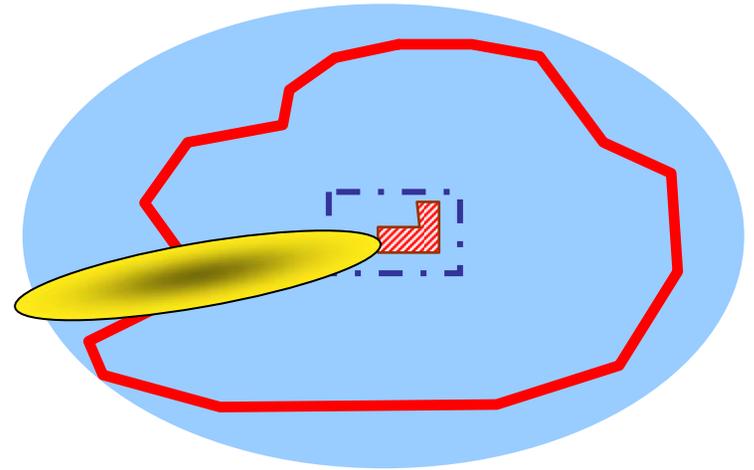


Sandia National Laboratory Consequence Assessment Program



Subcommittee on Consequence
Assessment and Protective Actions

SCAPA

New Orleans, LA

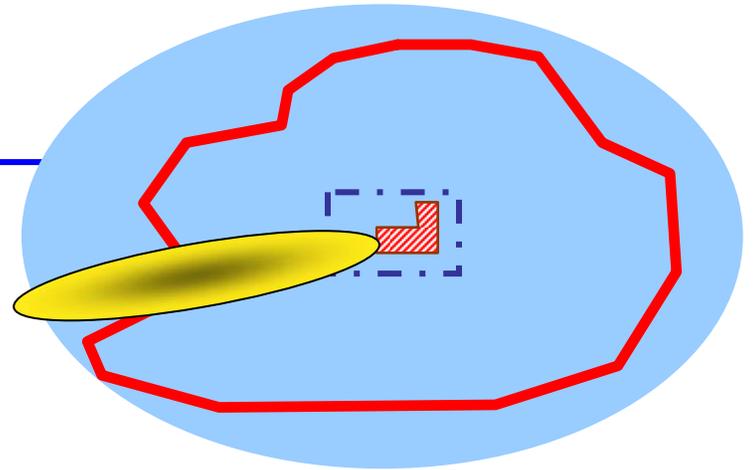
C. Reed Hodgkin
AlphaTRAC, Inc.

May 5, 2005



Agenda

- Consequence Assessment Decision-Making
- Initial Decisions - EALs
- Follow-on Decisions - Consequence Assessment



