

# Teaming with Others for a Strong Safety Culture and a Safer Workplace

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*Thanks to Bill Von Holle and Doug Minnema*

# **Management is responsible for providing a safe working environment.**

# **Workers are responsible for their own safety and that of their co-workers.**

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- Among management's responsibilities in providing a safe working environment is the integration of safety in design according to STD-1189, Appendix B, Chemical Hazard Evaluation.
- The Board noted two concerns with Appendix B in a 2008 letter to Deputy SOE:
  - It is not mandatory
  - Unlike radiological hazards, it only suggests safety significant, no safety-class equivalent controls for chemical hazards.

# **Management is responsible for providing a safe working environment.**

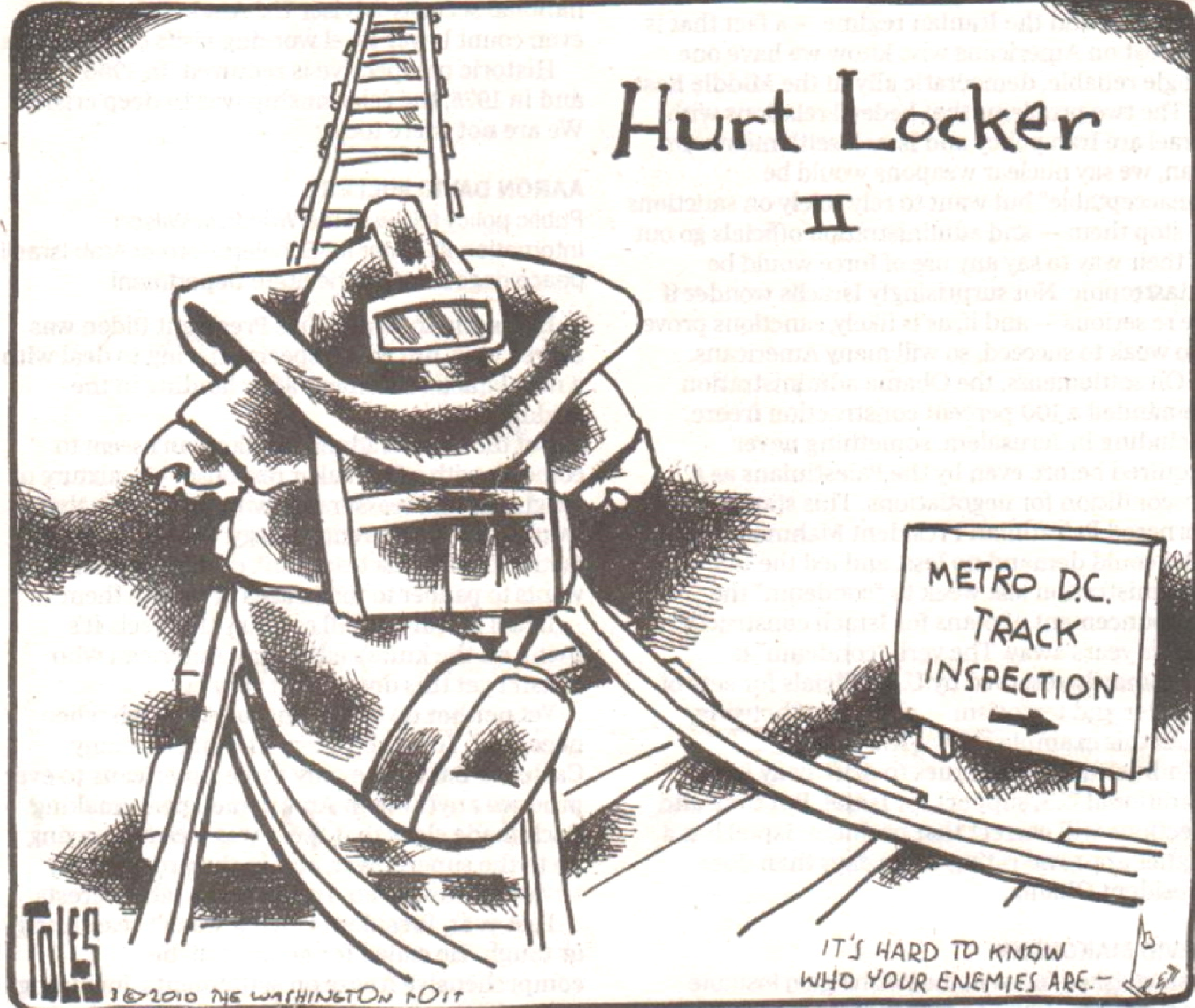
So, managers, lighten up on DART/TRC!!!

