AMERICAN SOCIETY OF
SAFETY PROFESSIONALS

Philadelphia Chapter

March 31, 2022, Virtual Meeting

Integrating Human and Organizational Performance into Safety Management

"Improving Safety Performance"

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Integrating Human and Organizational Performance into Safety Management
"Improving Safety Performance"

Terminal Objective

Provide a practical way of improving safety performance by applying human and organizational fundamentals into safety management.

Enabling Objectives

1. Provide history of Safety Performance Principles including organizational, leader and individual aspects
2. Review how organizational values and leader behaviors influence safety culture
3. Describe how reducing errors & violations, minimizing risks to hazards and a defense in depth approach (hazard mitigation controls) leads to zero events
4. Explain how programs, process, procedures and training are vital to sustaining safety performance
5. Reinforce that when individuals rigorously use Safety Performance Tools and Mitigation Controls safe results are achieved

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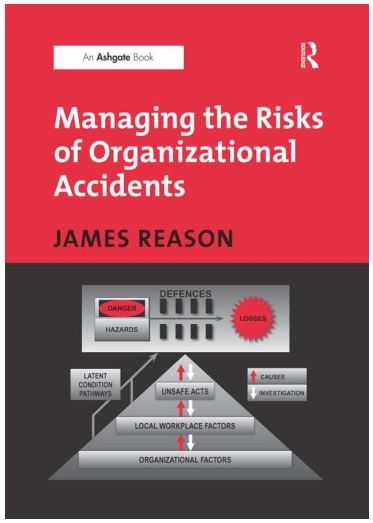
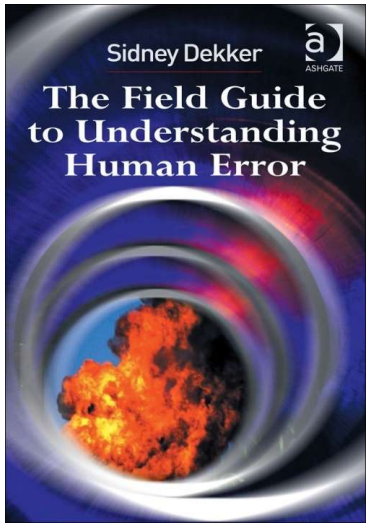
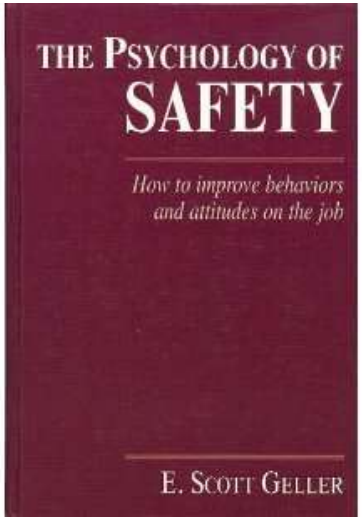
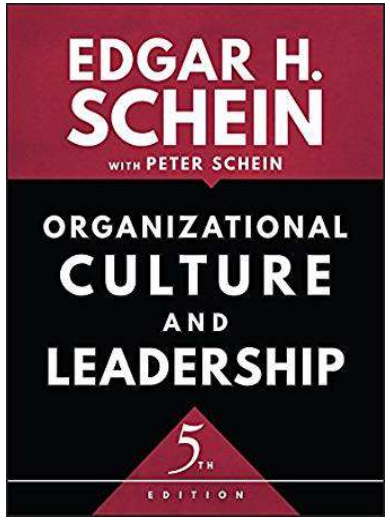
The Experts









"Why did it make sense for the person to do what they did at the time of the event?"
Sydney Dekker

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How were human performance fundamentals derived?

- Defense
- Airlines
- Nuclear Industry
- Medical

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ASSP GM-Z10.100-2019

ANSI/ASSP Z10.0-2019 Occupational Health and Safety Management Systems

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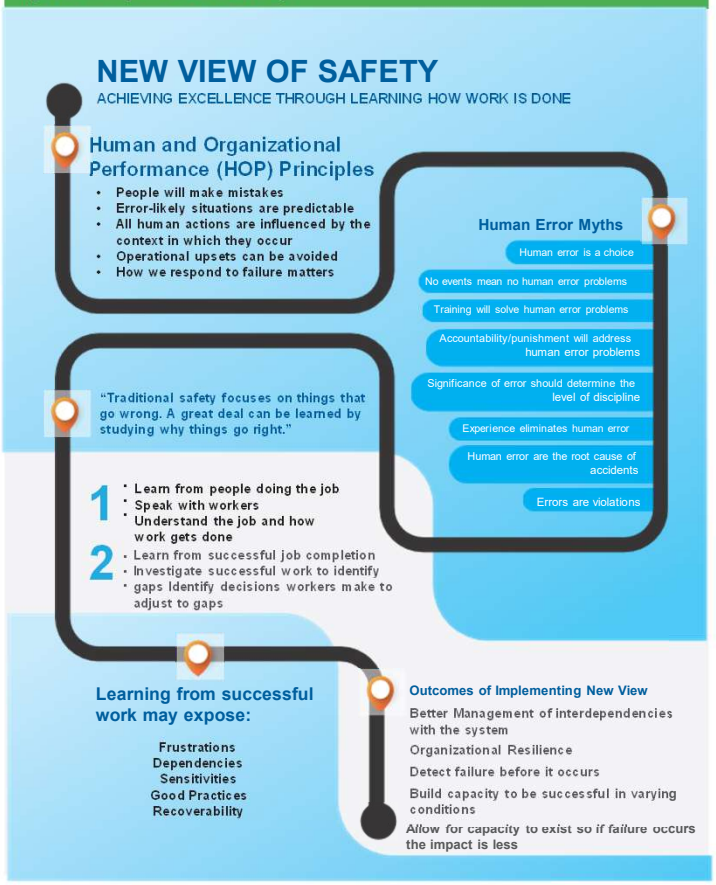
Understanding the Workplace: The New View of Safety

Figure 1 Revising How We Look at Safety



What is
Safety?

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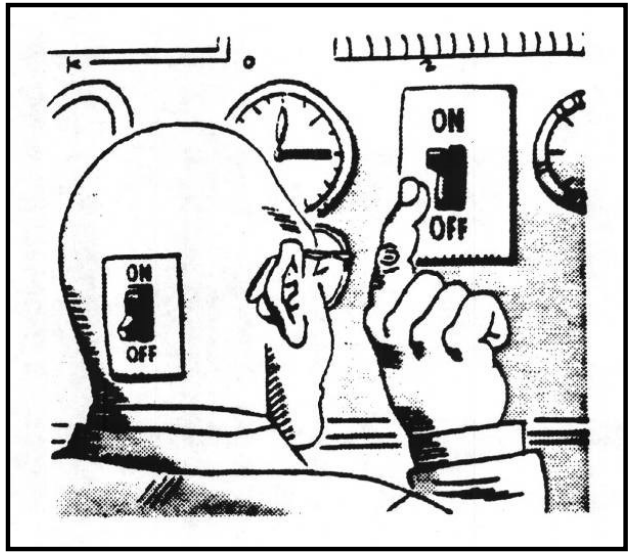
Safety Performance Principles

