DERP FORUM

Achieving Greater Success Through Strong Partnerships

November 14-17, 2023 • Kansas City, MO

Risk Management Methodology

A discussion on the RMM guidance,
including State and DoD perspective on application of RMM

James Salisbury (U.S. Army Corps of Engineers)
Ashley Mastin (Alabama Department of Environmental Management)

Session Outline

- RMM Overview
- The Regulator Perspective
- The DoD Perspective
- Takeaway Expectations for this Session
- Discussion

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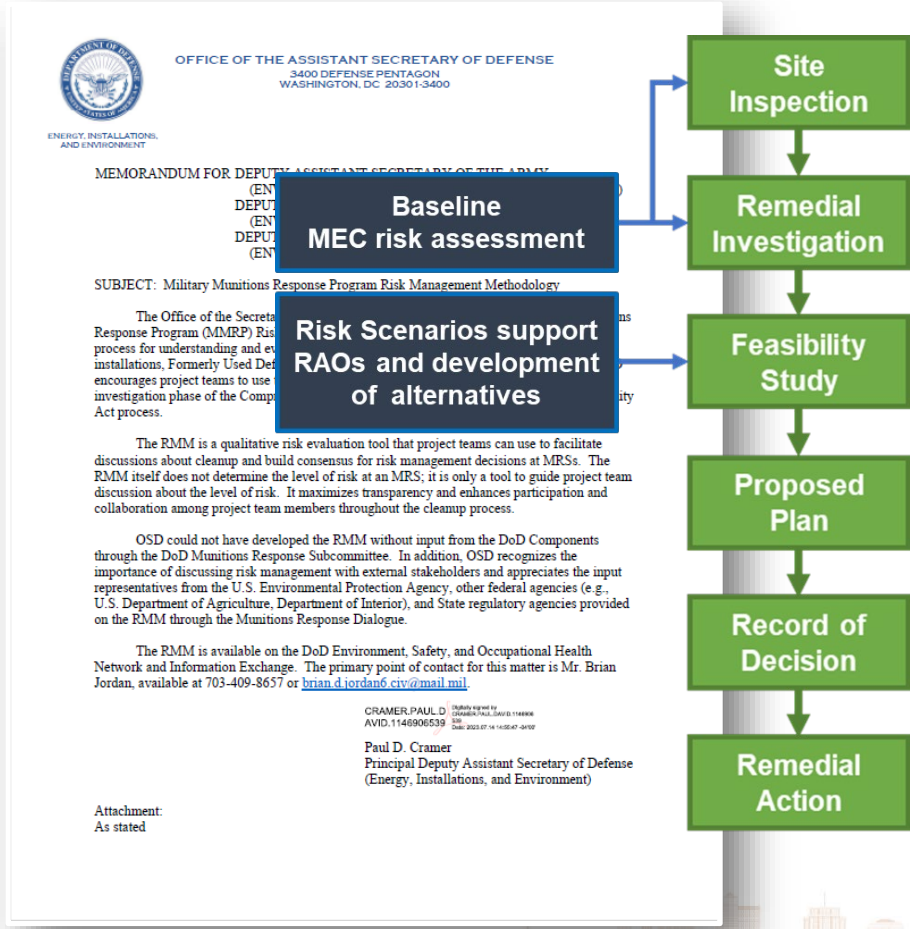
RMM Overview

A brief introduction to the Risk Management Methodology

Risk Management Methodology Overview

- Developed by the Office of the Secretary of Defense (OSD)
  - Coordination w/ U.S. Army Corps of Engineers (USACE)
- RMM is a qualitative risk evaluation tool
  - Provides project teams with a framework to guide discussion and build consensus for risk management decisions at munitions response sites (MRSs)
- Project teams are determined on a site-specific basis but can include:
  - DoD agency project manager
  - DoD subject-matter experts such as explosives safety, geophysics, and public affairs personnel
  - Regulators
  - Major landowners
  - Contractors
  - Other Federal and state agency representatives



Risk Management Methodology Overview

- Why use the RMM?
  - Consistent tool to support risk-based decisions at MRSs
  - Evaluates MEC exposure pathway