That is industrial safety, it is not chemical  
or nuclear safety!

*It does not fully provide the safe working  
environment we seek.*

# Hurt Locker

II



TOLES

18/2010 THE WASHINGTON POST

IT'S HARD TO KNOW WHO YOUR ENEMIES ARE.



U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

# INVESTIGATION REPORT

## REFINERY EXPLOSION AND FIRE

(15 Killed, 180 Injured)



### KEY ISSUES:

SAFETY CULTURE

REGULATORY OVERSIGHT

PROCESS SAFETY METRICS

HUMAN FACTORS

**BP**

TEXAS CITY, TEXAS

MARCH 23, 2005

**Heavy reliance on DART/TRC.**

REPORT No. 2005-04-I-TX

MARCH 2007

# BP Texas City Revisited

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- BP is unable to provide a safe working environment.
- According to DOL-OSHA, BP was not able to improve following the March 2005 accident (15 fatalities, 170 injuries). Since 2005, the site suffered 4 more fatal incidents.
- In 2009, BP Texas City was fined \$87,430,000 for failure to improve safety at the plant.
- The CSB and the Baker Commission found Texas City disaster was caused by organizational and safety culture deficiencies at all levels of the BP Corporation.

# Safety Culture

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- A key to improved performance is an improved organizational safety culture influenced by teaming at all levels.
  - Between management and workers, workers and co-workers, and DOE and its contractors.
- Safety Culture clearly influences all operations.

BUT...If it ain't measured,  
then it ain't managed or regulated.

Can we measure and then regulate  
safety culture?

# Safety Culture

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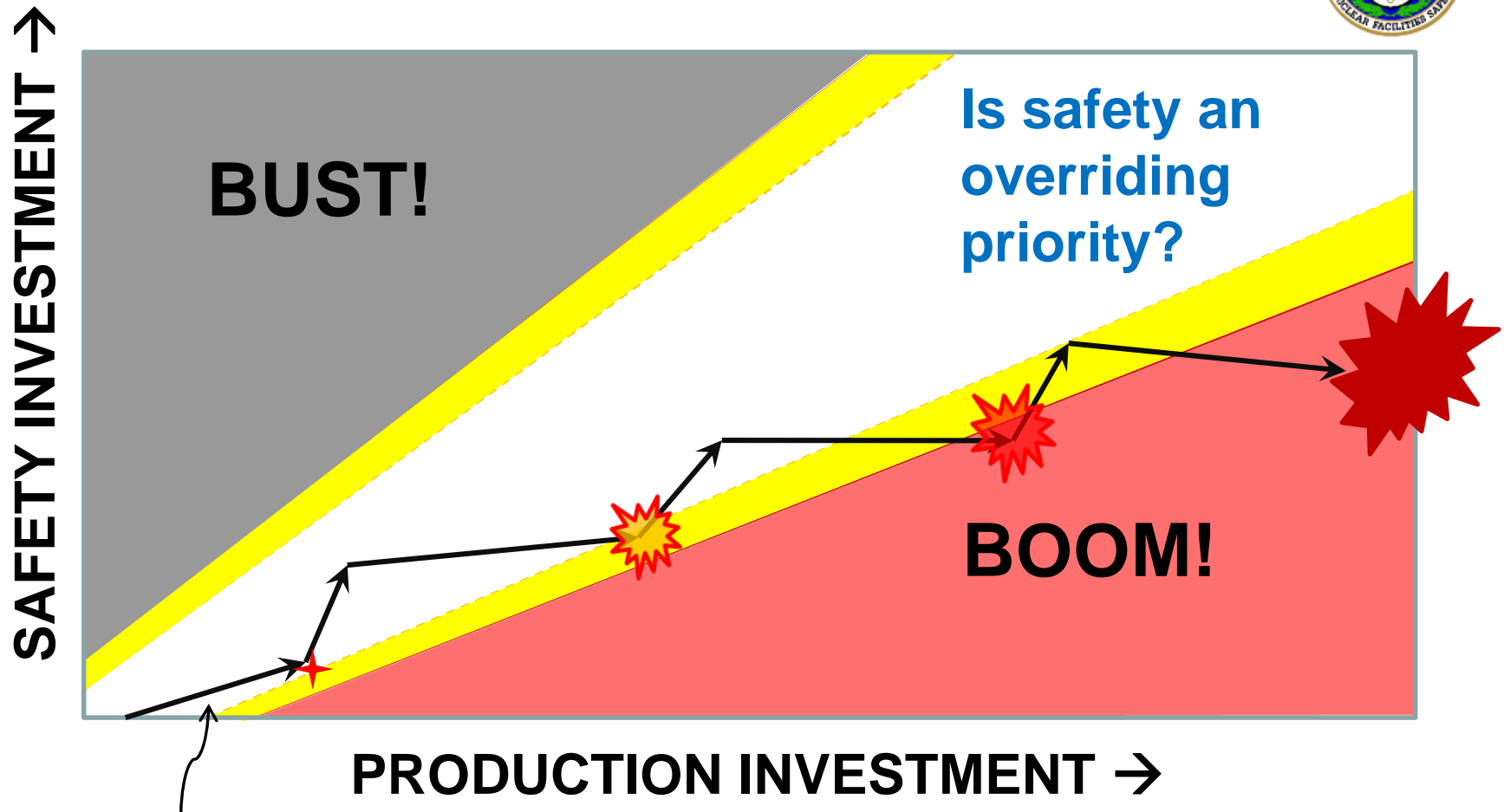
**Safety culture** is an organization's values and behaviors – modeled by its leaders and internalized by its members – that serve to make nuclear safety an overriding priority.\*