- People make errors
- Error-likely situations are predictable
- Errors and risks to hazards can be reduced using safety performance tools
- Behaviors are influenced by
  - organizational values, programs, processes and job site conditions
  - what is encouraged and reinforced



- Events can be eliminated with Hazard Mitigation Controls – Defenses

Md + Re → 0 Events

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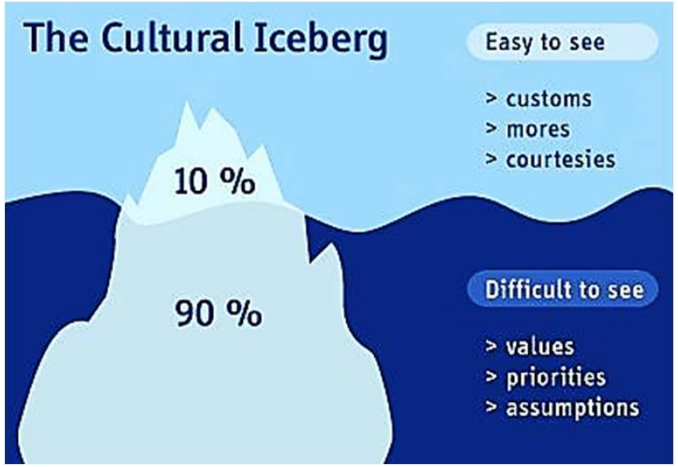
Improving Safety Performance

Organizational Values

Three Levels of Culture

1. What can be seen – visual cues?
2. Behaviors observed and reinforced.
3. Shared values, priorities & assumptions.



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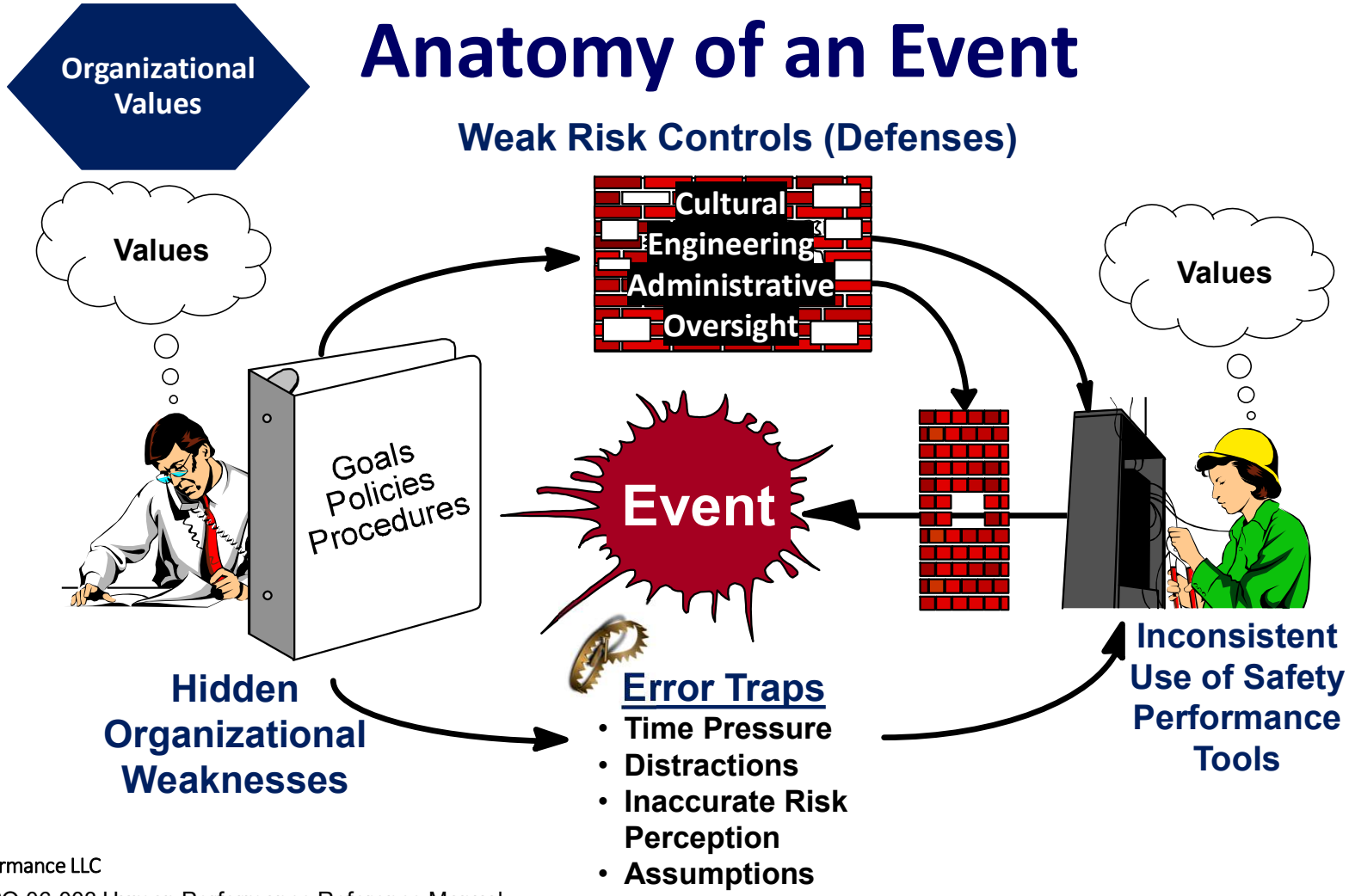
Organizational Values

People, Plant & Environment Safety Performance *Inextricably Linked*

Deepwater Horizon Oil Rig April 20, 2010

- Significant Environmental Damage & Massive Clean-ups
- 11 Fatalities
- $4.5 Billion Settlements
- Legal Issues