Consequence-Based Decision-Making

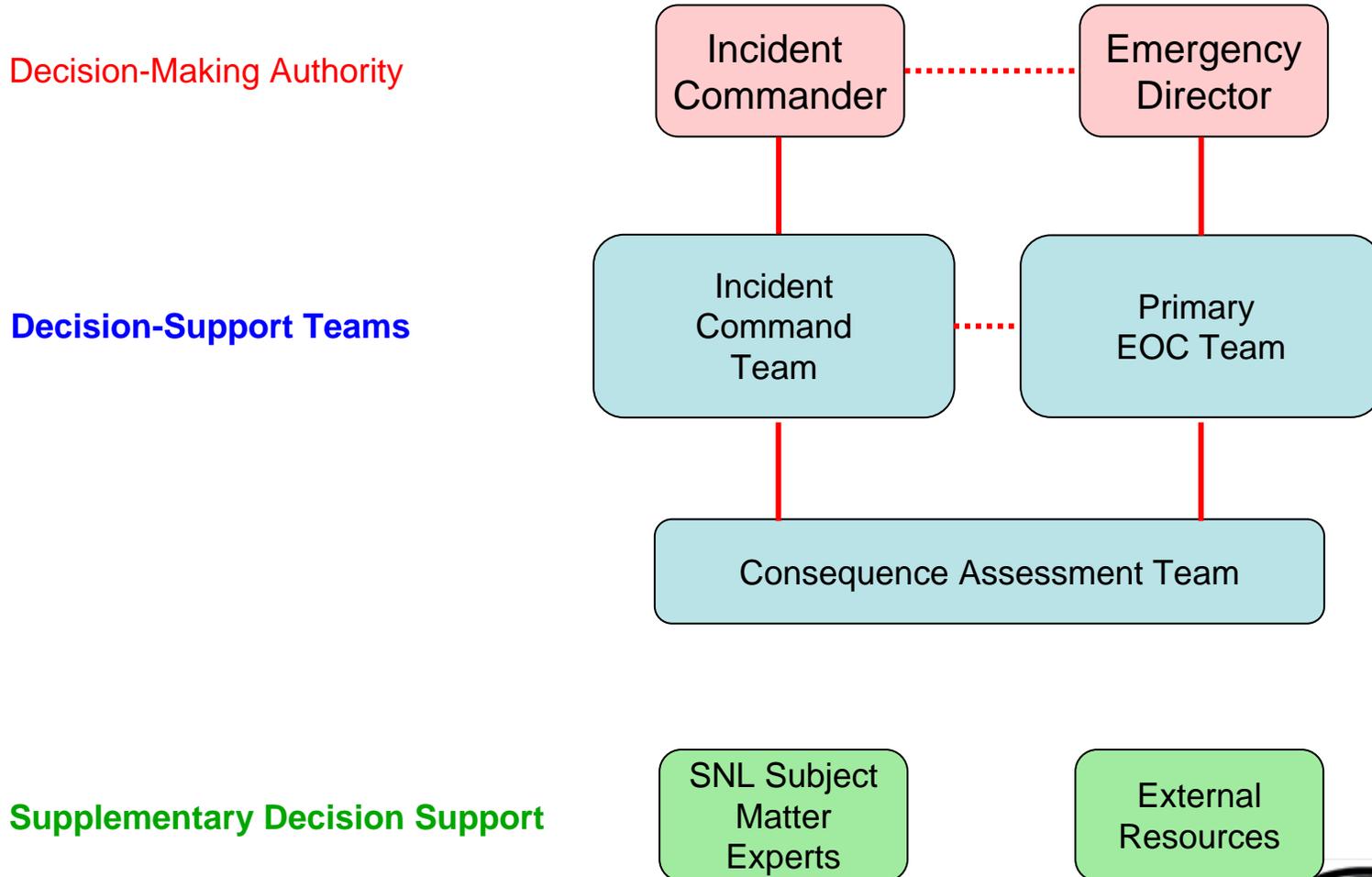
Primary Consequence-Based Decisions

- Event Categorization / Classification
- Onsite Protective Actions
- Offsite Protective Action Recommendations

