

**AMERICAN SOCIETY OF SAFETY PROFESSIONALS
(ASSP)
4-Hr CERTIFIED COURSE
SAFETY & RISK ASSESSMENT
FOR THE
SMALL TO MEDIUM SIZE ORGANIZATION**

Presented by:

**Joel N. Tietjens, CSP, CSHM
T-JENS & T-JENS, INC.**

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SEMINAR OUTLINE

1:00 PM – 5:15 PM

1. The System
2. Culture
3. Management/
Leadership/
Employee Participation (MLEP)
4. Planning
5. Implementation & Operation
6. Evaluation &
Correction Action
7. Management Review
8. In Summary

LEARNING OBJECTIVES

- Evaluate the organization's commitment to safety & risk determine why it is performing below expectations
- Assess the roles management & employees play in safety & risk performance in terms of their responsibility, authority, & accountability
- Analyze how well the elements of the organization's system are in achieving results
- Determine if the incident reporting & investigation process is identifying "real" issues
- Evaluate the organization's survey/audit process & the results for management effectiveness
 - Develop a plan for the areas in the organization's safety & risk system that need improvement



SAFETY MANAGEMENT

- Safety & risk management is that function which exists to assist **all managers** in better performing their responsibilities for operational system design & implementation through either the prediction of management systems deficiencies before errors occur or the identification & correction of management system deficiencies by professional analysis of accidental incidents (performance errors).
- A formal framework for integrating safety into **day-to-day operations** & includes safety goals & performance targets, risk assessments, responsibilities & authorities, rules & procedures, & monitoring & evaluation processes.
- The objectives of a safety & risk management system are to ensure that safety & risk are given **management time & organizational resources** & that it's subject to performance measurement & monitoring on par with organizational financial & production goals.

THE SYSTEM

- Does the system in which we function drive performance errors?
- Most management systems are concerned about
 - Losses
 - Financial
 - Compliance
 - Client Satisfaction
- Every system is designed perfectly to produce what it's producing
- The system is designed to get product or services out the back door
- The system is designed to maximize profit
- The system can be very difficult to change with that in mind
- Can the system be inherently flawed regarding safety & risk conditions?
- Defining a "System"
 - A group of units so combined as to form a whole & to operate in unison
 - The body as a functioning whole
- Every safety & risk system is made up of:
 - Inputs
 - Processes

- Outputs
- Inputs
 - Tools, Machinery, Equipment, Materials, Facilities, People, Money, Time
- Processes
 - Planning, Designing, Leading, Managing, Controlling, Educating, Training, Identifying, Measuring, Analyzing, Correcting
- Outputs
 - Safe/unsafe conditions
 - Many/few accidents/incidents
 - High/low morale, trust
 - Safe/unsafe behaviors
 - High/low cost/savings
 - High/low productivity
- Is the system in place contributing to performance errors?
- If an employee is being measured to get the job completed, then will safety & risk concerns be foremost on their mind?
- Training may have been given & understood, but the measurement is in getting the job completed

WHAT IS CULTURE?

- The totality of socially transmitted behavior patterns, arts, beliefs, institutions, & other products of human work & thought characteristic of a **community** or **population**
- A style of social & artistic expression peculiar to a society or class
- **Beliefs** & **values** will predict a culture
- No universal definition of corporate culture exists.
- Culture appears to reflect shared behaviors, beliefs, attitudes & values regarding organizational goals functions & procedures.
- Beliefs, attitudes & values about the corporate body, its function or purpose can vary from division to division, department to department, workgroup to workgroup, individual to individual.
- Corporate culture is heterogeneous, not homogeneous.

- As such, this will lead to different subcultures which typically form around functional groups, hierarchical levels & corporate groups.