Anatomy of an Event



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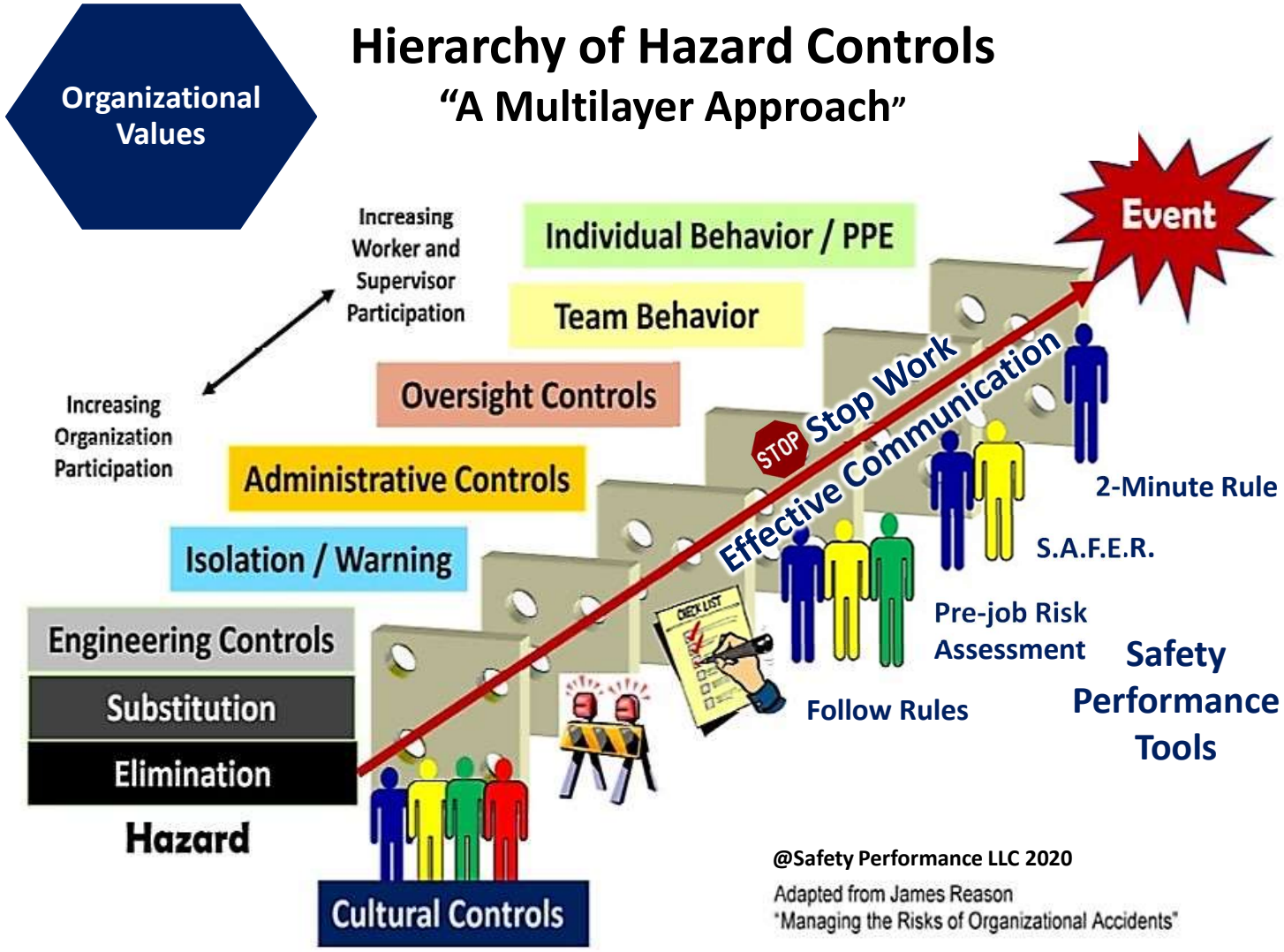
Adapted from INPO 06-003 Human Performance Reference Manual

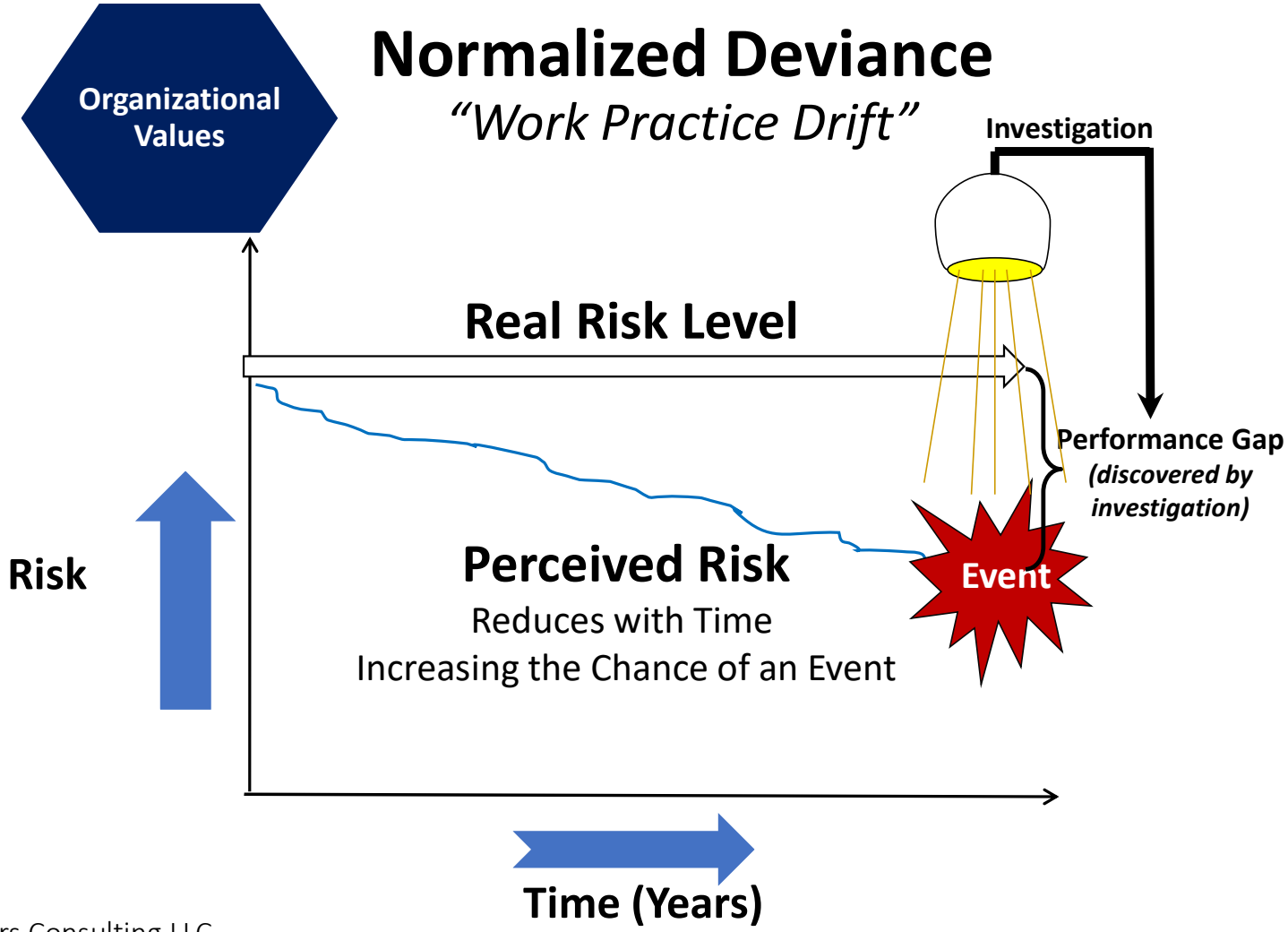
Hierarchy of Hazard Controls

"A Multilayer Approach"



@Safety Performance LLC 2020

Adapted from James Reason
"Managing the Risks of Organizational Accidents"



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Organizational Values

Every organization is perfectly aligned to get the results it gets!

- **The level of safety performance achieved is influenced by the collective behaviors of all individuals in the organization.**

- **People achieve high levels of safety performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates.**

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Leader Behaviors

Who are Safety Leaders?

