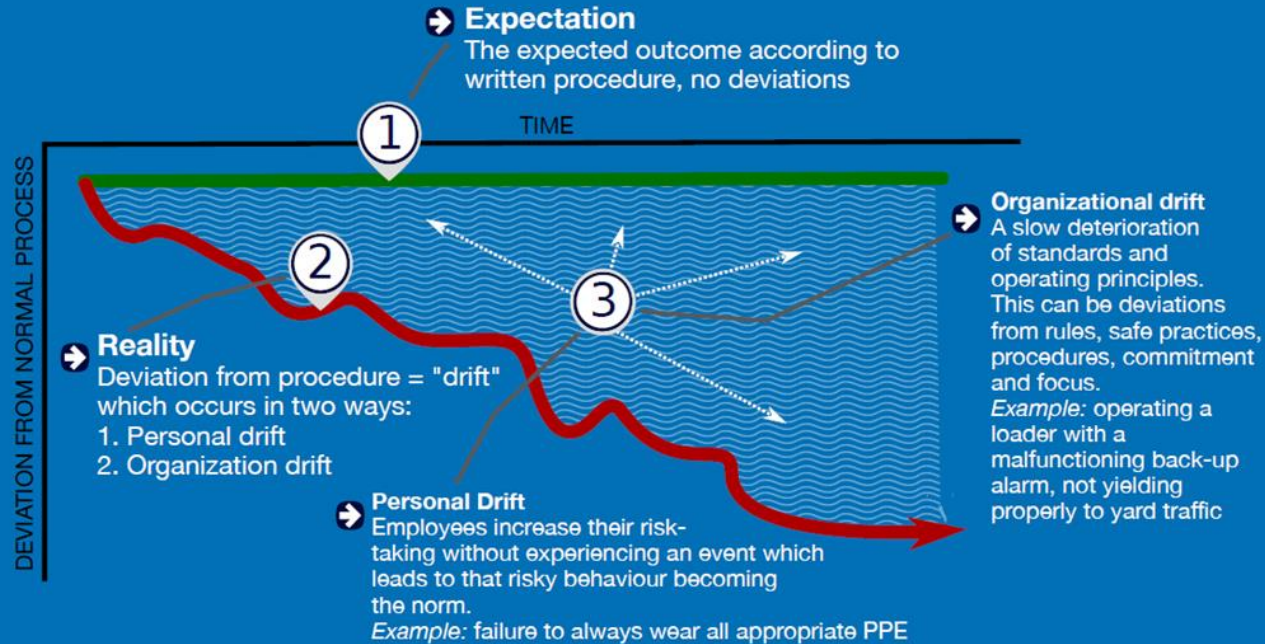
- How work really gets done
- Aware of work arounds

Shouldn't those most exposed to the risk have the most to say about it?