- Dating back to SEN-35-91, it's DOE Policy.
- Acting DS Kupfer Memorandum on January 16, 2009 on strengthening Safety Culture as a way of taking ISM to the next level.
- DS Poneman on November 24, 2009 testifies that "... the Department of Energy is committed to building and strengthening our safety culture."
- EFCOG/DOE ISMS Safety Culture Task Team; assessment tools drafted and piloted. This is teamwork.

\*INPO, *Principles for a Strong Nuclear Safety Culture*, November 2004.



# Culture determines the balance between mission and safety

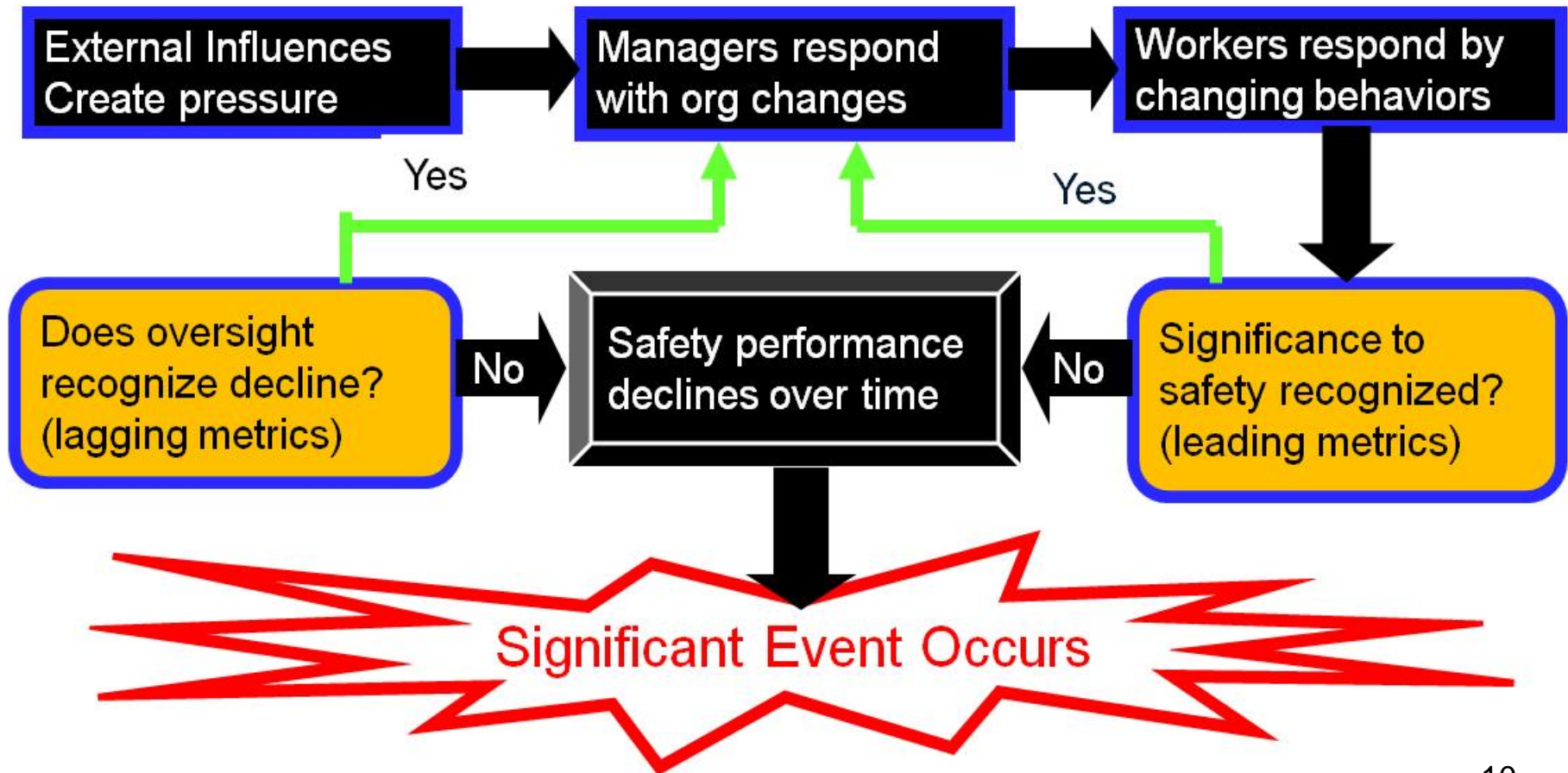


A modified "Reason Model" -- from Reason, 1997 and Starbuck, 1988.

# Changes in culture often precede major accidents



## *Leaders/managers create culture*



# Efficiency-Thoroughness Trade Off



Workers are always faced with multiple, changing, and often conflicting goals in the workplace. They are constantly faced with the ETTO challenge:

“How do I get the task done as thoroughly as practical but as efficiently as possible.”

The ETTO decision can be seen in:

“It looks OK to me”

“It’s not quite right but close enough”

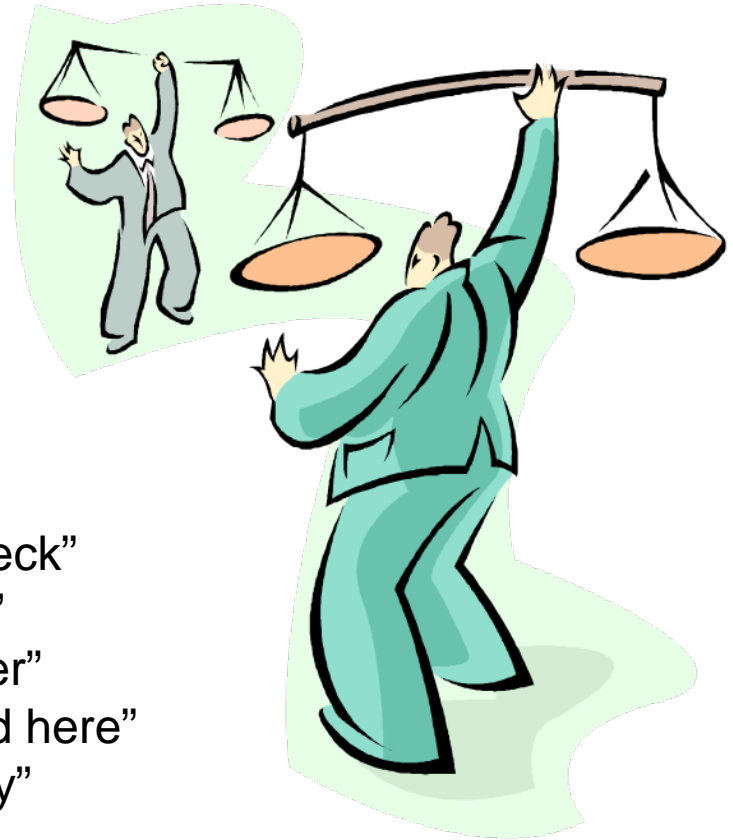
“This always works, no need to double check”

“If it’s not right somebody else will catch it”

“Let’s keep moving, we’ll deal with this later”

“Don’t worry, nothing ever happens around here”

“I’m not sure but I think this is the right way”



(E. Hollnagel)

# The ETTO conflict in a strong safety culture

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The ETTO conflict is resolved in a strong safety culture by workers teaming with others:

- They know they can be thorough and practice safe behaviors, e.g., stop unsafe work, questioning actions, without incurring supervisors and upper management penalties.
- They trust that others will carry out their responsibilities, and can be trusted to be thoroughly safe.