    Source → Encounter → Interaction → Incident

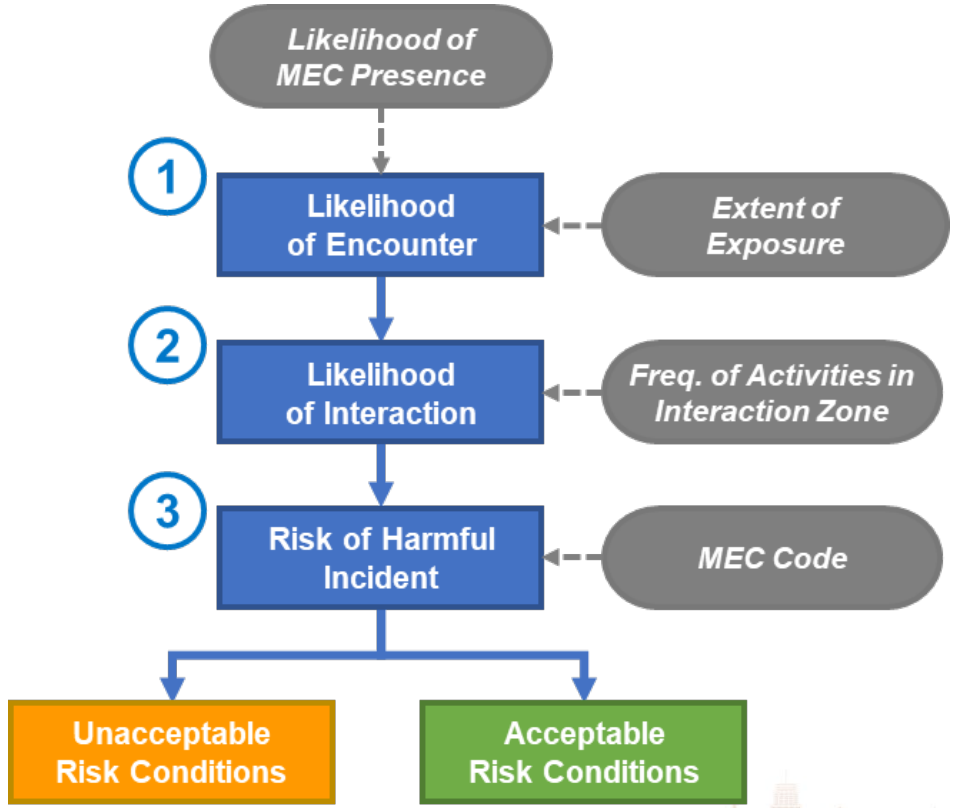
    and the likelihood receptors will
    - Encounter MEC
    - Interact with MEC
    - Experience a harmful incident
  - Considers site-specific factors that influence risks from MEC exposure
    - Uses them to guide the PDT's risk management decisions

Risk Management Methodology Overview

- When to use the RMM?
  - Remedial Investigation (RI)
    - Framework for the baseline MEC risk assessment
- Where is RMM information needed?
  - Feasibility Study (FS)
    - Risk scenarios help develop remediation goals
    - Risk scenarios help identify needed outcomes from different alternatives
- RMM is NOT a “black box”
  - Inputs do NOT drive precise outputs
  - PDTs must use the RMM to
    - Facilitate discussion
    - Build consensus on risk management decisions

Risk Management Methodology Matrices

- Considers three primary risk factors
  - Likelihood of Encounter (Matrix 1)
    - Likelihood of MEC presence
    - Extent of exposure
  - Likelihood of Interaction (Matrix 2)
    - Likelihood of encounter (from Matrix 1)
    - Frequency of activities in interaction zone
  - Risk of Harmful Incident (Matrix 3)
    - Likelihood of interaction (from Matrix 2)
    - "MEC Code"
      - Based on munitions severity and sensitivity
- They help the project team draw conclusions
  - Based on the three factors, is overall site risk *acceptable* or *unacceptable*?



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The Regulator Perspective

Observations on the Risk Management Methodology, according to the States

Application of RMM Assessment Areas

- Defining assessment areas
  - Land use
    - Reasonably anticipated land use
    - Vertical AAs
  - Amount of MEC present
    - HUA
    - LUA
    - NEU
    - No evidence MEC remain
  - Munitions types/characteristics

- RMM is applied to each AA individually

- Distinction between
  - "High" vs "Moderate"
  - "Low" vs "Very Low"

- Is there enough information?
  - CSM
  - Assumptions
    - Can they be validated?
    - Defensible
  - Grey areas
    - Default to most conservative scenario/inputs

- Can AAs change?