Organizational Drift

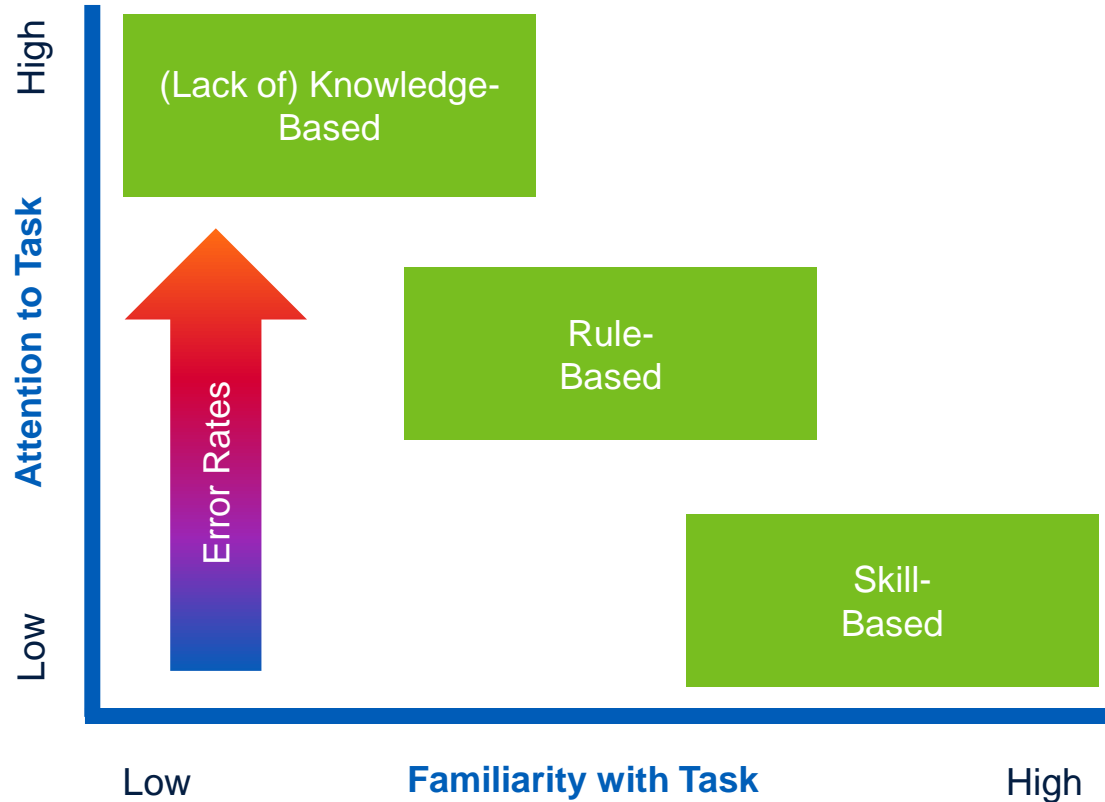
A gradual decline in an organization/system's normal functioning



➔ Fueled by competing pressures for a company's resources such as production, schedule, quality or costs.

➔ Drift tends to be justified and minimized by managers. As it becomes normalized, it becomes invisible.

Performance Modes





Which mode is it?