# Do we know what a good safety culture looks like?

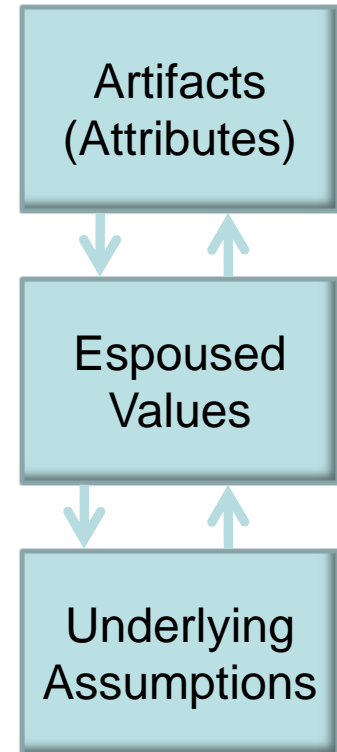


## Well, yes:

- Leaders who put safety first – message, resources, & incentives.
- Workers who take responsibility for their safety and that of their co-workers.
- Workers who will “stop” or “pause work.”
- Efforts to combat complacency; *status quo* questioned.
- Respect for all hazards and trust in the workplace.
- Performance metrics include leading indicators.

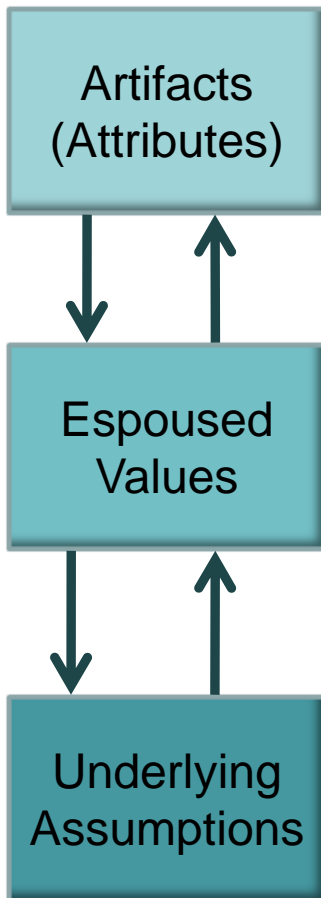
*Committed leaders need to “talk the talk” and “walk the walk.”*

*Empowered workers “get it.”*



(E. Schein)

# Can we measure safety culture?



(E. Schein)

## Typical Artifacts: **MEASURE**

- High turnover rates in safety-related positions.
- Management meetings only discuss production goals.
- Number of ConOps violations
- Number of times workers 'stop' or pause work

## Typical Espoused Values:

- **"We value and reward team work."**
- "Safety and security are our highest priorities."
- "Everybody at the plant has 'stop work' authority."
- "Our workers are always trained to the highest standards."

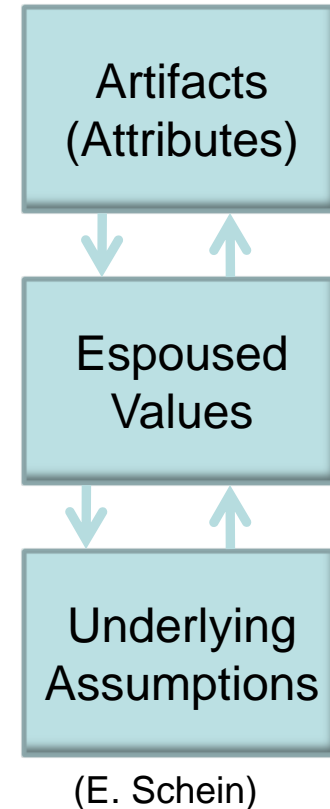
## Typical Underlying Assumptions:

- "We know the job best because we do it."
- "I'd never do anything that would hurt me or my buddies."
- "We need to get the job done so that we'll get paid."
- "My bosses will keep me out of trouble."

# Regulating safety culture



- We want to “regulate culture” and, if necessary, change it to support safety as an overriding priority.
- We can’t regulate “attitudes, values, and beliefs” because they don’t easily lend themselves to measurement.
- However, one can identify and regulate the artifacts and attributes (e.g., people, processes, equipment) that shape or *influence* the culture we seek.
- Prime candidate goals for regulatory focus could be:
  - Shape a safety culture through enlightened leadership.
  - Create a safety-conscious work environment based on effective teamwork.
  - Decision-making reflects safety first by including all team members contributions, e.g., safety professionals, and workers.
  - Learn from safety concerns
  - Monitor the safety culture
- The proof of the pudding will be in the measurable attributes of the organization, most notably worker’s behaviors.