DRIVING SYSTEM PERFORMANCE

MANAGEMENT/LEADERSHIP/EMPLOYEE PARTICIPATION (MLEP)

MLEP

- Leadership must begin at the top management level
- Continue down through the various levels of management
- Management must thoughtfully & thoroughly develop a safety & risk policy that can be understood, believed & sets the tone for action
 - Protection & continual improvement of employee safety & health
 - Encourage & solicit employee participation
 - Conformance to the organization's established risk & safety requirements
 - Conformance with regulatory issues & best or acceptable loss prevention practice
- The employer has the responsibility of providing a workplace free of any recognized hazards
- Safety & risk management system must rest on a solid foundation of management commitment & support
 - Commitment
 - To pledge or assign to some particular course or use
 - Support
 - To provide resources
 - Financial
 - Human
 - Organizational
- Understand what the policy means
- Establish challenging (realistic) goals for the organization

SAFETY & RISK IS NOTHING BUT RAA, RAA

RESPONSIBILITY

The obligation or commitment to undertake an assignment or a task

National Safety Council

A**UTHORITY**

Freedom **granted**

A**CCOUNTABILITY**

The obligation to accept the results & **consequences** of a job, task, or assignment. It implies that outcomes will be **evaluated**

National Safety Council

- Must define & assign
 - R**esponsibility
 - A**uthority
 - A**ccountability to personnel for implementing the system
- Personnel include all levels
 - Upper management to the employee levels
- **R**esponsibility, **A**uthority, **A**ccountability
 - Top management must provide leadership & assume responsibility for
 - Implementing, maintaining, & monitoring performance
 - Provide applicable resources
 - Define roles, assign responsibilities, grant authority, establish accountability
 - Integrate the safety & risk system into other business systems & processes
- Management must incorporate safety & risk guidance & directional information into the day to day operation
- Safety & risk must be managed like any other function or portion of the operation
- That's management's responsibility & management should be held accountable for performance
- If management & employees know that they will be measured (held accountable), the task or mission (responsibility) will be accomplished
- Establish a process to encourage & ensure effective employee participation
 - Resources
 - Time, money, people, equipment
 - Access to relevant information on system
 - Remove obstacles or barriers to participation
- John Maxwell:

RESPONSIBILITY - If You Won't Carry the Ball, You Can't Lead the Team
A leader can give up anything --- **except final responsibility.**

PLANNING

- Identify & prioritize safety & risk issues for the organization
 - Hazards
 - Risks (Risk control)
 - System deficiencies
 - Opportunities for improvement
 - Objectives (Implementation of plans)
- Review process
 - Gap analysis (Identify differences)
 - Document reviews
 - Identify relevant information (System & operational)
- Review is outside traditional context of safety & risk programs & activities
- Focus is on management system elements
 - Resources
(Time, money, people, equipment)
 - Expertise
 - Communication & employee participation
 - Change management timelines & effectiveness
- Assessment & Prioritization
 - Assess level of risk for identified hazards
 - Establish priorities based on
- **PROBABILITY**
(of it occurring)
- **SEVERITY**
(if it does occur)
- **COST OF CONTROL**
(cost to the organization to control it)
- Are all risks worth controlling?
- Can all risks be eliminated?

■ What are the available resources to the organization?

- Limited resources
- Every organization has limited resources

■ Can some risks only be minimized?

■ How much risk is acceptable by the organization?

KEY ELEMENTS OF EFFECTIVE RISK MANAGEMENT PROCESS

■ Key elements of effective risk management process

- Hazard Recognition
- Hazard Analysis
- Risk Assessment
- Risk Reduction

■ A **HAZARD** is an inherent biological, chemical, or physical characteristic of a material, system, process, or plant that has the potential for causing harm

■ **RISK** is the measure of potential human injury, economic loss, or environmental impact in terms of its severity & likelihood

ANALYSIS OF HAZARDS

■ Consideration should be given to:

- The level of exposure
- The duration of exposure
- The potential for, & effect of, simultaneous exposures
- The current controls in place

HAZARD ANALYSIS

■ A **hazard analysis** is a structured, systematic examination of the hazards of a process or task that helps:

- Uncover hazards that may have been overlooked
- Identify hazards that developed after a process or task was instituted
- Identify hazards that developed after a process or task was modified