(Lack of) Knowledge-Based

A kid who took the training wheels off his bike today

A new employee driving a ready-mix concrete truck

A water truck driver operating a paver

Rule-Based

Driving a rental car

An employee performing a routine task at a new job

A loader operating switching from a Komatsu to a Cat

Skill-Based

A professional chef cutting vegetables

A basketball player shooting free throws

Driving home from work on a summer day



Error Precursors



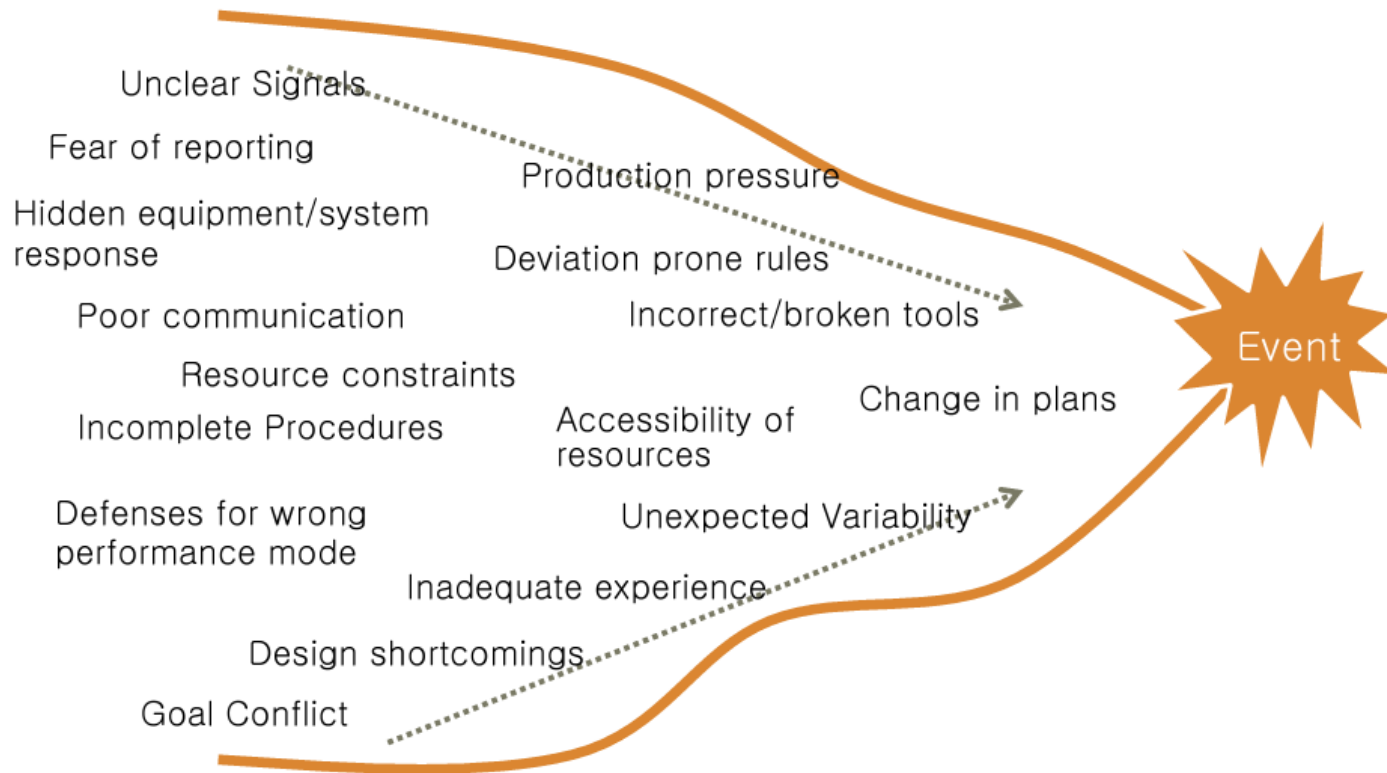
Task	Individual
• Time pressure (in a hurry)	• Unfamiliarity w/ task / First time
• High Workload (memory requirements)	• Lack of knowledge (mental model)
• Simultaneous, multiple tasks	• New technique not used before
• Repetitive actions, monotonous	• Imprecise communication habits
• Irrecoverable acts	• 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	• Complacency / Overconfidence
• Hidden system response	• Mindset (“tuned” to see)
• Unexpected equipment conditions	• Inaccurate risk perception
• Lack of alternative indication	• Mental shortcuts (biases)
• Personality conflicts	• Limited short-term memory

Error Precursors: Task Demands Examples

Specific requirements that either exceed the mental or physical capabilities or challenge the limitations of an individual or team performing a task.

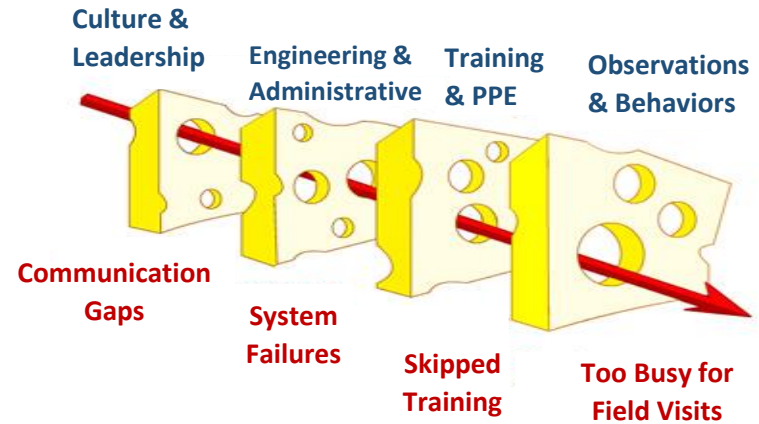
Error Precursor	Real World Example
Time Pressure	Avoiding Liquidated Damages
High Workload	State Engineer, Trucking, Timecards, Plant Down, etc.
Simultaneous Tasks	Responding to an email and while answering a phone call
Repetitive Actions	Watching the same belt lines / stackers over and over
Lack of or Unclear Standards	Task without a JSA; just know how to do it
Confusing Procedure	LOTO policy without Equipment Specific Protocol