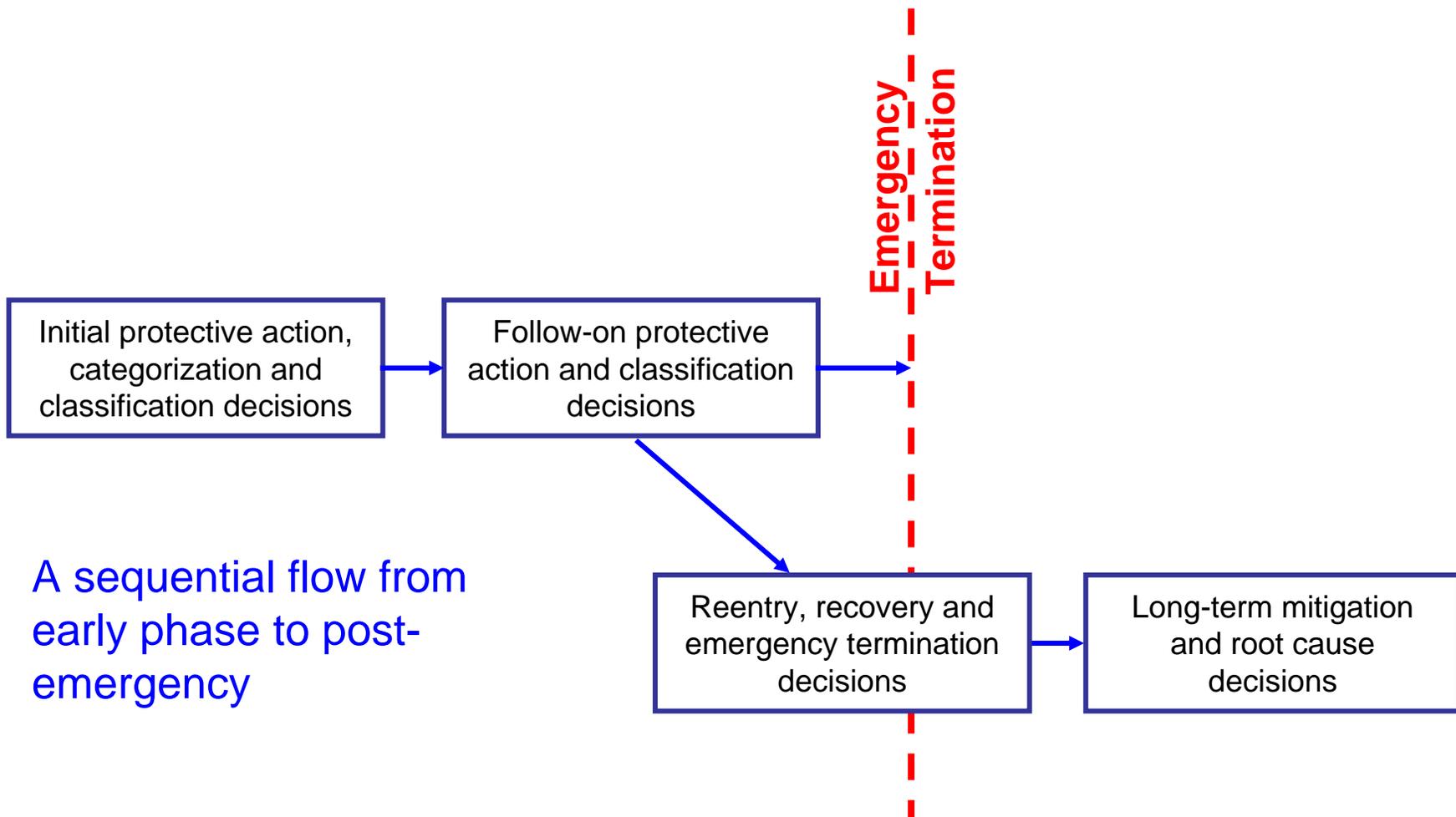
Other Consequence-Based Decisions

- Response planning and operations,
- Event termination,
- Reentry planning and operations,
- Recovery planning and operations,
- Long-term protective actions and cleanup,
and
- Root cause analysis.

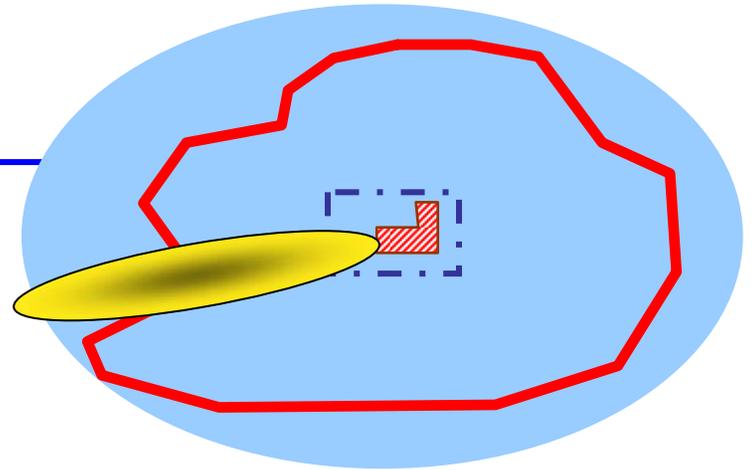
Consequence-based Decision Structure at SNL/NM