Board Members, CEO, Presidents, Vice-Presidents, Directors, Managers	Engineers
Supervisors	Workers
Trainees/apprentices	Anyone in the organization

Key Leadership Skills

- Lead by example
- Engage people
- Communicate effectively
- Talk Safety and Listen

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Organizational Behaviors

Let’s Talk Safety & Listen

Filters, Bias, Preconceived Notions

Leader Behaviors

Let's Talk Safety & Listen

- **Safety Leaders…**
  - Lead by example
  - Engage people
  - Effectively communicate
  - Talk Safety and Listen

- **Let's Talk Safety**
  - It takes **COURAGE** to speak up and be a safety leader.
  - The safety **conversation** builds trust and respect!
- **Listen to understand why and how work is performed.**
  It is easy to talk, it is much harder to listen.

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Leader Behaviors

Safety Has No Natural Feedback Mechanism

If people take shortcuts, the *naturally occurring positive consequence* from doing the job with less effort can cause the undesirable behaviors to continue.

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Leader Behaviors

Let's Talk Safety & Listen

1. See something?
2. Say something … ask how job is going – Listen!
3. Talk about safety:
   - ❑ Safe work practices (2 or 3)
   - ❑ Improvement opportunities or concerns (if any)
4. Give thanks and summarize

See Something … Say Something!

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Leader Behaviors

Let's Talk Safety & Listen

Examples

Safe Behaviors

"I thought you did a nice job with keeping your eyes on the task because it just takes a second for something to happen."

(Pause)

"And I saw you stayed clear of the moving parts which is good, so your hands don't get cut or pinched."

(Pause)

"And I thought it was good that you kept the tools and materials away from the machinery so that nothing rolls in and gets kicked back out."

Improvement Opportunity

"I just wanted to ask you if those are the best gloves for this type of task?"

"Thanks again, any questions for me? "

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Leader Behaviors

Let's Talk Safety & Listen

An Aligned Engaged Team Leads to Safety Excellence!

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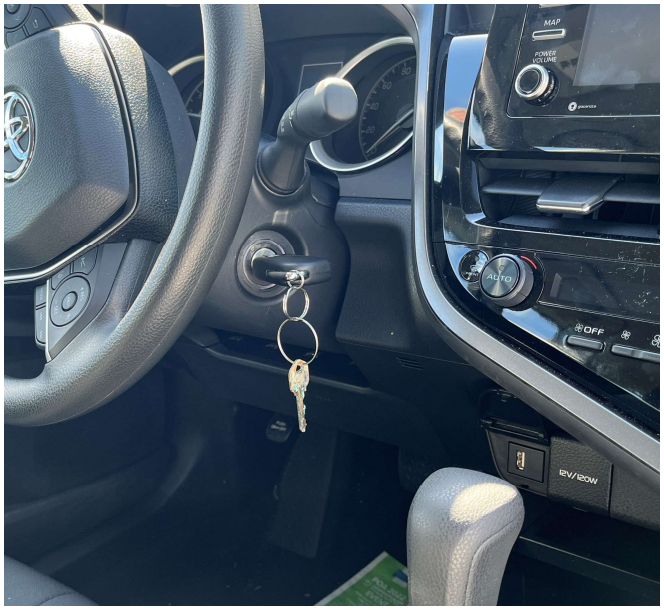
Errors
Violations
Hazards
Risks

Errors and Violations

Unintended "Not *Thinking*"



Intended *"Thinking"*

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GLOBAL LEARNING SUMMIT™

Errors
Violations
Hazards
Risks

Safety Performance Key Error Traps

Time Pressure

Distractions

Inaccurate Risk Perception

Assumptions

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Errors
Violations
Hazards
Risks

Safety Error Trap
Time Pressure

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Errors
Violations
Hazards
Risks

Safety Error Trap
Distractions

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Errors
Violations
Hazards
Risks

Safety Error Trap
Assumptions

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Errors
Violations
Hazards
Risks

Safety Error Trap
Inaccurate Risk Perception

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Errors
Violations
Hazards
Risks

Basic Safety Hazards

- Working from heights
- Spills on floors or trip hazards
- Stuck-by or caught-in between
- Unguarded machinery
- Overexertion
- Ergonomic
- Unseen

References: OSHA and ASSP Certificate in Risk Assessment

Errors
Violations
Hazards
Risks

Is the Risk to the Hazard Acceptable?

Errors
Violations
Hazards
Risks

Respect the Risk to Hazards

Safety Improves when the Risk to Hazards is Eliminated, Reduced or Controlled with Defenses and Safety Performance Tools!

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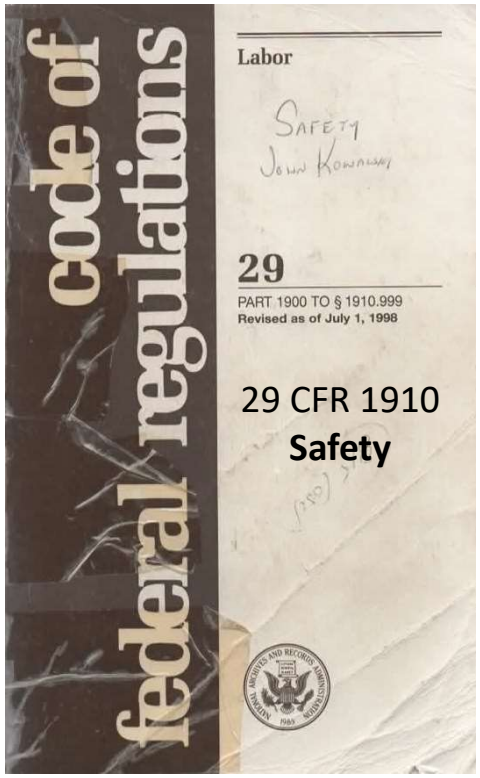
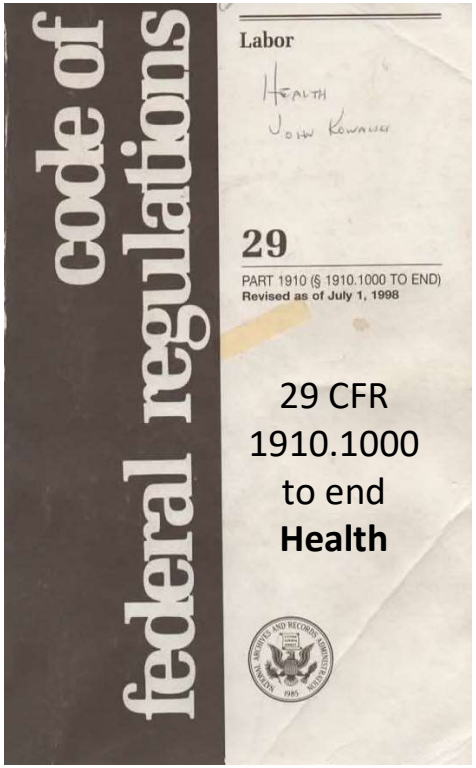
Programs
Processes
Procedures
Training

