EMERGENCY MANAGEMENT ROUNDUP

EXPECT THE UNEXPECTED

Results of a Complex-Wide Survey of Consequence Assessment Teams and Modeling Tools at DOE/NNSA Sites

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EMERGENCY MANAGEMENT ISSUES

Why a Survey?

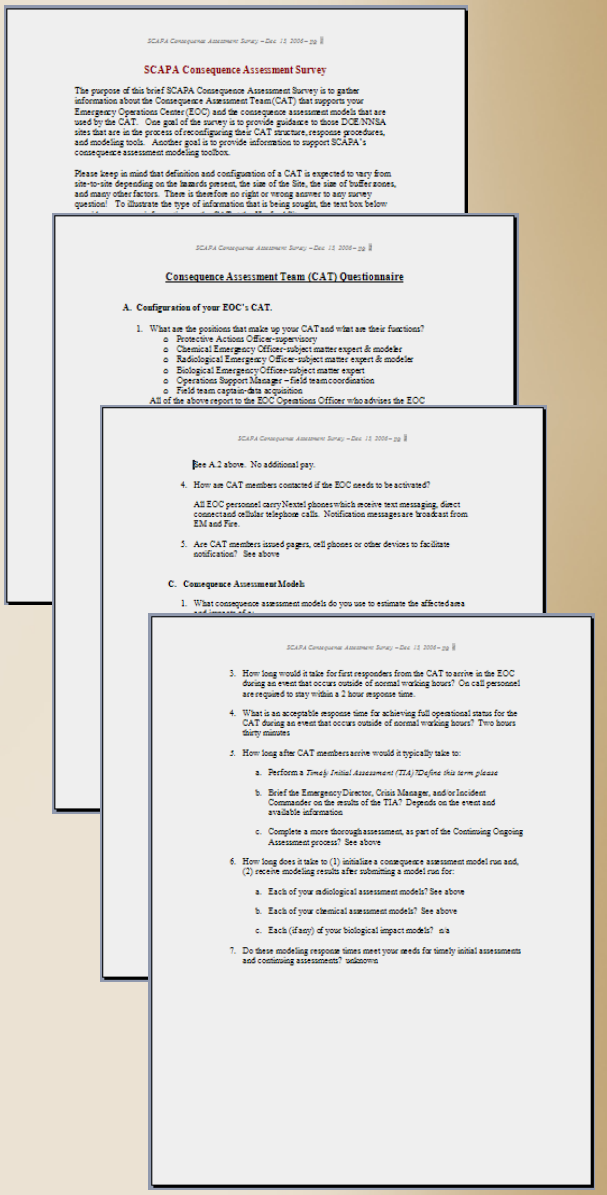
- DOE/NNSA Sandia Site Office wanted information from other sites concerning the make-up and response times of their EOC's consequence assessment teams
- Diana formerly requested SCAPA's help at last year's meeting
- We decided to expand the scope of the survey to include models used in our EOCs

We Sprang Into Action...

- Waited through the summer for Diana to have her baby
- Waited through the fall for her little premie to come home from the hospital and for Diana to return to work
- Then -- we sprang into action… (i.e., prepared the survey)

Who Participated?

- Survey sent to sites by SCAPA in mid-December:
  - -- ANL
  - -- BNL
  - -- Hanford
  - -- INL
  - -- LANL
  - -- LBL
  - -- LLNL
  - -- NTS
  - -- ORNL
  - -- Pantex
  - -- SNL
  - -- SRS
  - -- Y-12



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SCAPA Consequence Assessment Survey

The purpose of this brief SCAPA Consequence Assessment Survey is to gather information about the Consequence Assessment Team(CAT) that supports your Emergency Operations Center(EOC) and the consequence assessment models that are used by the CAT. One goal of the survey is to provide guidance to those DOE/NNSA sites that are in the process of reconfiguring their CAT structure, response procedures, and modeling tools. Another goal is to provide information to support SCAPA's consequence assessment modeling toolbox.