■ HAZARD ANALYSIS METHODS

- Formal methods for hazard analysis
 - Include inductive & deductive techniques
- Inductive - Using particular examples to reach a general conclusion
 - Failure Modes & Effects Analysis (FMEA)
 - Hazard & Operability Study (HAZOP)
 - Job Hazard Analysis (JHA)
- Deductive - To reach a logically certain conclusion
 - Event Tree Analysis
 - Fault Tree Analysis

RISK ASSESSMENT MATRIX

Risk Assessment Code

- 1 = Critical
- 2 = Serious
- 3 = Moderate
- 4 = Minor
- 5 = Negligible

		Probability of Occurrence			
		Likely	Probably	May	Unlikely
		A	B	C	D
S E V E R E R I T Y	Cat I <small>Catastrophic</small>	1	1	2	3
	Cat II <small>Critical</small>	1	2	3	4
	Cat III <small>Marginal</small>	2	3	4	5
	Cat IV <small>Negligible</small>	3	4	5	5

Risk Levels

- Objectives
 - Based on priorities
 - Elimination or control
 - Consistent with organizational culture/policy
 - Review & modify at appropriate intervals
 - For continual improvement
- Implementation plan
 - Documented
 - Define
 - Resources
 - Responsibilities (Assign)

- Timelines
- Steps to be taken
- Measurement methods for progress

IMPLEMENTATION & OPERATION

- Risk assessment
 - Establish & implement operational elements to achieve objectives
 - Integrate operational elements into the management system
 - Create & implement a risk assessment process for identifying hazards & risk level
- Hierarchy of Controls
 - Elimination
 - Substitution
 - Less hazardous materials
 - Processes
 - Operations
 - Equipment
 - Engineering controls
 - Warnings
 - Administrative controls
 - Personal protective equipment (PPE)
- Feasibility of controls
 - Level & extent controlled
 - Degree of risk reduction desired
 - Regulatory requirements
 - Recognized best practices
 - Available technology
 - Cost effectiveness
 - Internal standards & practices
- Design review & management of change (MOC)
 - Prevent or control hazards at the
 - Design stage

- Redesign stage
- Management of change phase
- Identify safety & risk issues
- Human factor issues
- Regulatory issues
- Control measures
- Employee participation

- Applicable life cycles phases
 - From concept to decommissioning
- Process verification
 - Management of change phase
 - Technology
 - Design specifications & raw materials
 - Organizational staffing changes
- Procurement
 - Hazards & risks of purchased products
- Contractors
 - Establish contractor safety & risk performance criteria
 - Identify, evaluate, & control hazards & risks generated by contractors or the organization that expose contractors
- Emergency preparation
 - Create & implement plans to prevent or minimize risk from potential emergencies
 - Periodic testing of plans & activities
 - Evaluate & update plans
- Education, training, awareness, & competence
 - Employee competency
 - Determines safety & risk education & training needs
 - Encourages & ensures employee participation
 - Remove barriers or obstacles
 - Addresses language differences
 - Training should be timely & ongoing



- Trainers are competent in subject matters

■ Communication

- Information about the plan & its progress
- Reporting of incidents
- Encourage employee to submit recommendations for improvements, hazards control
- With contractors
- Identify & eliminate barriers or obstacles

■ Document & record control process

- Identify what records need to be
 - Controlled
 - Reviewed
 - Updated
- Legible, identifiable, accessible
- Protected from
 - Damage
 - Deterioration
 - Loss
 - Retention period

EVALUATION & CORRECTIVE ACTION

■ Monitoring, measurement, & assessment

- A process to
 - Inspect & test workplace
 - Exposure assessment
 - Injury, illness & incident tracking
 - Occupational health assessment
 - Assess the performance of legal & other requirements set by the organization

■ Incident investigation

- A process to
 - Report
 - Investigate

■ Analyze

- the system to determine areas for improvement to prevent or minimize recurrence

MODELS FOR ACCIDENT-INCIDENT CAUSATION

■ THE DOMINO EFFECT

- The **Domino Effect** occurs when a small change causes a similar change nearby, which then will cause another similar change, & so on in linear sequence, by analogy to a falling row of dominoes standing on end
- The domino effect also relates to a chain of events

