International Association of Fire Chiefs

National Fire Protection Association

Chapter 19
Crew Resource Management and Leading Change (Fire Officer I)

Fire Officer I Objectives

- Discuss the origins of crew resource management (CRM).
- Discuss the concepts involved in researching and validating CRM.
- List Dupont's "dirty dozen" human factors that contribute to tragedy.

Fire Officer I Objectives

- Describe the six-point CRM model that can be used in the fire service.
- Discuss the fire officer's role in recommending change within a department.

Introduction

- Crew resource management (CRM) is a behavioral approach to reducing human error in high-risk or high-consequence activities.
- Leading change: recommending changes and developing a process to establish a change

Origins of Crew Resource Management

- In 1978, United Airlines Flight 173 crashed because the people flying it became engrossed in a burned-out light bulb and did not pay attention to the fact that the plane was running low on fuel.
  - In response, NASA developed crew resource management.

Origins of Crew Resource Management

- CRM became mandatory training.
- It was resisted by senior pilots until a spectacular crash landing in 1989.
  - The crew attributed their success in this incident to their CRM training.

Researching and Validating CRM Concepts

- The aviation industry's 80 percent reduction in accidents is partly attributable to CRM.
- CRM trains team members how to achieve maximum mission effectiveness in a time-constrained environment under stress.

Human Error

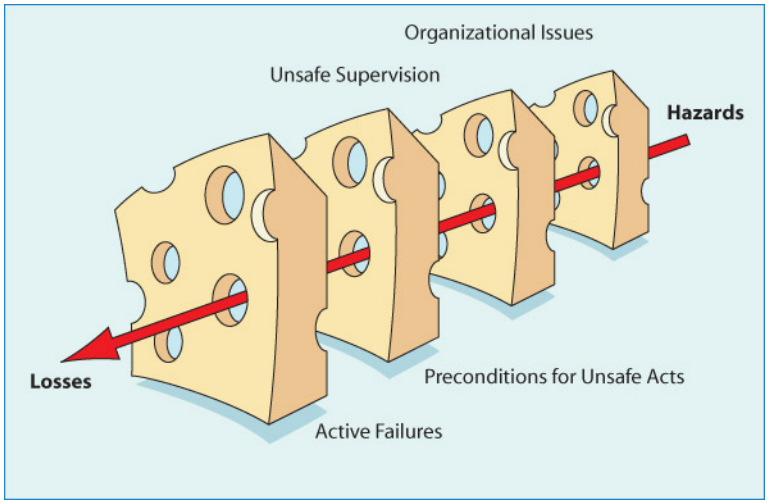
- Gordon Dupont noted similarities between errors in the cockpit and in the maintenance hanger.
- Dupont's "dirty dozen": list of reasons and ways humans make mistakes

Human Error

- The “dirty dozen”
  - Lack of communication
  - Complacency
  - Lack of knowledge
  - Distraction
  - Lack of teamwork
  - Fatigue
  - Lack of resources
  - Pressure
  - Lack of assertiveness
  - Stress
  - Lack of awareness
  - Norms

Human Error

- Dr. James Reason took a systems approach.
  - High-tech systems have many defensive layers.
  - Each layer is like a slice of Swiss cheese.



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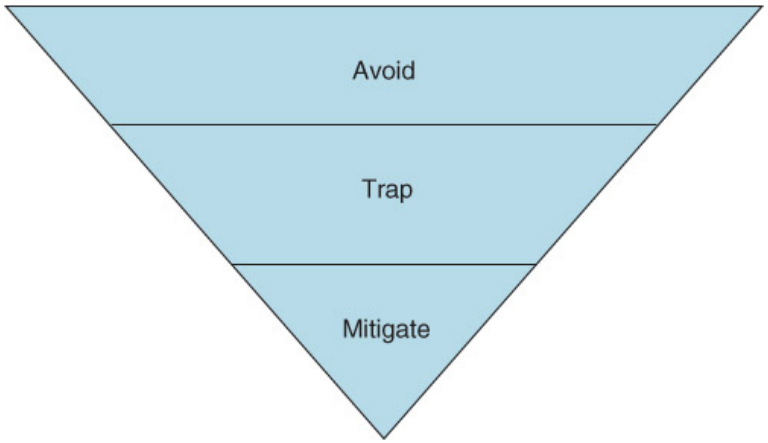
Active Failures and Latent Conditions