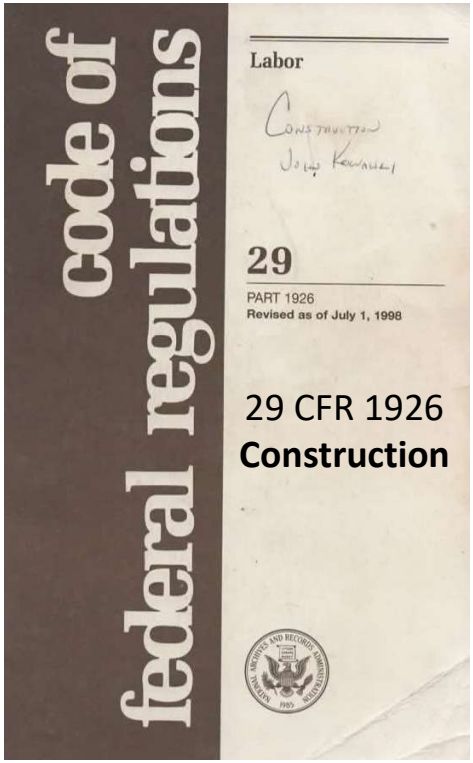
OSHA Regulations



29 CFR 1910
Safety



29 CFR
1910.1000
to end
Health



29 CFR 1926
Construction

Programs
Processes
Procedures
Training

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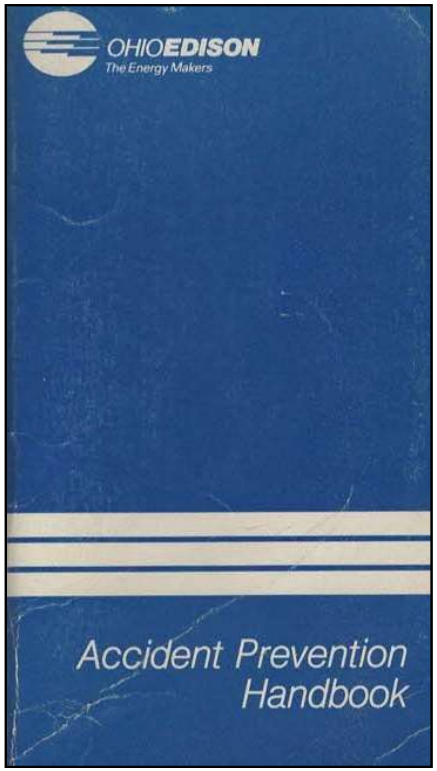
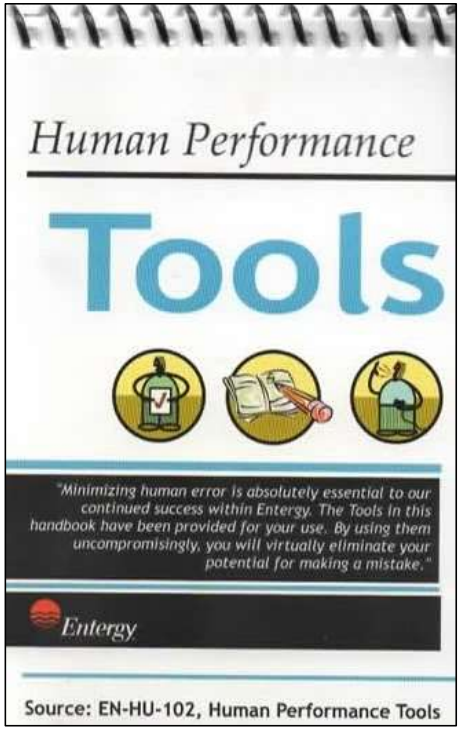
Programs
Processes
Procedures
Training

Pocket Safety and Human Performance Manuals

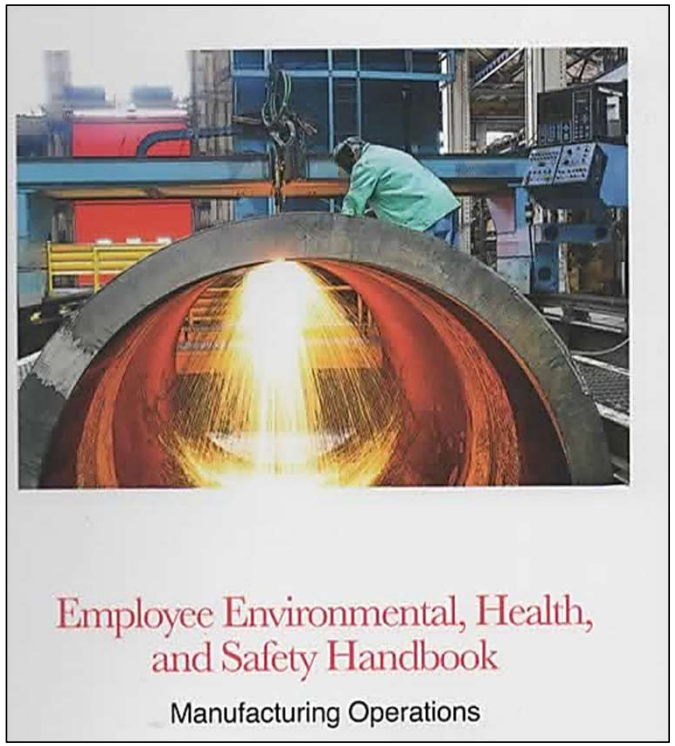




Source: EN-HU-102, Human Performance Tools

Programs
Processes
Procedures
Training

Safety Performance Handbook



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1.2. LIFESAVING RULES
1.3. INCIDENT REPORTING
1.4. GENERAL SAFETY RULES
1.5. HOUSEKEEPING
1.6. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Section 2: Hazard Assessment & Safety Performance Tool

2.1. HAZARD ASSESSMENT/HIERARCHY OF CONTROLS
2.2. STOP WORK
2.3. PRE-JOB RISK ASSESSMENT
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2.6. TWO-MINUTE RULE
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Dynamic Learning Activities

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Hazard / Risk Assessment and Safety Performance Tools

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Individual Behaviors

Pre-job Brief

What

A Pre-job Brief is an interactive discussion involving all team members to ensure all potential hazards, risks and lessons learned from previous performance are addressed.

Why

To ensure safe task completing by identifying hazards and hazard mitigation controls that will be used.

How

Usually conducted by the Supervisor close to the job site. Consider conducting it in a reverse manner (worker leads discussion) to assess understanding by participants.

OSHA 1910.269 Job Brief

- Hazards associated with job
- Work procedures involved
- Special Precautions
- Energy source control
- Personal Protective Equipment requirements

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Individual Behaviors

Focus on Confirmation Bias

Agency: Pilot in Bryant crash erred

Tom Schad
USA TODAY

The National Transportation Safety Board concluded Tuesday that pilot Ara Zobayan's poor decision-making likely caused the helicopter crash that killed NBA star Kobe Bryant and eight others last year.

The NTSB found that Zobayan was flying under visual flight rules, which means he had to be able to see where he was going, but decided to fly into thick clouds, where he became spatially disoriented. The NTSB identified "self-induced pressure and plan continuation bias" as likely contributing factors in Zobayan's decision-making.

Investigators also attributed fault to the company that operated the flight, Island Express Helicopters, citing its "inadequate review and oversight of its safety management processes."

"By most measures, the interviews that we conducted, the pilot was well thought of, well-regarded. He was the chief pilot. Had good credentials," NTSB chairman Robert Sumwalt said during a board meeting about the findings. "I think this illustrates that even good pilots can end up in bad situations."