Common Error Traps



Latent Conditions

- Underlying **organizational weaknesses**
- May lie dormant in the system for many years
- Often arise from decisions made by higher level management



Latent Conditions Examples

Underlying **organizational weaknesses**

Examples:

- Gaps in leadership
- Poor management decisions
- Inadequate budgets
- Difficulty getting tools/equipment
- Half-baked procedures
- Poor maintenance
- Unrealistic schedules
- Production over safety
- Understaffing

Active Triggers



- **Unsafe acts** that trigger events
- The **last act** before an event
- Mental slips, mistakes, lapses, procedural violations
- Will return if swatted; must **drain the swamp**



Active Triggers



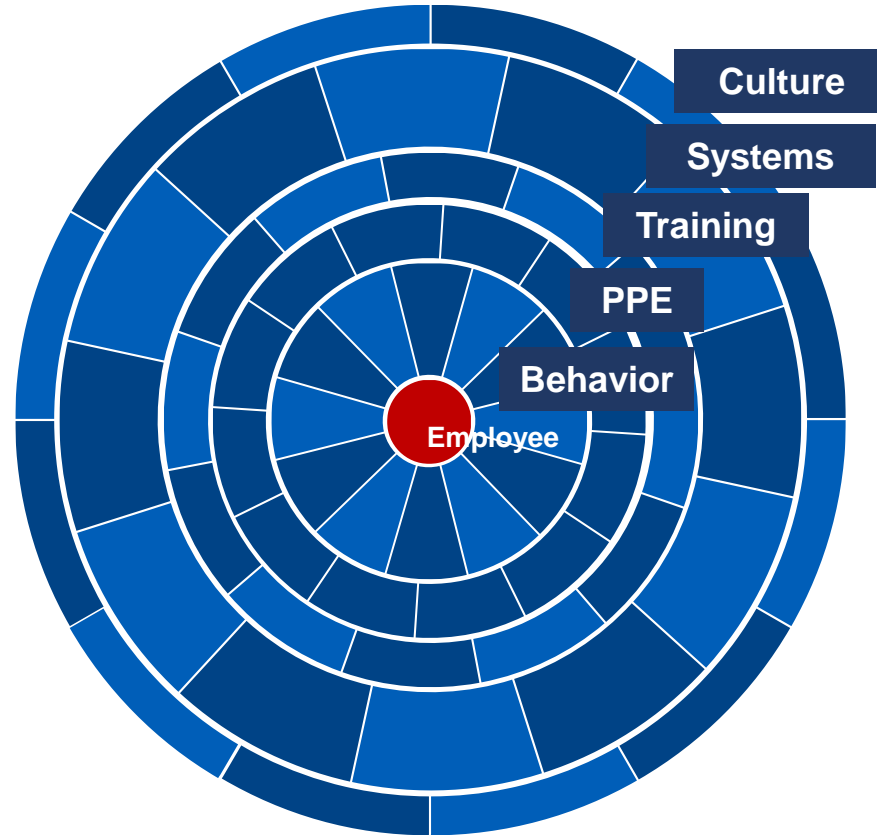
Workers are not causing events.

Workers make mistakes that
TRIGGER latent conditions that
already exist within the system.