Regulator Involvement

- Identify project team members
  - Technical staff
  - Decision makers
- Take advantage of State regulator's local knowledge and community relations
- Establish mechanism to settle disagreements when consensus can't be reached

- Engage regulators at RI planning phase for best results
  - Consider what information will need to be used in RMM
  - Incorporate data needs into QAPP
  - **BUT** RMM should not drive RI
- Keep lines of communication open and varied
  - Don't limit communication to only correspondence
  - Default to in-person meetings
  - Establish a schedule

ASTSWMO Survey

WHO	• State Regulators
WHAT	• Online survey
WHEN	• TBD - FY25
WHERE	• Email
WHY	• To gather feedback from the States on use of RMM

- Do you have sites that are using/have used RMM?
- How does it compare to the 2017 version used for FUDS?
- Has RMM been effective at keeping regulators engaged in decision-making process?
  - Were you brought in at the RI planning phase, or
  - Were you actively involved in development of the assessment, or
  - Were you provided the assessment outcomes at the FS stage or later?
- Did you participate through face-to-face meetings, virtual meetings/conference calls, or comment-response correspondence?

Regulator Considerations

- Is RMM guidance or BRA?
- What does “acceptable” mean?
- Does RMM promote consistency?
- Can RMM be used throughout the CERCLA process?

Regulator Considerations

- How can RMM be communicated to the public?
- How does RMM evaluate level of harm?
- How easily can factors influence outcomes?
- Is RMM applicable to underwater sites?

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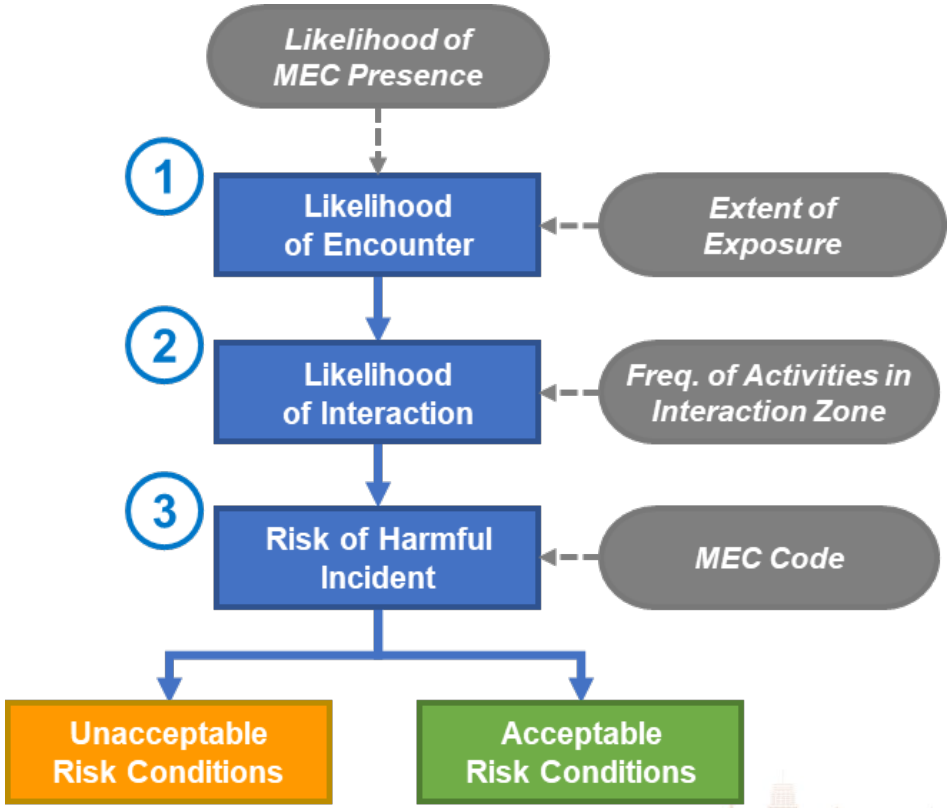
The DoD Perspective

Observations on the Risk Management Methodology, according to the DoD

RMM requires detailed land use data

- Risk scenarios for RMM evaluation are based on
  - Likelihood of MEC and distribution
  - Location and activities of receptors
    - i.e., ***land use data***
- Inputs to the RMM use
  - Likelihood of MEC
  - Extent of exposure and frequency of activities
    - i.e., ***land use data***
- Historically, we have not done a great job of collecting these data



RMM requires more detailed land use data, cont'd.

