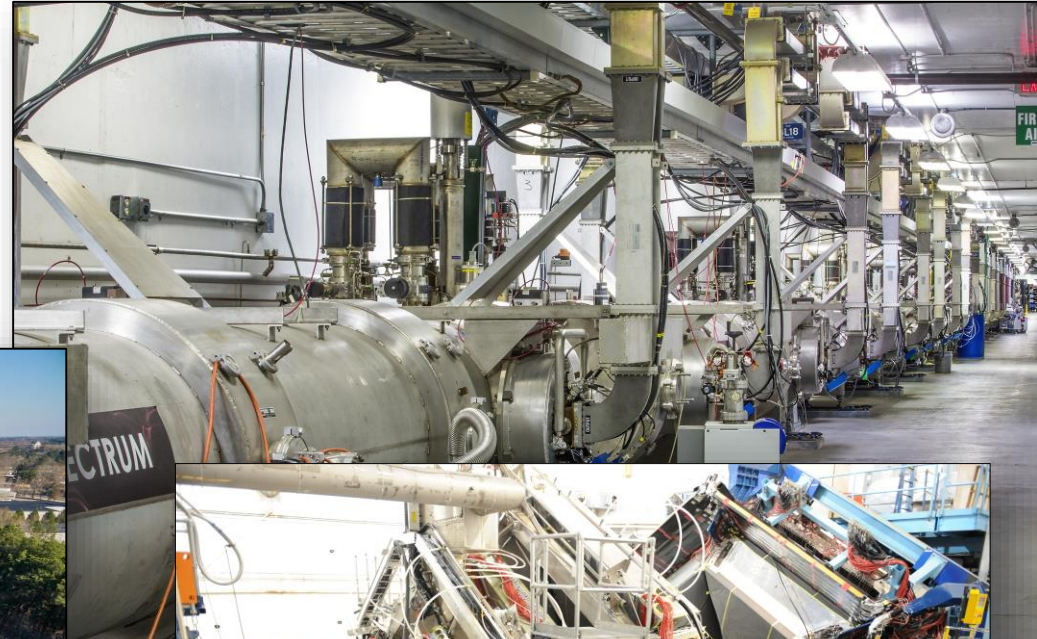# Human Performance Interface

Accelerator Safety Workshop
**Thursday, September 12, 2019**

The Big Picture

- Many DOE Labs have a good safety record and have developed an effective safety program by intentionally focusing on human activity and behavior
    - Correcting individual behavior and individual safety "culture"

- Yet, we seem to experience a chronic low level of injuries; this includes rare events that result in severe injuries and severe close-calls

- We do not and should not consider acceptable even a low level of injuries and close-calls
    - With an ongoing low-level of injuries and bad events, it is increasingly likely that we will severely injure an employee at some point!

- HPI asks to focus less on the individual behavior and personal culture and more on organizational behavior and culture

- Bottom line: we need to commit, as an organization, to taking the lab's performance from good to great
    - We need a high-performing organization

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Important elements in high-performing organizations

Demonstrate Operational Excellence through the Elements of a Healthy Culture

Informed Culture: managers and employees communicate openly to share knowledge and experiences.

Learning Culture: we go beyond superficial causes to the core and are willing to make major reforms to get better.
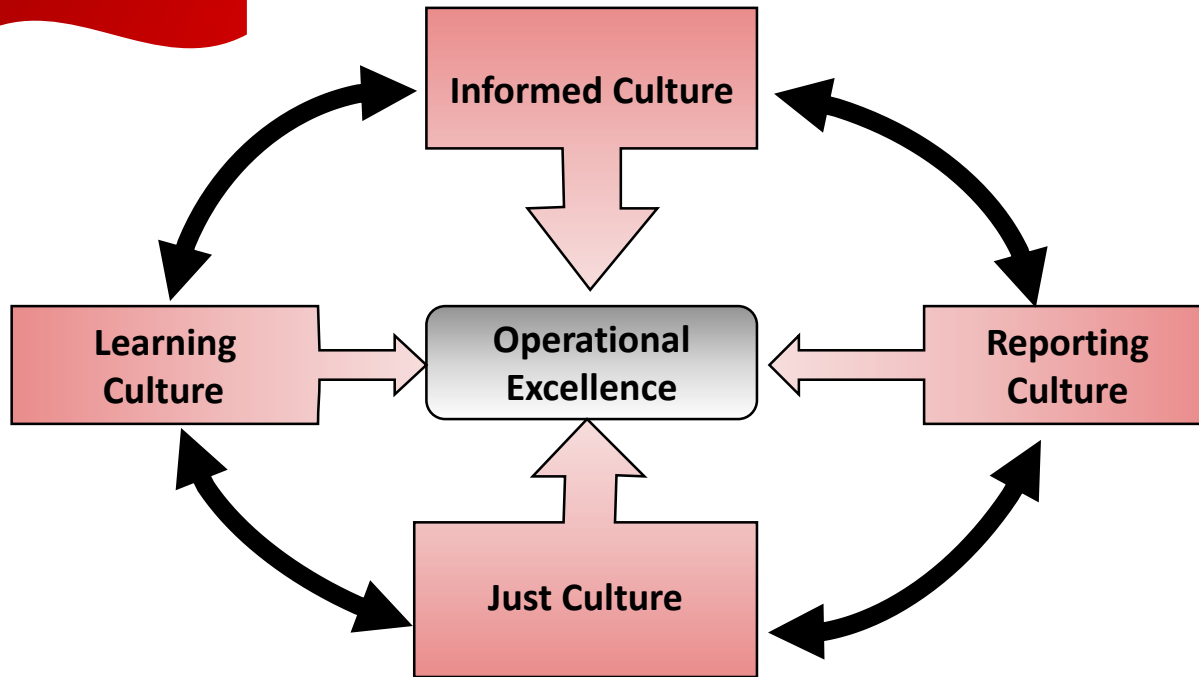
Reporting Culture: employees feel free to report errors and near-misses; successes are applauded; organizational weaknesses are identified and addressed.