Consequence-Based Decision Flow



- A sequential flow from early phase to post-emergency



Initial Decisions - EALs and Protective Action Plans

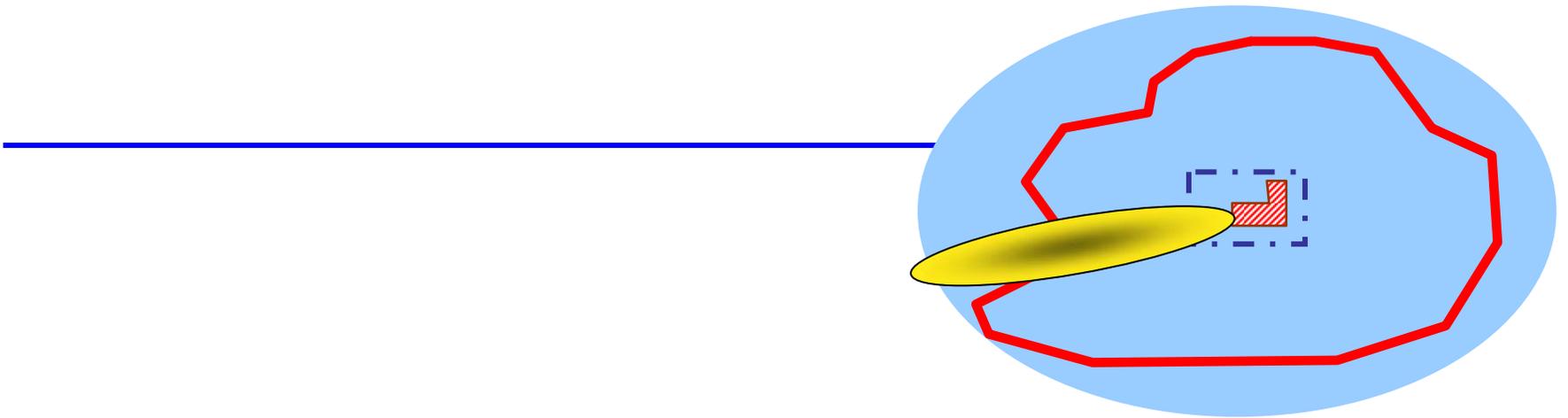
Approach

- IC answers short set of key EAL questions based on initial event information and rapid workaids
- Answers lead to rapid selection of EAL from EAL set
 - (EAL is directly related to analyzed event from Hazards Assessment)
- EAL identifies best choice of Protective Action Plan and Event Classification for event
- IC incorporates EAL recommendations in decisions and implements actions

EAL Process



- Five straight-forward steps
- Entire process from gathering information to communicating decisions designed for completion within about 10 minutes