***General Site Description*: Describe historic munitions use followed by the current site description. Include acreage, type of former site and describe general current and reasonably anticipated future use (residential, commercial/industrial, agricultural, recreational, etc.).**	
1. *User Populations (Potential Receptors):* Onsite or adjacent populations, include current and reasonably anticipated future users, including seasonal users and visitors that could reasonably access and use the site.	
2. *Frequency and Duration of Site Use:* Describe the frequency of use; the potential duration (e.g., number of hours, days) of activities by user (e.g., residents, workers, recreational users) to estimate the potential contact hours at a site each year. This may include seasonal variations.	
3. *Outdoor Activities:* List potential current and future activities (e.g., gardening, farming, grazing) and/or recreational activities (e.g., swimming, boating, hiking, camping). Activities should match with the receptors (e.g., residents, maintenance crews, farmers, recreational users) identified in Factor 2.	
Horizontal Coverage of Land Use	***Vertical Land Use***
4. *Coverage of potential site activities that would traverse the site* Describe scale of EACH receptor and activities identified Discuss the likely coverage of the site over a year. Consider barriers (natural or manmade) to access; populations that could reasonably or are known to access the site and ease of access over a year.	**5. *Depth and Energy associated with site activities that may interact with an item*** Describe depth of activities identified in Factors 3. Consider energy associated with intrusive activities (handheld trowels and shovels versus use of farming equipment)

RMM requires more detailed land use data, cont'd.

- We need to ***use SPP meetings*** to collect initial land use data
- Include ***land use data in DQOs***
  - Step 3: Identify Inputs to the Decision
    - What are the land use data needs?
  - Step 6: Specify Performance Criteria
    - What quality of data do we need to support project decisions?

- Have QAPP ***definable feature of work (DFW)*** for collecting land use data
  - Identify planned POCs
  - Explain when we plan to contact them
  - List the information we will request
    - Descriptions of land use activities, inc. locations/coverage, estimated frequencies, and intrusive depths
  - Develop an interview form to record this data as part of the project record

RMM requires more detailed land use data, cont'd.

- Should include ***measurement performance criteria (MPCs)*** for land use data
  - Describe the data quality we need to support project decisions
    - Doesn't have to be highly technical

* **Note**: This is an example ONLY. For large sites with many landowners, a sample of contacts would likely suffice

- Example MPC
  - **Measurement**: Land Use Data.
  - **Data Quality Indicator**: Completeness.
  - **Specification**: 100%* of landowners have been contacted and have provided information on land use and activities at their properties. Data must include descriptions of land use activities, inc. general description of actions, locations/coverage, est. frequencies, and est. intrusive depths.
  - **Activity Used to Assess Performance**: Data verification by Risk Assessor.

RMM benefits from Regulator involvement

- MEC risk assessment is QUALITATIVE!
  - RMM is a framework to help *the PDT evaluate* risks from explosive hazards
  - PDT must ***collaborate*** on the process, including inputs
  - Collaboration requires ***communication***
- We're doing it **WRONG…**
  - … if the *1st time* the Lead Agent sees the RMM assessment is the RI Report
  - … if the *1st time* the Regulator sees the RMM assessment is the RI Report
- Decision makers should be involved in the process in a meaningful way

USE the project SPP meetings!

