Risk-Informed, Performance-Based Oversight of Radiological Emergency Response Programs

Session T4: Is it Possible to Create a Risk-Informed and Performance-Based Emergency Preparedness Regulatory Regimen?

OBSIDIAN
ANALYSIS

March 11, 2014

Could Reasonable Assurance of Offsite Preparedness Be Enhanced?

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ANALYSIS

- **Current oversight provides "*reasonable assurance* that appropriate protective measures can be taken offsite in the event of a radiological emergency" (44 CFR 350.5(b))**
- **Study question is to explore whether a more *risk-informed, performance-based* oversight regimen could:**
  - Enhance qualities of reasonable assurance (e.g., transparency)
  - At same or lesser resource burden
- **Requires outlining such a regimen**

Radiological Emergency Response Tasks and Risk Significance

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High Risk Significance
Early Phase / Time-Sensitive

State/Local OROs	1. Receive Licensee Notification of Emergency	OROs, (w/licensee)	5. Make a Protective Action Decision
State/Local OROs	2. Understand the Notification	EM Director, ORO	6. Mobilize Response Components
State/Local OROs	3. Notify Appropriate Officials	Joint Info. Center	7. Notify the Public
State/Local OROs	4. Assess the Situation	State/Local OROs	8. Implement Protective Action Decision

Medium Risk Significance
Early/Intermediate Phase

Local OROs — 9. Receive, Screen, and Support Evacuees

OROs, licensee — 10. Manage Exposure and Contamination Risks

Low Risk Significance
Intermediate/Late Phase

Licensee, OROs, Fed. Gov't — 11. Make Area of Impact Safe for Public Return

Licensee, OROs, Fed. Gov't — 12. Facilitate Community Restoration & Recovery

Focus is on avoiding acute exposure

Performance-Based Evaluation

- **Decomposed tasks into 42 subtasks**
- **Developed an objective and (where possible) quantifiable performance target to be demonstrated for almost all subtasks**
  - Timeliness
  - Success rate / reliability
- **Proposed a baseline frequency of required demonstrations for each subtask**

Performance-Based Evaluation (2)

PROVISIONAL FREQUENCY	# OF SUBTASKS	EXAMPLES OF TASKS/SUBTASKS
Monthly	7	▪ Receive Licensee Notification of Emergency ▪ Understand the Notification ▪ Notify the Appropriate Officials
Quarterly	2	▪ Assess the Situation/Monitor Radioactivity
Biannually	17	▪ Assess the Situation (all other subtasks) ▪ Make a Protective Action Decision ▪ Notify the Public
Annually	8	▪ Receive, Screen, and Support Evacuees
Quadrennially	2	▪ Mobilize Response Components
Once per Cycle	3	▪ Make Area of Impact Safe for Public Return (exploratory) ▪ Facilitate Community Restoration and Recovery (exploratory)

Focus is on biannual exercise of assessment/PAD/public notification

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Performance-Based Evaluation (3)
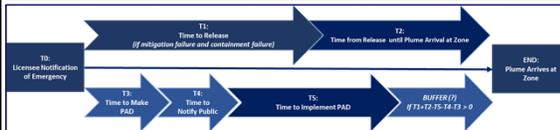
- **Considered aggregate metric such as timeliness**
- **Major gap remains how to demonstrate implementation of protective action decisions**
  - Need proxy indicators
- **Varied scenarios and real weather help avoid rote response**

Performance-Driven Oversight

- **Four levels of performance**
  - Green, White, Yellow, Orange
  - Orange reserved for tasks with high risk significance (and their subtasks)
- **Responsibility for corrective action varies with degree of less-than-target performance**
  - Green: Can be received if issue self-identified and corrected immediately
  - White: Subtask performance to be redemonstrated at next scheduled opportunity; corrective action is State/local responsibility
  - Yellow: State provides root cause analysis and proposed corrective action, and redemonstrates at next opportunity
  - Orange: FEMA leads root cause analysis and sets performance improvement plan; next failure to achieve tolerable performance leads to withdrawal of "reasonable assurance" and referral to NRC

## Implementation Considerations

- **All-hazards integration**
  - Performance-based oversight allows for all-hazards integration
  - Objective data may help show correlations between all-hazard inputs and achievement of radiological performance targets
- **Resource burdens**
  - Additional demonstrations impose additional costs
  - Detailed cost information is not readily available
  - Unlikely that savings from not conducting plan reviews (or other non-performance-based oversight) will offset additional demonstration costs

Conclusions

- **Risk-informed, performance-based oversight regimen for offsite radiological emergency response programs is conceptually feasible**
- **Such a regimen would have qualitative benefits**
  - Greater transparency or clarity of "reasonable assurance"
  - Development of dataset for technical assistance / analysis
  - Openness to further all-hazards integration
- **Resource burden is unclear, but likely greater**
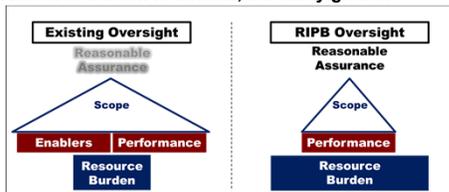
Questions?

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