Please keep in mind that definition and configuration of a CAT is expected to vary from site-to-site depending on the hazards present, the size of the Site, the size of buffer zones, and many other factors. There is therefore no right or wrong answer to any survey question! To illustrate the type of information that is being sought, the text box below

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Consequence Assessment Team (CAT) Questionnaire

A. Configuration of your EOC's CAT.

1. What are the positions that make up your CAT and what are their functions?
   - Protective Actions Officer-supervisory
   - Chemical Emergency Officer-subject matter expert & modeler
   - Radiological Emergency Officer-subject matter expert & modeler
   - Biological Emergency Officer-subject matter expert
   - Operations Support Manager –field team coordination
   - Field team captains-data acquisition

   All of the above report to the EOC Operations Officer who advises the EOC

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See A.2 above. No additional pay.

4. How are CAT members contacted if the EOC needs to be activated?

   All EOC personnel carry Nextel phones which receive text messaging, direct connect and cellular telephone calls. Notification messages are broadcast from EM and Five.

5. Are CAT members issued pagers, cell phones or other devices to facilitate notification? See above

C. Consequence Assessment Models

1. What consequence assessment models do you use to estimate the affected area

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3. How long would it take for first responders from the CAT to arrive in the EOC during an event that occurs outside of normal working hours? On call personnel are required to stay within a 2 hour response time.

4. What is an acceptable response time for achieving full operational status for the CAT during an event that occurs outside of normal working hours? Two hours thirty minutes

5. How long after CAT members arrive would it typically take to:

   a. Perform a *Timely Initial Assessment (TIA)?Define this term please*

   b. Brief the Emergency Director, Crisis Manager, and/or Incident Commander on the results of the TIA? Depends on the event and available information

   c. Complete a more thorough assessment, as part of the Continuing Ongoing Assessment process? See above

6. How long does it take to (1) initialize a consequence assessment model run and, (2) receive modeling results after submitting a model run for:

   a. Each of your radiological assessment models? See above

   b. Each of your chemical assessment models? See above

   c. Each (if any) of your biological impact models? n/a

7. Do these modeling response times meet your needs for timely initial assessments and continuing assessments? unknown

Configuration of Consequence Assessment Teams

Positions

- Team Lead
- Meteorologist
- Industrial Hygienist
- Health Physicist
- Model Operator
- Field team Coordinator

Configuration of Consequence Assessment Teams

- Average # assigned to each position: **3**
- Average # of full-time EOC staff: **2**
- Total # of volunteer participants in the EOC: **2 – 30**

Activation and Notification

- Who is the typical 1st responder:
  - Normal workday: Full time EM staff
  - Other times: On call staff member or someone closest to the site
- Most sites have “on-call” staff members
- Only the Nevada Test Site pays staff for on-call time
- Pagers and cell phones are used to contact staff members during an activation

Response Times to the EOC

During Normal Working Hours

- Average time to arrive: 15 min
- Average time to achieve full operational status: 30 min

During Off-Normal Working Hours

- Average time to arrive: 30 min
- Average time to achieve full operational status: 60 min

Response Times (cont)

Upon Arrival at EOC, how long to:

- Perform a Timely Initial Assessment (TIA)? 10-15 min
- Brief the Crisis Manager or Incident Commander on the TIA? < 30 min
- Complete a thorough assessment?

  30 min - 1 hr

Emergency Response Models

	Site	Rad Modeling	Chem Modeling	Bio Modeling	Use of NARAC
1	ANL	Hotspot	EPIcode	Looking	Seldom used
2	BNL	Hotspot & NARAC	EPICode & NARAC	NARAC	Used
3	Hanf.	Hotspot, APGEMS, & NARAC	EPICode & NARAC	NARAC	Used
4	INL	RSAC & INL VIZ	Aloha & EPICode	NARAC	Seldom used
5	LANL	Hotspot & MIDAS & NARAC	Aloha & EPICode & MIDAS & NARAC	N/A	Used
6	LBL	None	None	None	Not Used
7	LLNL	Hotspot & NARAC	Aloha & EPICode & NARAC	NARAC	Used
8	NTS	Hotspot & EPHA & NARAC	EPICode & NARAC	NARAC	Used
9	ORNL	CAPARS & RASCAL & NARAC	CAPARS & Aloha & NARAC	CAPARS	Used
10	Pantex	Hotspot & NARAC & EPHA	Aloha & EPICode & EPHA & NARAC	N/A	Used
11	SNL	Hotspot & NARAC	Aloha & EPICode & NARAC	NARAC	Bio & Occasional Supplement
12	SRS	Puff/Plume & LPDM	Aloha & HPAC	N/A	Seldom Used
13	Y-12	Hotspot & RASCAL & NARAC	CHARM & EPICode & NARAC	NARAC	Used