The NTSB's long-awaited findings come a little more than a year after the Sikorsky S-76B helicopter crashed into the hills near Calabasas, California, on Jan. 26, 2020.

An official inspects the remains of a helicopter the day after a crash killed Kobe Bryant; his daughter, Gianna; and seven others. NTSB/AFP VIA GETTY IMAGES

All nine people on board died in the crash, including Bryant and his 13-year-old daughter, Gianna; John and Keri Altobelli and their daughter, Alyssa; Sarah Chester and her daughter, Payton; Christina Mauser, an assistant coach; and Zobayan. The group had been traveling to Thousand Oaks for a youth basketball game.

Experts and investigative records had long pointed to spatial disorientation as a likely factor in the crash.

NTSB investigators said Tuesday that from 2010 to 2019, the board found 194 fatal aircraft accidents related to spatial disorientation.

Over the course of a four-hour board meeting, NTSB investigators and board members also repeatedly referenced Zobayan's decision to proceed into poor weather rather than land the helicopter at nearby Van Nuys Airport and wait it out.

Investigator-in-charge Bill English referenced this when asked if having a second pilot on board might have helped avoid the tragedy.

"We don't see any specific factors in this accident that directly relate to single-pilot vs. dual-pilot – for example, workload," English said. "It doesn't take much workload to turn the helicopter around and land it at Van Nuys. It takes a good decision and good support to do that."

English also said that while investigators found deficiencies in Island Express Helicopter's safety procedures, it is not considered a "rogue" or "problem" company.

Investigators added that there is no evidence to suggest that the actions of the air traffic controllers contributed to the crash in any way.

Bryant, who was 41, was well-known for traveling by helicopter during his career with the Los Angeles Lakers and in retirement. He viewed it as a way to avoid the oft-gridlocked traffic in Los Angeles and the surrounding area. He had previously flown in the aircraft that crashed and traveled regularly with Zobayan.

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Individual Behaviors

A Safety Minute

When Starting, Returning or Interrupted at the Jobsite…

1. **Explore:** (Look up, down & around)
   - **Recognize hazards & controls**
   - **Any potential challenges?**

2. **Review / Follow Rules**
   - Life Saving Rules / JSA / Job Brief
   - PPE / Safety Equipment

3. **Perform Final Safety Check**
   - What is the worst that can happen and why won't it?
   - Have all questions been answered?

STOP if Unsure and Seek Help!

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Individual Behaviors

Understand & Follow Rules

What

The rules reflect best practices in the work-place, and many are required by OSHA. Following rules means that individuals understand the rule's intent and purpose and follow them as written.

Why

- To safeguard yourself and coworkers
- To ensure the correct actions are performed in the proper sequence and reduce risk of error.
- Ensures that we stay in "positive control" of the plant; the only thing that happens is what we expect to happen.

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Individual Behaviors

Life Saving Rules

CRAFT

- **C**onfined Space
- **R**igging and Lifting
- **A**rc Flash / Electrical
- **F**all Protection
- **T**agging - Energy Source Control

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Individual Behaviors

Attention Focus
Self and Peer Check

Self-Check focuses attention on the task, to think about the intended action and its expected response before performance, and verify actions taken after performance. STAR (Stop, Think, Act, and Review) is a technique to self check.

Peer-Check is a series of actions by two individuals working together at the same time and place, before and during a specific action, to prevent an error by the performer.

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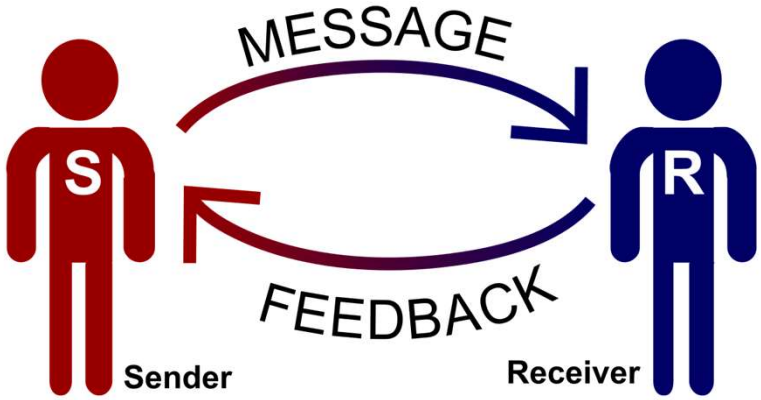
Individual Behaviors

Effective Communication

What

Effective Communication is clear, concise, and free of ambiguity. It is provided in a way that minimizes the chance of being misunderstood. Especially, when exchanges of information directly manipulate equipment or are critical actions.



Why

- To minimize the potential for making errors.
- To provide for the accurate, complete, concise, clear, and error-free transfer of information.
- To ensure the receiver of the message listens to and understands the message sent.

How

It is performed using Three-Part Communications, the phonetic alphabet and the noun names of equipment and components.

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Individual Behaviors

Stop When Unsure

What

STOP Work is a brief interruption work to discuss and resolve assumptions, uncertainty, changing conditions, or other potential unsafe conditions.

Why

- To reduce errors and exposure to hazards
- To ensure good decisions are made during work performance
- To challenge preconceptions and assumptions

When

Personnel are authorized to stop work and seek help if an actual or potential unsafe condition is present, but especially when:

- The task is determined to be unsafe
- Confusion or concerns are identified
- Unanticipated changes in conditions are encountered
- Conflict or inconsistencies exist between plans, rules, procedures, instructions, and actual conditions
- You or others think or say the following words and phrases: “Probably, I assume, I think, Maybe, Should be, Not sure, We’ve always, I’m 90% certain”

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Individual Behaviors

Post Job Brief

What

A Post-Job Brief is performed to gather information and lessons learned from workers after task completion.

Why

- To ensure that the work site has been cleaned up
- To ensure that job status is communicated
- To identify what worked well and any opportunities for improvement

When

After task completion.

Typical Post Job Brief

- **What worked well?**
- **What can be improved?**
- **What lessons were learned that need to be captured and passed on to others?**

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Improving Safety Performance

Safety Performance Improvement

- Improve Incident Reporting, Investigations and Trending
- Focus on Risk Reduction & Exposure Control
- Focus on Behaviors and Coaching
- Use of Safety Performance Tools and Defenses
- Leadership Consistently Values the Balance of Safety & Production
- Leading "Proactive" Safety Performance Measures

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Improving Safety Performance

Journey to Improve Safety Performance

Phase 1
Safety Culture Assessment Discovery & Analysis

- Incident data (2-year period)
- Safety standards & reports
- Safety Meetings
- Field observations / interviews
- Design & conduct safety survey

Phase 2
Safety Performance Introduction & Assessment Workshops

- Safety Professionals
- Senior Management
- Union Leaders

Phase 3
Safety Performance Training

- Senior Leadership
- Mangers & Supervisors
- Employees

Phase 4
Strategic Plan & Performance Measures

- Senior Leadership Workshops

Phase 5
Let's Talks Safety and Listen

- Safety Observation Program
- Training

Phase 6
Hazards and Risk

- Recognize Hazards
- Assess Risks
- Mitigation Controls

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Improving Safety Performance

Commitment to a Safety Strategic Plan
Example

Safety Performance Strategic Plan

TARGET ZERO
No Job Is Routine

_____
. Director, Site Operations

_____
Maintenance

_____
Director, Performance Improvement

_____
Director Engineering

_____
Outage & Work Management

_____
Site Vice-President

Safety Performance Strategic Plan

Our Vision

The people at are committed to excellence in Safety & Human Performance. A Strategy has been developed in support of the Strategic Objectives for Safe Event-free Plant Operation. An action plan has been developed to add focus to this initiative, as well as emphasize ownership and accountability. The signatures in this document signify the individual's ownership and accountability to this plan.