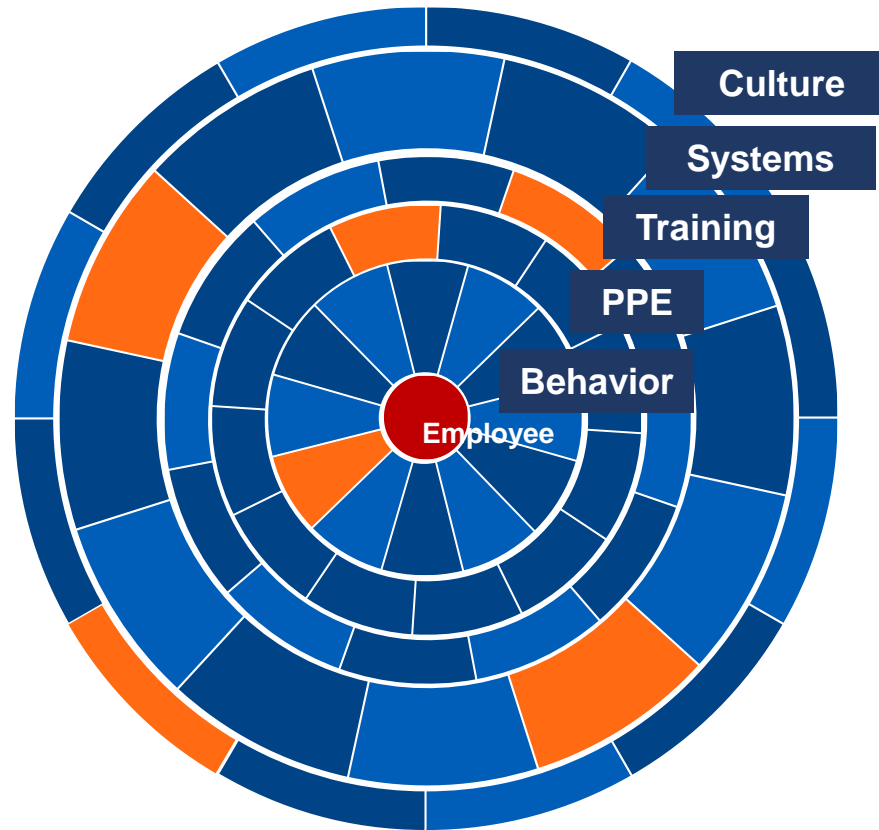
Why didn't our system prevent an
event?