# Regulating Culture (con't)

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**A goals-oriented approach helps to identify processes that change the underlying assumptions and values.**

## **SHAPE A SAFETY CULTURE**

- Incentives & rewards support safety
- Hiring & promoting support safety
- Balance mission and safety
- Leadership development
- Supervisor/manager values training

## **CREATE A SAFETY-CONSCIOUS WORK ENV.**

- Employee concerns
- Minority opinions
- Questioning attitudes
- Budget prioritization for safety
- Safety organization independence

## **DECISION-MAKING REFLECTS SAFETY FIRST**

- Clear expectations for safe conduct of mission
- Safety integrated in procedures & process descriptions
- Transparency between management and workers
- Integrated Safety Management
- Training on efficiency-thoroughness trade-off expectations



# Regulating Culture (con't)

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## LEARN FROM SAFETY CONCERNS

- Corrective action programs
- Occurrence reporting processes
- Event investigation processes
- Lessons learned processes
- Fight complacency

## MONITOR THE SAFETY CULTURE

- Audit/assessment processes
- Quality assurance & quality control
- Management by involvement
- Recognizing external influences
- Int./Ext. Independence of monitoring

A number of processes directly shape or perpetuate culture and are viable candidates for regulation.

Some processes are already regulated for other purposes and may need to be restructured to fit into this framework.

# Measuring Culture

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Culture is manifested in the attitudes and behaviors of the workers and can be observed through the visible artifacts. A goals-oriented approach can identify artifacts that measure existing culture and changes to it; this can be a tailored process.

## **SHAPE A SAFETY CULTURE**

*Look for changes in*

- Upward mobility of workforce, e.g., FR's.
- Production demands – get 'er done
- Safety vs. non-safety resources
- Competing or distracting priorities
- Worker satisfaction with managers
- Aging of the workforce

## **CREATE A SAFETY-CONSCIOUS WORK ENV.**

*Look for changes in*

- Rate & nature of employee concerns
- Rate & nature of minority opinions
- Turnover, retirement, & overtime rates
- Turnover in training organization
- Assigned responsibilities & authorities

# Measuring Culture (con't)

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## **DECISION-MAKING REFLECTS SAFETY**

### **FIRST** -- *Look for changes in*

- Identification of hazards
- Rate & nature of procedural violations
- Rates of deferred maintenance
- Rate of deferred/overdue training
- Currency of procedures & policies

## **LEARN FROM SAFETY CONCERNS**

### *Look for changes in*

- Rates of overdue corrective actions
- Effectiveness of corrective actions
- Quality of occurrence reporting
- Quality of investigations
- Rates of actions taken due to LL's

## **MONITOR THE SAFETY CULTURE**

### *Look for changes in*

- Rates of overdue/delayed/cancelled audits & assessments
- Number & quality of findings
- Turnover in audit/assessment staff
- Rate & nature of externally- vs. internally-identified findings
- Rate & nature of reportable events
- Housekeeping
- Use of leading indicators to prevent accidents

# Measuring Culture (con't)

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- If it ain't measured, then it ain't managed or regulated.
- Many of these metrics are **leading indicators** since, with proper interpretation, one can use them to predict the ability of a process to perform as desired and avoid unwanted outcomes.
- Lagging indicators are the most powerful in mission space, while leading indicators are preferred for safety.
- Inequalities between safety metrics and mission metrics may indicate the need to rebalance priorities and resources within the organization.

# Conclusions

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- Safety culture is driven by committed leadership and empowered workers together as a team.
- The behaviors of workers is the best measure of safety culture – at the activity level where unsafe behavior can be avoided.
- Safety culture can be measured and regulated to improve the underlying assumptions and values that are its underpinning.
- If it ain't measured, then it ain't regulated or managed. So, measure it!
- Overreliance on industrial safety can lead to complacency and is not a meaningful measure of chemical and nuclear safety.

# References

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2. W. Starbuck & F. Milliken; "Challenger: Fine-tuning the odds until something breaks;" *Journal of Management Studies*, 1988. 25: 319-340.
3. E. Hollnagel; Barriers and Accident Prevention; Ashgate Publishing; 2004.
4. E. Schein; "Leadership and Organizational Culture;" in F. Hesselbien, et.al., the Leader of the Future; Jossey-Bass. 1996.
5. E. Schein; "Keeping the Edge: Enhancing Performance through Managing Culture;" 2003 INPO CEO Conference; 2003.