Informed Culture

Learning Culture

Operational Excellence

Reporting Culture

Just Culture

Just Culture: people are not punished or penalized for omissions or decisions taken that are commensurate with their experience/training; clear distinction between acceptable and unacceptable behavior.

* Based on James Reason, *Managing the Risks of Organizational Accidents, 1997*

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HPI: a powerful concept to improve operational performance

- The 5 Principles of HPI
  - People are fallible, even the best make errors
    - People don't set out to commit errors
    - Prior to an accident, people have usually done the same task using the same process successfully many times before
  - Error likely situations are predictable, manageable and preventable
    - Common error precursors include
      - Task demands, resource pressures, distractions
      - An individual's attitude and capability
      - Work environment
      - Human Nature
  - Individual behavior is influenced by organizational processes and values
    - Organizations are goal-driven and behaviors are driven towards achieving he goal
    - What is stressed by management - communicated subtly or overtly by leadership - (quality, schedule, compliance, safety, etc.) defines the standard of performance

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HPI: a powerful concept, con't.

- Individual behavior is influenced by organizational processes and values, cont'd.
  - Workers will strive to achieve the goal
  - Leadership supervision defines standards of performance
- People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers and subordinates
  - What is stressed by management - communicated subtly or overtly by leadership - (quality, schedule, compliance, safety, etc.) defines the standard of performance
  - Peer pressure influences culture
- Events can be avoided by an understanding f the reasons mistakes occur and application of lessons learned form past events
  - The intent of accident investigations is to understand not what went wrong, but "what didn't go right"
  - Human performance (behavior and action) is the outcome of a process and not the cause of an event
  - Did the event result from a drift away from normal process
  - Corrective actions – long term solutions (not reactive fixes)

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HPI Interface to existing process at JLab

- The first thing we did was reevaluate causal analysis on recent events!
  - Revaluating causal factors using an HPI lens resulted in a different point of view on culpability and ownership of corrective actions

- The second thing - initiate training
  - This was initiated through ESH&Q
  - HPI is not a safety process, it must be applied broadly
  - Started training with upper and line management training
  - Continued with workforce training

- Third thing - incorporate HPI principles into existing work observation / work discussion processes
  - Much more engaging conversations
  - Discussions touch on safety but also process optimization
  - Workers more open when you are asking questions that allow them speak about their work, workplace, and process innovations

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HPI Interface to existing process at JLab, cont'd.

- The first thing we did was reevaluate causal analysis on recent events!

Anatomy of an Event

J Reason (1990)

