

Thirty Minutes to Success or Failure: Critical Decisions in the First Minutes of an Emergency

TRADE

Emergency Management Issues

Special Interest Group

May 16, 2012

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Background

- The Hanford Site is an environmental remediation site with most of its 25 hazardous facilities currently in surveillance, decommissioning, or remediation mode.
- Since the 1990s when the emergency management order was revised, there have been seven hazardous material operational emergencies on the Hanford Site.
- Numerous other emergencies.

Premise

- For most facility events, initial decisions during the first 30+ minutes of the event became the overall deciding factors for the success, or failure, of the overall emergency response.
 - Initial decisive action to classify the emergency, implement planned protective actions, and activate emergency services response for events resulted in minimal issues in follow-up investigations.
 - Indecisiveness and delayed response during the first minutes of an emergency resulted in follow-up investigations determining that overall response was less than adequate.
 - Personnel safety issues
 - Multiple investigations
 - Penalties
 - Legal action

Problem

- Master of the obvious?
 - Chaos theory:
 - A small change in the initial conditions may have significant change in the long-term behavior of the system (butterfly effect).
 - Why do response personnel sometimes initially make incorrect decisions?

Examples

- Less than adequate responses
 - In 1997, an explosion occurred at the Plutonium Reclamation Facility at approximately 1953 hours. An Alert was not declared and resulting protective actions were not implemented until 2102 hours.
 - In 2007, a waste tank leak occurred at 0210 hours. Personnel did not request emergency services and no protective actions were implemented until 1020 hours.
- Successful responses:
 - 327 Building Explosive Material Discovery (1998)
 - Fast Flux Test Facility Sodium Reaction (2005)
 - Burial Ground Waste Spill (2005)
 - Wautoma Fire (2007)

Barriers to Success

- Situational Awareness
 - Indicators
 - Communications
 - Environment
 - Resources
- Denial
- Unwillingness to activate the system
- Procedure ambiguity
- Unfamiliar event
- Single point failure

Potential Consequences

- Inadequate protection of personnel
- Delays in mitigation
- Inadequate and delayed notifications
- Decreases credibility and trust
 - Employees
 - Offsite agencies
 - Stakeholders
- Productivity
 - Lengthy investigations (of response)
 - Readiness reviews
 - Corrective actions

Tools for Success

- Clear, concise communications to decision makers
- Adequate indicators that events are occurring
- Non-ambiguous trigger points for planned response actions (EALs, response procedures, etc.)
- Training and drills
 - Comprehensive drill program to prepare for a range of events
 - The events we plan for are probably not going to happen—because we have planned for them
- Management support for conservative decision making (to a point).
- Checks and balances
 - Eliminate or minimize the potential for a single point failure

Summary

- Successful emergency responses are dependent upon timely, accurate decisions to implement the emergency response system.
 - Emergency resources
 - Categorization/Classification
 - Protective actions
 - Notifications
- There are potential barriers to making correct initial decisions.
- Eliminating or minimizing those barriers will ensure that when you make decisions, they usually will be correct.