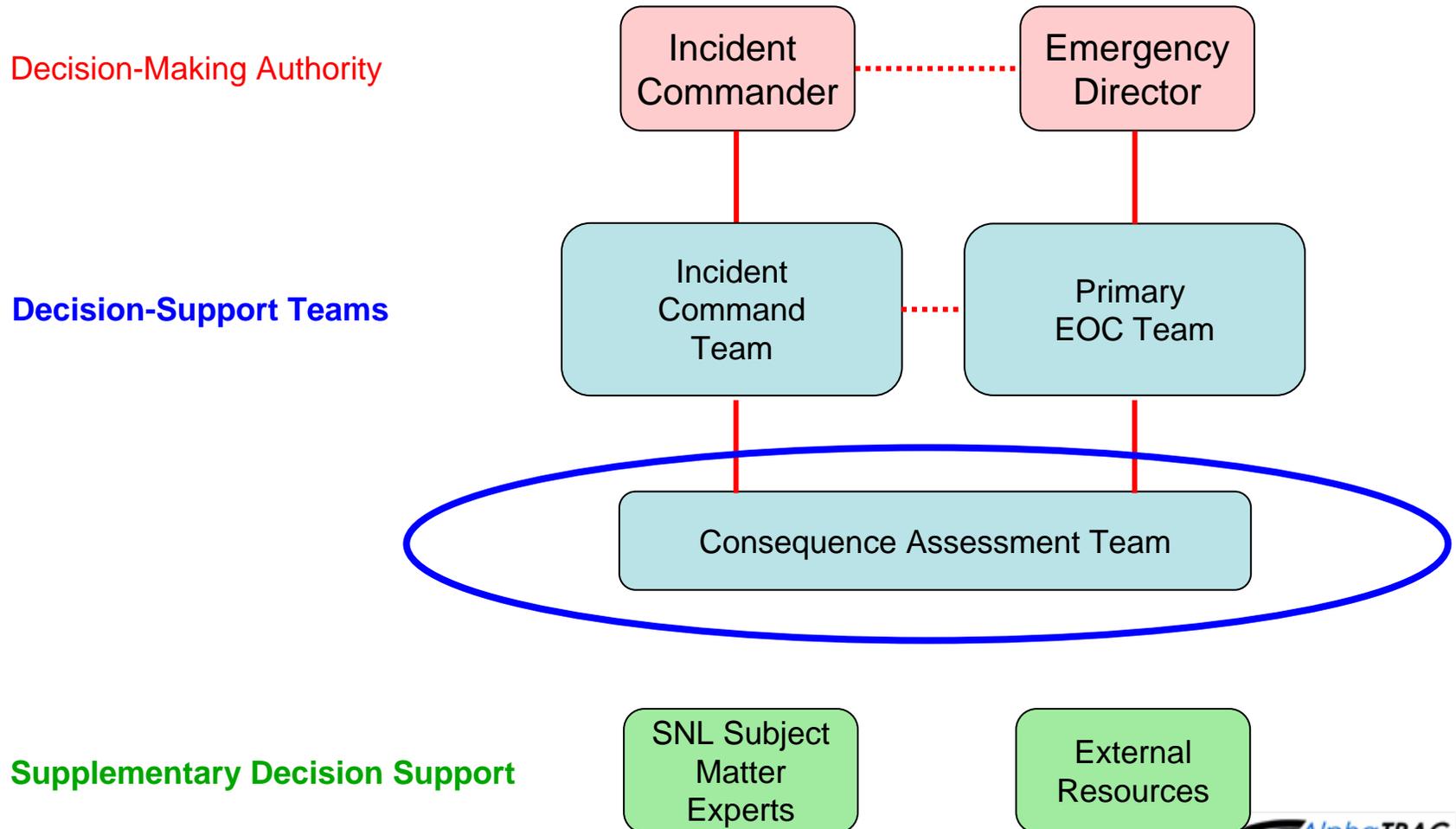


Follow-on Decisions - Consequence Assessment

Follow-on Consequence-Based Decisions

- Consequence-Based decisions made after the initial EAL-based decisions
- Based on projection of consequences for specific event and atmospheric conditions
- Progressively more realistic as information and analytical resources improve
- Consequence projections performed by Consequence Assessment Team

Consequence-based Decision Structure at SNL/NM



Client: Incident Commander

- Support Needed (as defined by ICs)
 - Initial and ongoing event-specific meteorological conditions,
 - Event-specific weather forecast,
 - Rapid confirmation of Initial Event Classification and Protective Actions,
 - Rapid initial and then ongoing consequence assessment with consequence-based event classification and protective action recommendations,
 - Notification of event-impacting atmospheric and weather conditions.

Client: Emergency Director

- Support Needed (defined by EDs)
 - Ongoing event-specific meteorological conditions,
 - Event-specific weather forecast,
 - Confirmation of Initial Event Classification and Protective Actions,
 - Rapid initial and then ongoing characterization of sources and event from consequence assessment perspective,
 - Rapid initial and then ongoing consequence assessments with consequence-based event classification and protective action recommendations,

Primary EOC Team

- Support Needed (defined by EDs) [Continued]
 - Notification of event-impacting atmospheric and weather conditions.
 - Atmospheric and ground deposition support for field monitoring planning and management,
 - Reconciliation of field monitoring and modeling results, and
 - Consequence-based support for recovery planning and management.

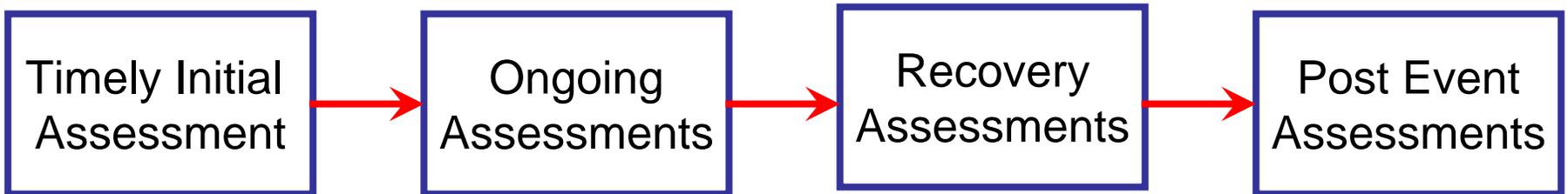
CA Team Mission

Provide timely, useful information to the Incident Commander and the Primary Emergency Operations Center Team for making informed decisions about ...

Onsite protective actions, offsite protective action recommendations, and event classification ...

Associated with a hazardous materials (radioactive, chemical, biological or explosive) emergency at or impacting the Sandia National Laboratories.