■ ROOT CAUSE ANALYSIS (RCA)

- A class of problem solving methods aimed at identifying the root causes of problems or incidents
- Initially reactive – after the event
- Leads to proactive – to prevent an event from experience or lessons learned
- Two separate processes

■ COMMON PROCESS IN RCA

1. Define the problem
2. Gather data/evidence
3. Ask “why” & identify the true root cause associated with the defined problem
4. Identify corrective action(s) that will prevent recurrence of the problem
5. Identify effective solutions that prevent recurrence, are within your control, meet your goals & objectives & do not cause other problems
6. Implement the recommendations
7. Observe the recommended solutions to ensure effectiveness
8. Variability Reduction methodology for problem solving & problem avoidance

■ COMMON TOOLS FOR RCA

- Brainstorming
- Control charts
- Fishbone diagram (Ishikawa, Cause-and-Effect, Causal)
- Flowchart
- Pareto chart
- Run chart

Tree diagram

■ Cause & Effect Diagram (Fishbone diagram, Ishikawa, Cause-and-Effect, Causal)

People

■ Human factors

Procedures

■ Adequate, flawed

Equipment

■ Proper, faulty

Environment

■ Physical, geographical, weather

■ SWISS CHEESE MODEL

First hypothesized in 1990 by James Reason, University of Manchester, Dept. of Psychology

Most accidents can be traced to one or more of four levels of failure:

■ Organizational influences

■ Unsafe supervision

■ Preconditions for unsafe acts, &

■ The unsafe acts themselves

Active Human Errors

■ An action that has immediate effect

Latent Human Error

■ A human error which is likely to be made due to systems or routines that are formed in such a way that humans are disposed to making these errors

■ An action that has a delayed effect

■ Errors in design, organization, training or maintenance that lead to operator errors & whose effects typically lie dormant in the system for lengthy periods of time

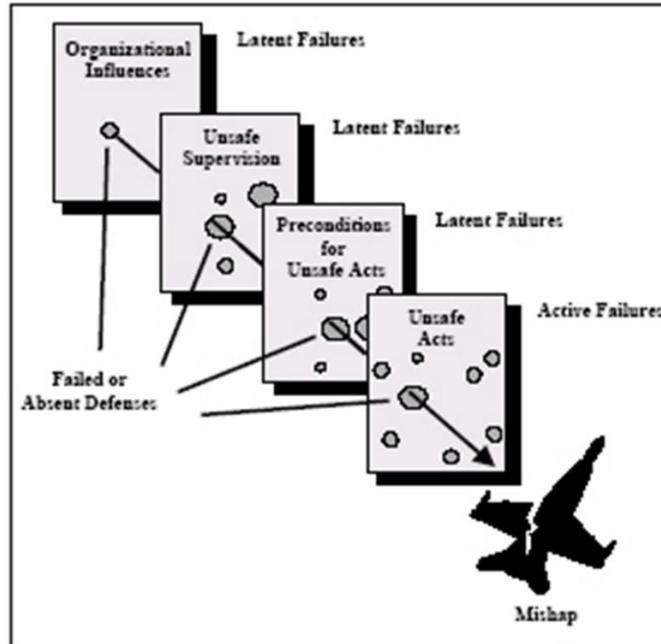
Latent Failures

■ Described as “resident pathogens” which arise from factors such as

1. organizational culture
2. management decisions
3. design of procedures, or
4. deficiencies in training