RMM Risk Scenarios support RAOs

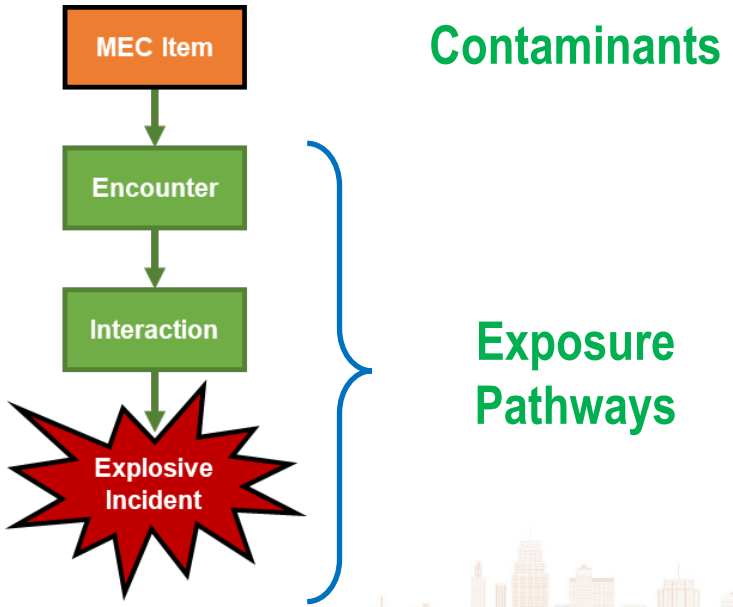
- "Risk scenarios" are the core of the RMM evaluation
  - Each reflects a unique combination of risk conditions for receptors
- Each risk scenario includes
  - Assessment Area
  - Receptor Activity
  - Interaction Zone

Develop Site-specific Risk Scenarios

Preparatory Step	Purpose
Define Assessment Areas	Describe discrete parts of the MRS based on similar levels of risk using data on land use and known or suspected MEC
Identify Receptor Activities	Describe the different land use activities taking place within each assessment area
Define Interaction Zones	Look at the depths of potential interaction with known or suspected MEC for each receptor activity

RMM Risk Scenarios support RAOs, cont'd.

- Remedial Action Objectives (RAOs) are required for a Feasibility Study
  - NCP states the lead agency is required to "establish remedial action objectives (RAOs) that specify contaminants and media of concern, potential exposure pathways, and remediation goals"
  - For RAOs on MMRP projects
    - Contaminants and media of concern
      - Described in the CSM
    - Potential exposure pathways
      - Described in the CSM
    - Remediation goals
      - "… to mitigate exposure pathways to eliminate unacceptable risk conditions."
        - MEC risk is not easily quantifiable
        - There is no widely "acceptable" level of MEC exposures



RMM Risk Scenarios support RAOs, cont'd.

RAOs require

- Contaminants and Media of Concern
  - Specific MEC types
  - Specified horizontal boundary
  - Depth related to current/future land use
  - Depth of MEC determined during characterization (if less than land use)
- Potential Exposure Pathways
  - Receptors
  - Pathways
- Remediation Goals