Phases of a CA Response



CA Checklist Acts As Guide

- Spin-up and activation
- Timely Initial Assessment
- Ongoing Assessment

Event Date:	Event Time:
Event:	
CONSEQUENCE ASSESSMENT TEAM ACTIVATION	
<input type="checkbox"/>	1 Gather initial event information
<input type="checkbox"/>	2 Develop Consequence Assessment Action Plan
<input type="checkbox"/>	3 Identify and request critical event information
<input type="checkbox"/>	4 Declare Consequence Assessment Team operational
TIMELY INITIAL ASSESSMENT	
<input type="checkbox"/>	1 Prepare and distribute initial meteorological summary Product: Meteorological Summary Recipient: IC and EOC Coord.
<input type="checkbox"/>	2 Prepare and distribute hazard summary for area of event Product: Hazard Summary Table Recipient: IC and EOC Coord.
<input type="checkbox"/>	3 Obtain and distribute MSDS's for primary hazards Product: MSDS Sheet(s) Recipient: IC and EOC Coord.
<input type="checkbox"/>	4 Review and confirm initial event classification and protective actions Product: Review / Confirmation Message Recipient: IC and EOC Coord.
<input type="checkbox"/>	5 Identify key source / event / atmospheric conditions Product: EAL Checklist Recipient: Internal use by CAT
<input type="checkbox"/>	6 Conduct TIA: EAL/EPHA analysis and make initial protective action and classification recommendation Product: TIA Analysis Form, PA Plan Map, Recommendation Message Recipient: EOC Coord.
ONGOING ASSESSMENT	
<input type="checkbox"/>	1 Provide initial event-specific weather forecast Product: NWS Meteorograph and message Recipient: IC and EOC Coord.
<input type="checkbox"/>	2 Provide updates of event-specific meteorological conditions and periodic weather forecasts Product: Meteorological Summary Recipient: IC and EOC Coord.
<input type="checkbox"/>	3 Conduct ongoing updates of Source / Event Scenario Product: EAL Checklist Recipient: Internal use by CAT
<input type="checkbox"/>	4 Provide ongoing updates of hazard information Product: Current Hazard Inventory Recipient: IC and EOC Coord.
<input type="checkbox"/>	5 Conduct ongoing updated Consequence Assessment Product: Plume Plot and Analysis Message Recipient: IC and EOC Coord.
<input type="checkbox"/>	6 Conduct ongoing atmospheric and deposition assessments Product: Deposition Plot and Analysis Message Recipient: IC and EOC Coord.

Timely Initial Assessment

- Objectives:
 - Get arms around event
 - Support / confirm initial decisions
 - Provide event specific decision advice
- Characteristics:
 - Little information
 - Little time for analysis
 - High degree of decision pressure from customers

Timely Initial Assessment - Framework

- Scope: Provide initial decision support products
- Timeframe: Within 18 minutes after CA Team declared Operational
- Information available: initial information at time CA Team declared Operational
- Approach: Highly focused operation with effective tools

Timely Initial Assessment Tasks

TIMELY INITIAL ASSESSMENT

- | | |
|--------------------------|--|
| <input type="checkbox"/> | 1 Prepare and distribute initial meteorological summary
Product: Meteorological Summary
Recipient: IC and EOC Coord. |
| <input type="checkbox"/> | 2 Prepare and distribute hazard summary for area of event
Product: Hazard Summary Table
Recipient: IC and EOC Coord. |
| <input type="checkbox"/> | 3 Obtain and distribute MSDS's for primary hazards
Product: MSDS Sheet(s)
Recipient: IC and EOC Coord. |
| <input type="checkbox"/> | 4 Review and confirm initial event classification and protective actions
Product: Review / Confirmation Message
Recipient: IC and EOC Coord. |
| <input type="checkbox"/> | 5 Identify key source / event / atmospheric conditions
Product: EAL Checklist
Recipient: Internal use by CAT |
| <input type="checkbox"/> | 6 Conduct TIA: EAL/EPHA analysis and make initial protective action and classification recommendation
Product: TIA Analysis Form, PA Plan Map, Recommendation Message
Recipient: EOC Coord. |

Ongoing Assessments

- Objectives:
 - Fully event-specific assessment
 - Refined analysis
 - Project into future
 - Evaluate contingencies
 - React to changing situation
- Characteristics:
 - Progressively better information
 - More time for analysis
 - Decision pressure variable but often less than TIA

Ongoing Assessment - Framework

- Scope: Provide ongoing, progressive decision support products
- Timeframe: Within about 10 - 15 minutes of situation change / request
- Information available: Developing information from event scene and other resources
- Approach:
 - Early - Focused operation with effective tools
 - Later - Response to customer requests

Ongoing Assessment Tasks

ONGOING ASSESSMENT

- | | |
|--------------------------|--|
| <input type="checkbox"/> | 1 Provide initial event-specific weather forecast
Product: NWS Meteorograph and message Recipient: IC and EOC Coord. |
| <input type="checkbox"/> | 2 Provide updates of event-specific meteorological conditions and periodic weather forecasts
Product: Meteorological Summary Recipient: IC and EOC Coord. |
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