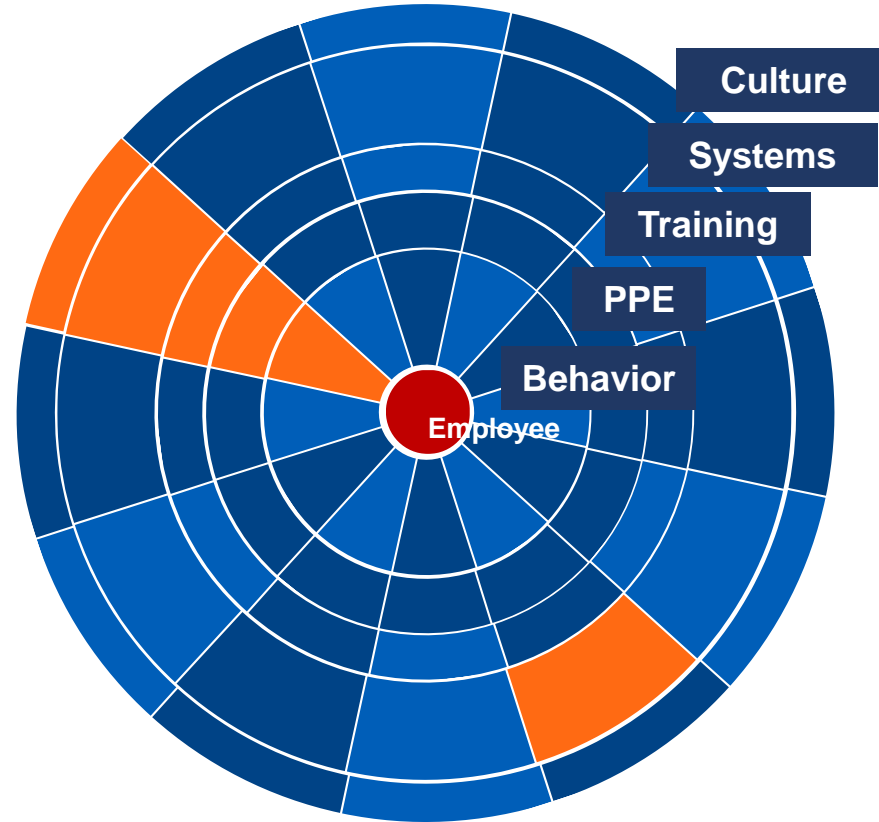
Presence of Defenses



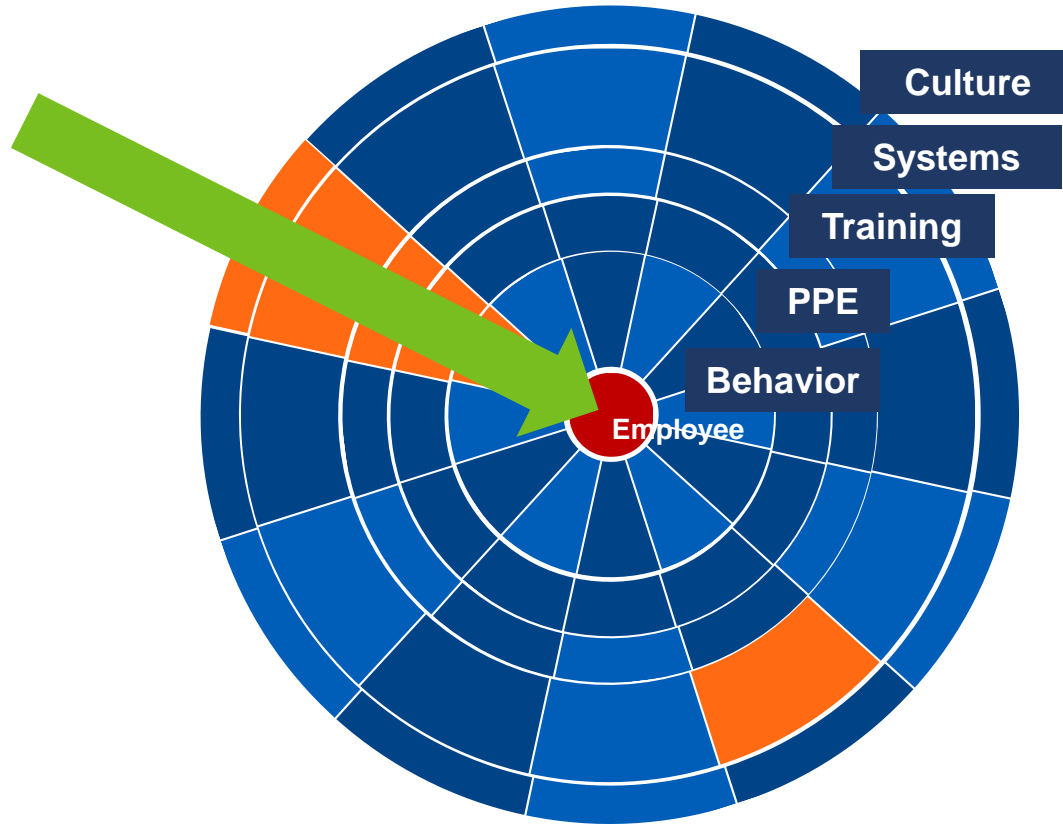
Gaps in Defenses



Set the Stage for Active Triggers



Errors Can Trigger an Incident





Key Defense Principles

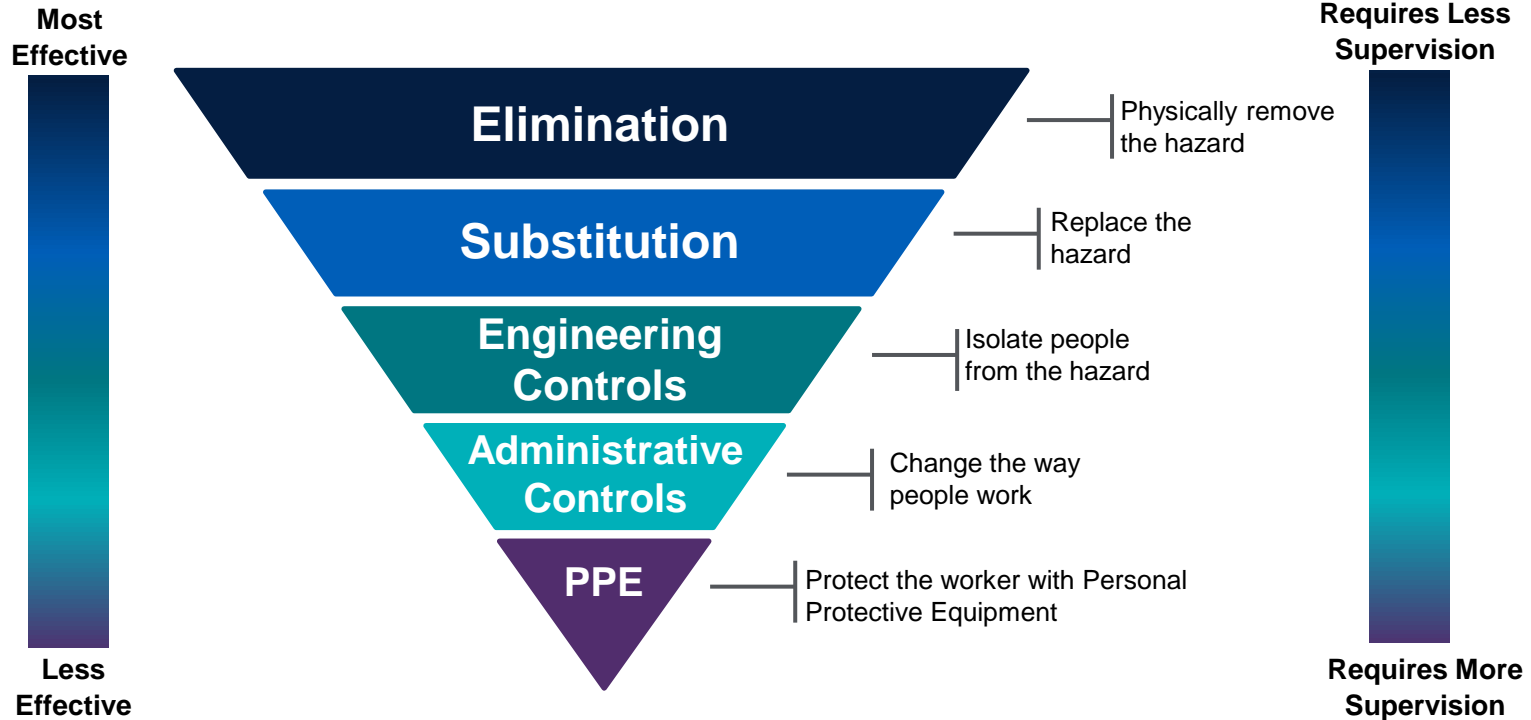
No matter how strong the leadership is, **drift will occur**

When **building strong defenses**, you want to ask:

- How can we **establish defenses** and **minimize drift**?
- Is there a **better way** to do the task?
- What **redundant systems** can be incorporated?
- What **critical behaviors** need to be developed and reinforced?
- How can we develop them into **habits**?



Hierarchy of Controls





Defense erosion

- Drift causes erosion of defenses. All defenses erode over time.
- Redundancy minimizes drift.
- Redundant processes are built through:
 - Culture
 - Leadership
 - Administrative processes
 - Training processes
- Without redundancy, defenses erode and events will occur.



Becoming A Learning Organization

- Learning only occurs in an **environment of trust**
- It is about understanding **organizational drift** and uncovering **latent conditions**
- Requires moving safety from a model of “**crime & punishment**” to one of “**diagnose & treat**”

What will you do?