- Two reasons why holes appear in the layer of defense:
  - Active failures
  - Latent conditions
    - May lie dormant within a system for years

Error Management Model

- CRM is an error management model with three activities.
- Mitigation: action taken by responders to minimize the effect of an emergency



Courtesy of Dr. Robert Helmreich

The CRM Model

- The fire service CRM model covers:
  - Communication skills
  - Teamwork
  - Task allocation
  - Critical decision making
  - Situational awareness
  - Debriefing

The CRM Model

- Everyone must recognize the following:
  - No one is infallible.
  - Technology is fallible.
  - Catastrophes result from a chain of events.
  - Everyone is obligated to speak up when they see something wrong.

The CRM Model

- Everyone must recognize the following (cont'd):
  - People who work together effectively are less likely to have accidents.
  - Every member of the team must participate.

Communication Skills

- Communication: the successful transfer and understanding of a thought
- Airline disaster miscommunication:
  - Misinterpretation of instructions
  - “Fighter pilot” mentality in captains
  - Lack of assertiveness by crew members
  - Cockpit distractions

Communication Skills

- Develop a standard language and teach appropriate assertive behavior.
- In a fire apparatus, the crew should exchange only pertinent information.
- A CRM-enriched environment encourages the freedom to question.

Communication Skills

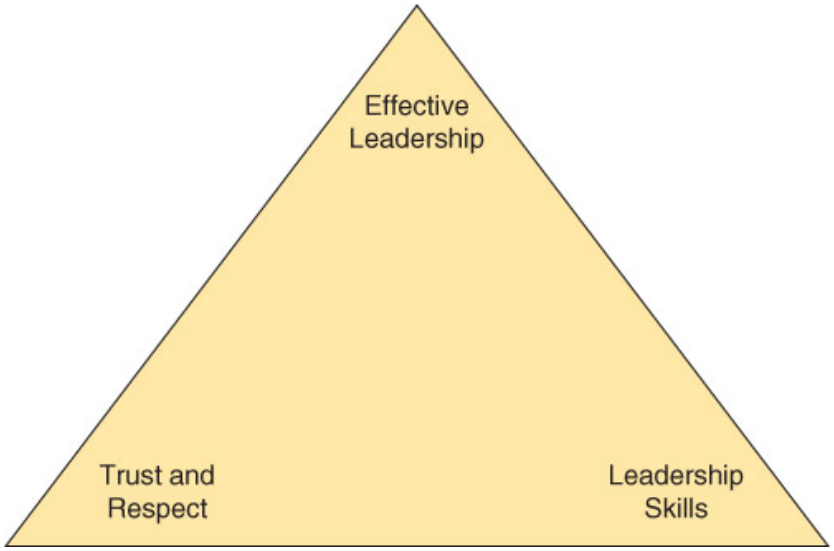
- Inquiry and advocacy are skills that promote synergy.
  - They require practice and patience.
  - Use buzzwords to signal discomfort.
    - Opens the door to inquiry and advocacy
    - Reserved for situations involving risk of injury

Communication Skills

- Assertive statement process:
  - Use an opening/attention getter.
  - State your concern.
  - State the problem as you see it.
  - State a solution.
  - Obtain agreement or buy-in.

Teamwork

- Leadership
  - Must earn trust and respect and have leadership skills
  - Respect is based on competencies:
    - Personal
    - Technical
    - Social



Teamwork

- Mentoring
  - Help others develop skills
  - Lead by example
  - Admit to making mistakes
  - Share knowledge

Teamwork

- Handling conflict
  - Focus on what is right, not who is right.
  - Establish an open climate for error prevention.