For Radiological Events: Hotspot

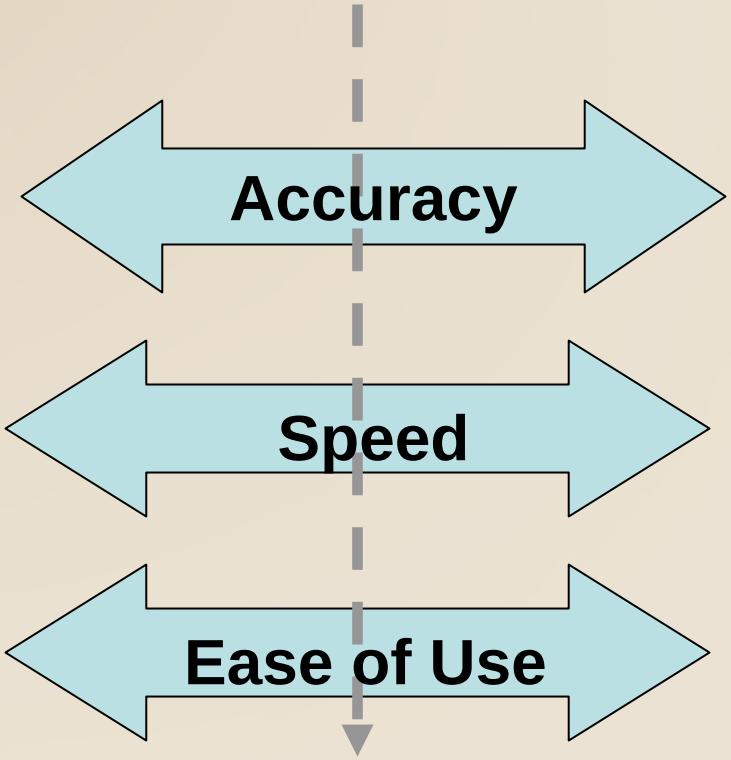
- generally used across the complex to provide an initial consequence assessment.
- quick and simple to use
- runs on your own PC
- simple assumptions / limited capabilities
- undergoing a software quality assurance (SQA) upgrade & a new version of Hotspot will soon qualify for the DOE Central Registry of Toolbox models.

For Radiological Events: NARAC

- offers a sophisticated modeling capability
- computation engine operated at LLNL
- supplements other rad models throughout the DOE complex
- a fair amount of training and regular practice is needed to keep users proficient
- often takes ~10 minutes to get results
- more technical/user documentation needed
- has an evolving SQA program that does not meet Central Registry standards.

For Radiological Events: Review

Hotspot | **NARAC**



Most Sites Need a Model in the Middle

For Radiological Events: "Middle Models"

- APGEMS
- CAPARS
- MIDAS
- RASCAL
- Puff/Plume
- RSAC

- **No one choice for a middle model that effectively balances needs for timeliness, ease-of-use, sophistication, control, QA, etc.**
- **Each model has its own set of strengths and weaknesses**

For Chemicals Events

- **Aloha** and **EPICode** provide basic support across the complex
- **NARAC** is used as a supplemental model.
- Other models used are MIDAS, CAPARS, CHARM, HPAC
- Less need perceived for a chemical middle model

For Biological or Nano Events

- Sites are just starting to think about these types of sources
- Many rely on **NARAC** but are concerned about the lack of source terms for lab release events
- More work is needed for sites to feel comfortable in dealing with biological and nanotechnology source terms

Energetic Releases

- Some sites use their “everyday” models for this (e.g., Hotspot, EPICode)
- Other sites are moving toward using a specialized model (e.g., Blast FX)

For more information...

- Full survey results are available -- please contact:

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