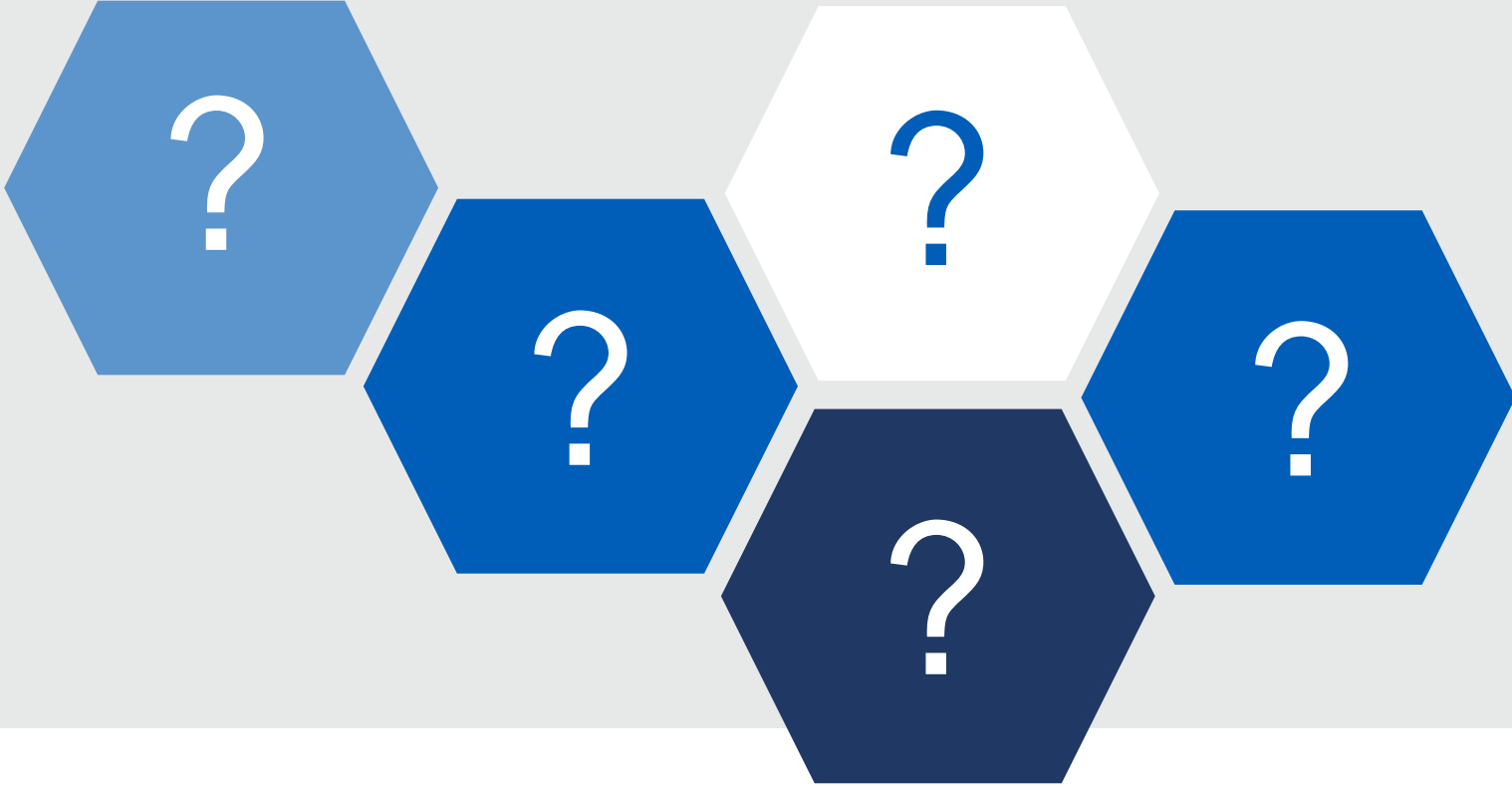
Since HP is not something you can just check off your list, how will you keep it alive for yourself? For your team?

Set Micro-Goals

- What is a daily goal you can set for your worksite / team?
- How can you get others invested in this goal?
- How can you respond when you don't meet your daily goal?
- How can you recognize behaviors that respond to or prevent drift?



What Questions Do You Have?





Human
Performance

Thank You