Teamwork

- Responsibility
  - Final decision making rests with the leader.
  - Foundation to manage emergency operations:
    - Risk a lot to save a savable life.
    - Take a calculated risk to save savable property.
    - Risk nothing to save what is already lost.

Teamwork

- Followership
  - Followers should perform self-assessment in four areas:
    - Physical condition
    - Mental condition
    - Attitude
    - Understanding human behavior

Teamwork

- Each individual must have:
  - Healthy appreciation for personal safety
  - Healthy concern for safety of the crew
  - Respect for authority
  - Willingness to accept orders
  - Knowledge of the limits of authority

Teamwork

- Each individual must have:
  - Desire to help the leader be successful
  - Good communication skills
  - Ability to provide constructive feedback
  - Ability to admit errors
  - Ability to keep ego in check

Teamwork

- Each individual must have:
  - Ability to balance assertiveness and authority
  - Learning attitude
  - Ability to perform demanding tasks
  - Adaptability

Task Allocation

- Task allocation: dividing responsibilities in a way to accomplish them effectively
  - Safety is compromised with task overload.
- Knowing one's own limits and the capacity of the team is the first step.

Task Allocation

- Performance is enhanced through training classes and exercises.

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Critical Decision Making

- Emergency scenes demand rapid decision making by the crew leader.
  - Fire officers and military combat officers use a similar decision-making process.
  - Two decision-making models:
    - Recognition-primed decision making (RPD)
    - Naturalistic decision making

Critical Decision Making

- Decision making is improved through:
  - Gaining experience
  - Training constantly
  - Improving communication skills
  - Engaging in preincident preplanning

Critical Decision Making

- Communication provides:
  - Enhanced problem identification
  - Better incident control
  - Improved situational awareness
  - More rapidly identified hazards
  - Rapidly assessed resource capability

Critical Decision Making

- Communication provides (cont'd):
  - More rapidly developed solutions
  - Improved decision making
  - Reduced surprises and unanticipated problems

Situational Awareness

- Situational awareness: accurate perception of what is going on around you
  - Affects performance and decision making
  - When not maintained, errors occur

Maintaining Emergency Scene Situational Awareness

- Fight the fire.
- Assess problems in the time available.
- Gather information from all sources.
- Choose the best option.
- Monitor results and alter the plan.

Situational Awareness Loss Factors

- Ambiguity
- Distraction
- Fixation
- Overload
- Complacency
- Improper procedure
- Unresolved discrepancy
- Nobody fighting the fire

Recommending Change

- The fire officer is in the best position to lead change.
  - The fire officer has the best view of opportunities, challenges, and barriers.
  - The CRM assertive statement process provides a model for discussing sensitive or consequential issues.

Recommending Change

- Five disconnects in implementing change:
  1. Culture change is viewed as a threat.
  2. Bad behaviors and attitudes are tradition.
  3. Safety and mission are imbalanced.
  4. Voices of safety leadership are muffled.
  5. Lessons have not been embraced.

Recommending Change

- Change begins with the postincident debriefing.
  1. Just the facts
  2. What did you do?
  3. What went wrong?
  4. What went right?
  5. What are you going to do about it?

Summary

- CRM is a behavioral approach to reducing human error in high-risk or high-consequence activities.
- Leading change involves recommending changes and developing a process to establish a change.
- CRM was developed by NASA in 1979.

Summary

- Dupont determined that a “dirty dozen” of human factors contribute to tragedy.
- Reason identified two precursors to holes in defense: active failures and latent conditions.
- CRM is an error management model.

Summary

- A six-point CRM model serves the fire service well.
- Developing a standard language, maintaining a “sterile cockpit,” and teaching appropriate assertive behavior reduce errors from miscommunication.
- Members must work together.

Summary

- Task overload occurs when the fire officer exceeds his or her capacity.
- CRM promotes team involvement.
- The loss of situational awareness may lead to calamity.
- The fire officer is in the best position to lead change within the fire department.