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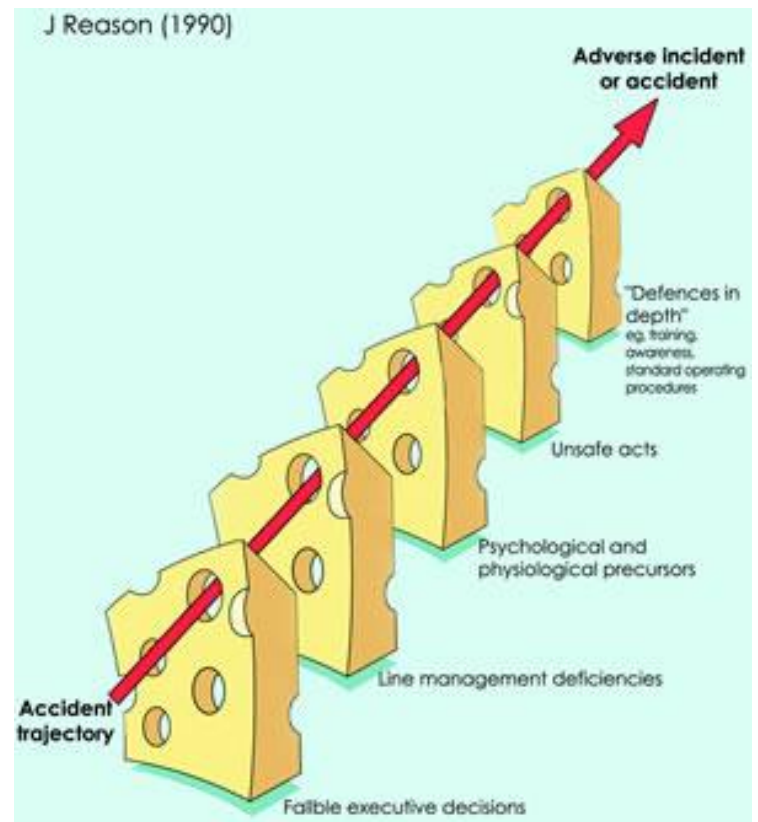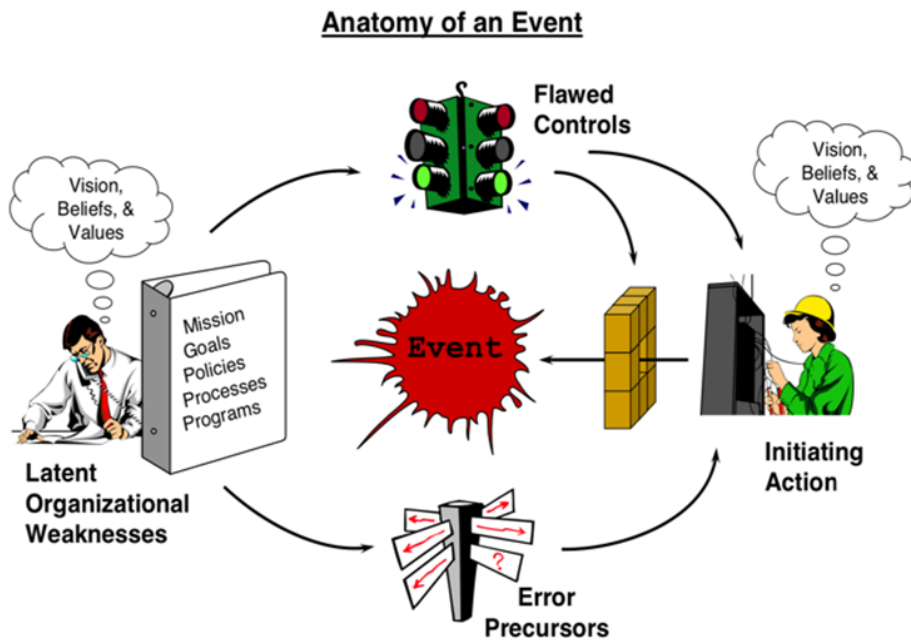
HPI Interface to existing process at JLab, cont'd.

- The first thing, cont'd.
  - The question "what were you thinking" is a radically different question when you ask "why were you thinking that it was OK to…"
  - The answer to the question can also be radically different

- How would you feel if
  - You were involved in a major mishap and you and you work for an organization whose primary concern is punishing the person who caused the mishap, or
  - You were involved in a major mishap and you work for an organization whose primary concern is identifying the root and contributing causes to avoid recurrence

- The response will be different once the basic message goes out that the organization is seeking
  - Understanding not what went wrong, but "what didn't go right" and
  - The basis for individual actions, not blame

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HPI Interface to existing process at JLab, cont'd.

- The second thing, cont'd.
  - Training empowers workers to ask difficult questions
  - Training engages workers in optimizing solutions

- The third thing, cont'd.
  - Changing the work observation / work discussion processes involved speaking with workers about the new focus
  - Workers appreciate the cange
  - A previous conversation with a worker found not wearing safety glasses would have been:
    - Are you aware that you are not wearing your safety glasses?
    - Do you know that they are required?
    - Is there a reason you are not wearing them?
    - Are you aware that this is an infraction, etc, etc.
  - A current conversation with the same worker might be
    - I notice you are not wearing your safety glasses
    - Are you concerned about protecting your eyes?

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HPI Interface to existing process at JLab, cont'd.

- A current conversation with the same worker might be… cont'd.
  - Are there any practical barriers to you obtaining or using safety glasses?
  - I'm curious as to why you think it's OK not to wear them and I'm curious how you received this message?
  - Is there something I can do or we can do together to strengthen the message about safety glasses use in this location.
  - Do you think this message needs to be more robust and who should give it: line manager, senior manager?
  - Do you think this message needs to go further than just safety glasses?
- You get the picture…

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Summary

- HPI is not an individual behavior-based process; it looks at systems and not individuals

- The intent is continuous improvement across all organizational systems which, by its nature, promotes individual performance

- It is a deliberate step towards creating a culture that promotes responsible behavior at all levels and in all processes

- QUESTIONS

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