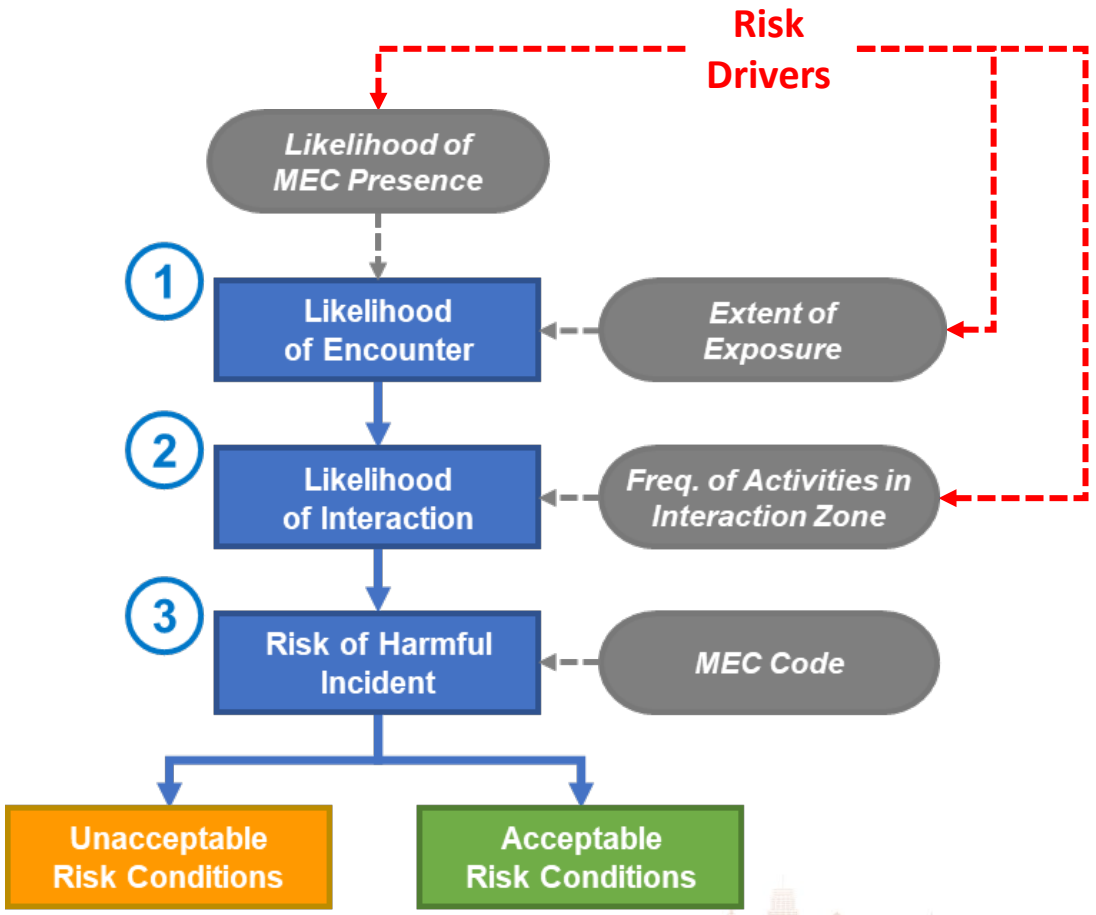
RMM input data requires

- For MEC
  - MEC Types
- Risk scenarios include
  - Assessment Areas
  - Receptor Activities
  - Interaction Zones

Risk scenarios provide a basis for the RAOs!

Support FS Alternative Development

- Protective remedial alternatives need to mitigate causes of risk
  - i.e., “risk drivers”
- RMM results identify the main risk drivers
  - Likelihood of MEC Presence
  - Extent of Exposure
  - Frequency of Activities in the Interaction Zone



Support FS Alternative Development, cont'd.

- Remedy components must address risk drivers
  - Likelihood of MEC Presence
    - Reduce source
      - e.g., surface or subsurface removal
  - Extent of Exposure
    - Prevent access
      - e.g., fences, covers/barriers
    - Restrict access
      - e.g., require permit to enter
    - Influence behavior to reduce extent of use
      - e.g., hazard notification (signs, pamphlets, etc.)
  - Frequency of Activities in the Interaction Zone
    - Restrict or prohibit activities
      - e.g., require dig permits, prohibit excavation
    - Influence behavior to reduce frequency of use
      - e.g., hazard notification (signs, pamphlets, etc.)

Also use RAOs
(which are based on risk scenarios)!

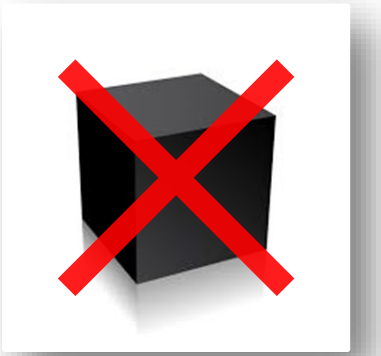
So, what does all that mean?

Takeaway Expectations for this Session

Takeaway Expectations for this Session

- Plan to collect land use data
  - Detail is critical for risk assessment
  - *Include in data collection plan*
- Develop appropriate risk scenarios
  - Better risk assessments
  - Facilitates RAOs
  - Supports remedial alternative development
- Be open to ways RMM can be improved

- RMM is NOT a black box!
  - The whole project team should be involved in building consensus on inputs and conclusions
  - That means the whole project team is making the risk conclusions/decisions
    - Not just a contractor
    - Certainly not RMM itself!
    - Involve the Regulator!



Discussion

Let's open the floor

Regulator Considerations

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