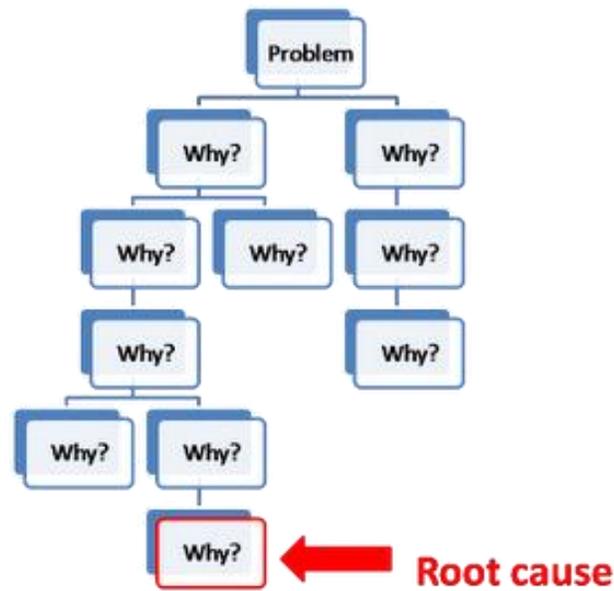
- ❑ These “resident pathogens” are described as having two forms of adverse effect:
 1. They can translate into error provoking conditions;
 2. They can create weaknesses in the organization’s defenses which may lie dormant within the system, until when combined with active failures, they contribute to the occurrence of an incident or accident

James Reason, 2000



■ 5 WHYS

- ❑ A questions-asking method used to explore the cause-effect relationships underlying a particular problem
- ❑ The goal of applying the 5 Whys method is to determine a root cause of a defect, event, or problem
- ❑ Technique originally developed by Sakichi Toyoda & later used within Toyota Motor Corporation during the evolution of their manufacturing methodologies
- ❑ A critical component of problem solving training delivered as part of the induction into the Toyota Production System
- ❑ Architect of the Toyota Production System, Taiichi Ohno, described the 5 whys method as
 - “The basis of Toyota's scientific approach . . . by repeating “why” five times, the nature of the problem, as well as its solution, becomes clear.”
- ❑ Tool has seen widespread use beyond Toyota, & is now used within Kaizen, Lean manufacturing, & Six Sigma



- Audits
 - Plan & conduct periodic audits to determine system effectiveness
 - Conducted by competent personnel
 - Document & communicated
 - Those responsible
 - Immediate communication in the event of eminent dangers
 - Fatality
 - Serious injury or health issue
 - Environmental or property damage
- Audit
 - A systematic analysis of safety & risk elements to determine the degree of quality & management control
- Objectives
 - Systematically evaluate all elements of the safety & risk system
 - Analyze & appraise efforts to identify, evaluate, & control hazards & the potential for hazards
 - Provide management guidelines to establish performance standards & organizational goals
- Type - Comprehensive
 - In-depth review of all elements of the system

- Type - Limited
 - Focuses on a narrow portion or single element of the system
- Formal
 - Follows a structured path resulting in a detailed report
- Informal
 - Provides interim milestones on the system or any of its many elements
- Corrective & prevention action
 - Address non-conformance & hazards not being controlled
 - Identify & address new or not previously recognized hazards & risks
 - Elevate action of high-risk hazards
 - Review & ensure effectiveness of action taken
- Feedback
 - Results gathered are included in the ongoing planning process

MANAGEMENT REVIEW

- Process that upper management reviews the safety & risk management system to ensure
 - Suitability
 - Adequacy
 - Effectiveness
- Issues to consider during the review
 - Progress in risk reduction
 - Effectiveness of processes to identify issues
 - Effectiveness of addressing underlying causes of risks & system deficiencies
 - Input from employees
 - Status of corrective & prevention actions
 - Follow-up actions from previous reviews
 - Objective measurements
 - Performance expectations
- Review outcomes & follow-up
 - Future direction

- Changes necessary for continual improvement
- Action items
 - Policy
 - Priorities
 - Objectives
 - Resources
 - Other safety & risk elements

LEARNING OBJECTIVES

- Evaluate the organization's commitment to safety & risk & determine why it is performing below expectations
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- Analyze how well the elements of the organization's system are in achieving results
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END OF SEMINAR ADMINISTRATION

- Evaluations
- Personal Belongings
- Contact ASSP
 - Phone: 847-699-2929
 - Web: www.assp.org

For the American Society of Safety Professionals (ASSP)

Joel N. Tietjens, CSP, CSHM
T-JENS & T-JENS, INC.
18803 Whitewood Drive, Spring, TX 77373-5613
Off: 281-353-3680 E-Mail: Joel@tjens.com Web: www.tjens.com