Manager, Operations _____
Superintendent, Unit 1 Operations _____
Superintendent, Unit 2 Operations _____
Manager Maintenance _____
Superintendent, Instrument & Control Maintenance _____
Superintendent, Electrical Maintenance _____
Superintendent, Mechanical Maintenance _____
Superintendent, Planning & Support _____
Superintendent, Maintenance Services _____
Superintendent, FIN Team _____
Superintendent, Nuclear Construction _____
Manager, Site Projects _____
Manager, Nuclear Training _____
Chemistry Manager _____
Manager, Radiation Protection _____
Manager, Design Engineering _____
Manager, Plant & Equipment Engineering _____
Manager, Technical Services Engineering _____
Manager, Work Management _____
Manager, Outage Management _____
Manager, Site Protection _____
Manager, Human Resources _____
Manager, Regulatory Compliance _____

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Improving Safety Performance

Safety Performance Measures

Traditional "Reactive" Measures…	Leading "Proactive" Measures…
• Compliance driving the Safety program • Low employee involvement • Training heavily focused on technical aspects of job • Focus on a single cause • Correct the individual failure • Narrowly apply solutions • OSHA Recordable injuries • Lost Time Accidents • Worker Compensation Cost • Regulatory violations	• Leadership "Walks the Talk" • Leaders motivating employees to own safety & go beyond minimal standards • Recognition for use of Safety Performance Tools & Defenses • Focus on hazard exposure and risk • Employees involved in developing and implementing safety training programs • All Training includes "soft" skills • Focus on organizational root cause • Correcting system/process deficiencies • Recognize a near miss or good catch • Improvement Opportunities • Self Assessments • Safety Perception Surveys

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Improving Safety Performance

Safety Performance Strategic Plan Example

Safety Assessment Gaps / Recommendations	Actions	Proactive Performance Measures
1.Increase focus on learning from incidents	• Reset the criteria to determine what type and depth of investigation is necessary • Review and enhance the method/tools for investigation • Improve and standardize corrective action process and method of communication to ensure learning is shared and issue is fixed everywhere it is applicable • Pilot Culpability Model	1. Potential Significant Injury or Fatality Near Misses and trend analysis
2.Define expectations and leadership behaviors to align performance measures update, coach and reinforce standards and expectations for safety performance	• Identify & clean up clutter. Get rid of what you don't need. • Identify proper walkways and paint lines for the walkways. All areas need to identify walkways. • Laydown areas need to be identified and also marked. • Plant wide audit of all signs. Remove old signs. Hang new applicable signs. Formalize homemade signs and hang new standardized.	1. Management & Supervisor Observations and Coaching – amount and quality 2. Pre-job briefing - amount and quality 3. Assessments of use of Safety Performance Tools and Hazard Controls 4. Job Hazard Analysis and Safety Procedures – amount and quality

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Improving Safety Performance

Safety Performance in Action

"Safety is not the lack of injuries, it's the use of safety performance tools and the presence of defenses"

TAKE A SAFETY MINUTE
STARTING, RETURNING OR INTERRUPTED TO TASK...

1. **Explore:** (Look up, down & around)
   - Recognize hazards & controls
   - Any potential challenges?
2. **Review / Follow Rules**
   - Life Saving Rules/JSA/Job Brief
   - PPE / Safety Equipment
3. **Perform Final Safety Check**
   - What is the worst that can happen and why won't it?
   - Have all questions been answered?

STOP if Unsure and Notify Supervision

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Engagement

Participation

Safety Conversations

Defense Validation

PRE-JOB RISK ASSESSMENT

Before every job discuss:

- ❑ Hazards associated with job
- ❑ Work procedures involved
- ❑ Special Precautions
- ❑ Energy source control
- ❑ Personal Protective Equipment requirements
- ❑ Environmental Hazards and Controls

STOP if Unsure Seek Help

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Teamwork

Effective Communication

Life Saving Rules

Know your CRAFT:

- Confined Space
- Rigging & Lifting
- Arc Flash
- Fall Protection
- Tagging

Understand & Follow Rules

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Improving Safety Performance

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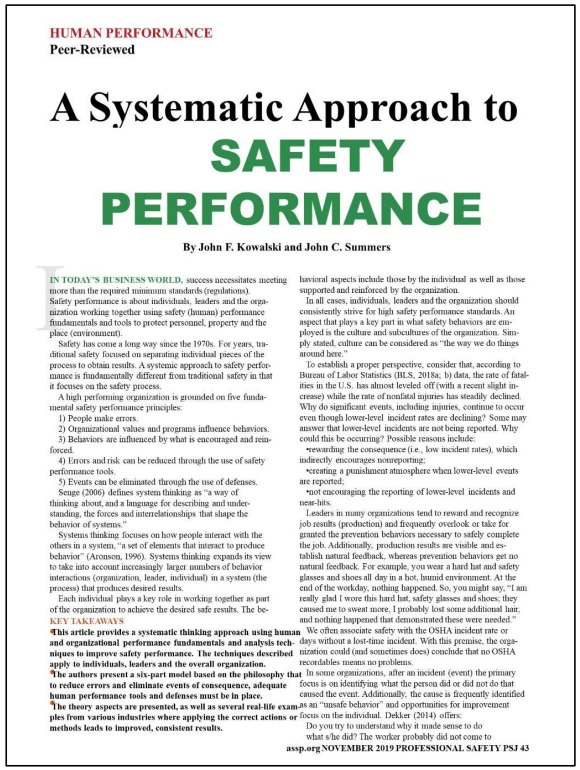

HUMAN PERFORMANCE
Peer-Reviewed

A Systematic Approach to SAFETY PERFORMANCE

By John F. Kowalski and John C. Summers

IN TODAY'S BUSINESS WORLD, success necessitates meeting more than the required minimum standards (regulations). Safety performance is about individuals, leaders and the organization working together using safety (human) performance fundamentals and tools to protect personnel, property and the place (environment).

Safety has come a long way since the 1970s. For years, traditional safety focused on separating individual pieces of the process to obtain results. A systemic approach to safety performance is fundamentally different from traditional safety in that it focuses on the safety process.

A high performing organization is grounded on five fundamental safety performance principles:

1) People make errors.
2) Organizational values and programs influence behaviors.
3) Behaviors are influenced by what is encouraged and reinforced.
4) Errors and risk can be reduced through the use of safety performance tools.
5) Events can be eliminated through the use of defenses.

Senge (2006) defines system thinking as "a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behavior of systems."

Systems thinking focuses on how people interact with the others in a system, "a set of elements that interact to produce behavior" (Aronson, 1996). Systems thinking expands its view to take into account increasingly larger numbers of behavior interactions (organization, leader, individual) in a system (the process) that produces desired results.

Each individual plays a key role in working together as part of the organization to achieve the desired safe results. The behavioral aspects include those by the individual as well as those supported and reinforced by the organization.

In all cases, individuals, leaders and the organization should consistently strive for high safety performance standards. An aspect that plays a key part in what safety behaviors are employed is the culture and subcultures of the organization. Simply stated, culture can be considered as "the way we do things around here."

To establish a proper perspective, consider that, according to Bureau of Labor Statistics (BLS, 2018a; b) data, the rate of fatalities in the U.S. has almost leveled off (with a recent slight increase) while the rate of nonfatal injuries has steadily declined. Why do significant events, including injuries, continue to occur even though lower-level incident rates are declining? Some may answer that lower-level incidents are not being reported. Why could this be occurring? Possible reasons include:

- rewarding the consequence (i.e., low incident rates), which indirectly encourages nonreporting;
- creating a punishment atmosphere when lower-level events are reported;
- not encouraging the reporting of lower-level incidents and near-hits.

Leaders in many organizations tend to reward and recognize job results (production) and frequently overlook or take for granted the prevention behaviors necessary to safely complete the job. Additionally, production results are visible and establish natural feedback, whereas prevention behaviors get no natural feedback. For example, you wear a hard hat and safety glasses and shoes all day in a hot, humid environment. At the end of the workday, nothing happened. So, you might say, "I am really glad I wore this hard hat, safety glasses and shoes; they caused me to sweat more, I probably lost some additional hair, and nothing happened that demonstrated these were needed."

We often associate safety with the OSHA incident rate or days without a lost-time incident. With this premise, the organization could (and sometimes does) conclude that no OSHA recordables means no problems.

In some organizations, after an incident (event) the primary focus is on identifying what the person did or did not do that caused the event. Additionally, the cause is frequently identified as an "unsafe behavior" and opportunities for improvement focus on the individual. Dekker (2014) offers:

Do you try to understand why it made sense to do what s/he did? The worker probably did not come to work to do a bad job. If what s/he did made sense to him/her, it probably makes sense to others as well.

That points to systemic conditions to examine.

If an assumption is made that individuals come to work to do their jobs, not to get hurt, then digging a little deeper to identify organizational factors that influence individual behaviors is warranted. In the worst possible scenario, the person performed the correct action, and a hidden (latent) flaw or problem existed, leading to the event. All the individual behavioral change actions in the world will not improve this condition.

Peeling back the layers can lead to more important questions (and answers):

- What about the behaviors of the leaders?
- Does the investigation include review of the work situation that existed when the event or injury occurred?
- Does it include supervisor and manager follow-up to identify how they may have influenced (or did not influence) on-the-job behaviors?
- Does the investigation include reviewing preparations for job performance, what job previews, hazard analysis, walk downs or prejob briefings occurred before work commenced?
- What previous operating experience, if any, existed before this performance?
- What was the focus of the job brief?

Often, the focus before and during the task is on what it takes to get the job done. High-reliability organizations also focus on what to avoid while achieving success. A site vice president at a nuclear power plant in northwest Ohio has great words to consider when briefing workers: "We have all the time necessary to perform the job correctly the first time, we just don't have any time to waste."

Safety Performance Process

Safety performance combines industrial safety, human performance and organizational performance into one process to protect people, the property (plant) and place (environment).

The safety performance process has six key elements starting with organizational behaviors and rotating clockwise toward safe results (Figure 1). Simple-to-use programs, processes and procedures, and hazard risk analysis are vital parts of the safety performance process. However, they alone do not guarantee success. To be effective, the alignment of behaviors of the organization, leaders and individuals is needed. Each aspect of the safety performance process is outlined here.

Organizational Behaviors

Safety starts with the culture of the organization. Safety performance is management-sponsored and leadership-driven by the collective behaviors of the company, from the board of directors to the workers in the field.

After providing human performance training at a power station in western Pennsylvania, training feedback was solicited from trainees, some of whom provided negative feedback. A meeting was held to discuss the subject material. During the meeting, the attendees huddled around one individual, a seasoned worker and an informal leader who the workers respected. Attendees commented that they liked the training, but that their supervisors would not let them use the human performance techniques.

In the days that followed, after being asked several times to help lead the human performance effort, the informal leader finally agreed to help. With his leadership, the program thrived. Workers became involved with the process and made several suggestions to improve it. Workers also started to coach each other and apply safety performance tools more consistently. A key result was that errors decreased.

Every organization has leaders like this informal leader at all levels of the organization. It is critical to identify and engage these leaders to improve safety performance.

While interacting with hundreds of companies and thousands of employees, the authors have often been asked, "How can we reduce errors?" After analyzing hundreds of consequential events, a few common themes usually appeared. First, individuals were not consistently applying appropriate error prevention tools. Second, and more importantly, defenses to protect against errors were either flawed or missing. On further investigation, the authors frequently identified an organizational weakness. If a program was in place to reduce errors and ensure defenses, it was inconsistently applied. Worst case, there was no program, no systematic approach, to protect individuals and the organization.

KEY TAKEAWAYS

- **This article provides a systematic thinking approach using human and organizational performance fundamentals and analysis techniques to improve safety performance. The techniques described apply to individuals, leaders and the overall organization.**
- **The authors present a six-part model based on the philosophy that to reduce errors and eliminate events of consequence, adequate human performance tools and defenses must be in place.**
- **The theory aspects are presented, as well as several real-life examples from various industries where applying the correct actions or methods leads to improved, consistent results.**

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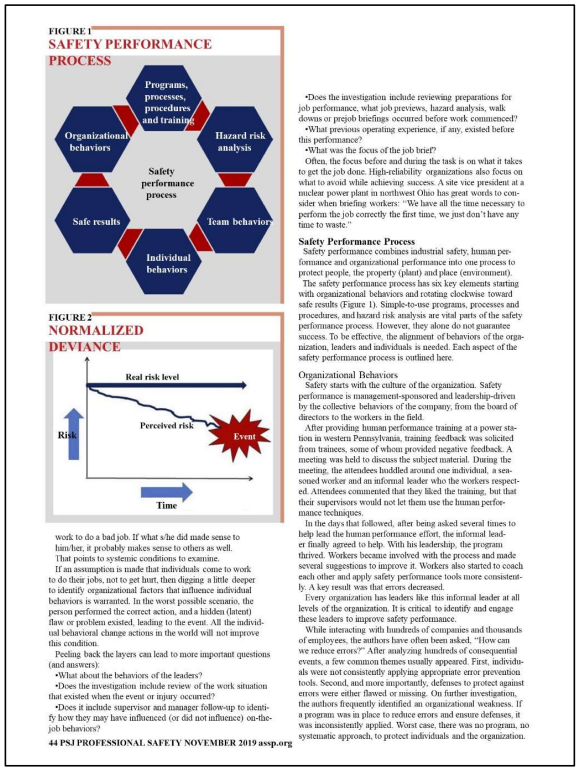

FIGURE 1
SAFETY PERFORMANCE PROCESS

FIGURE 2
NORMALIZED DEVIANCE

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Thank You

You are successful when others are successful!

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