

Munitions and Explosives of Concern Hazard Assessment (MEC HA). June 2006.  
Update on review comments and responses for the preliminary draft guidance document issued for comment from January 17, 2006 to March 17, 2006.

MEC HA Comment Review Meeting Notes. March 28 – 30, 2006. Huntsville, AL.  
Participants: Dr. Michelle Crull USACE, Jim Manthey USACE, Doug Maddox USEPA, Kevin Oates USEPA, Bill Vieth USACE, Dick Wright Mitretek.

Members of the MEC HA TWG met in Huntsville for three days to review the comments received on the preliminary draft MEC HA Guidance document. They were joined by Dr. Michelle Crull and Jim Manthey for specific discussions on comments submitted by the Army. Comments were received from the follow organizations and commentors.

Department of Defense Explosives Safety Board  
U.S. Air Force  
U.S. Navy  
U.S. Army  
State of Alaska  
State of California  
State of Illinois  
State of Ohio  
Department of the Interior  
U.S. EPA  
Center for Public Environmental Oversight  
National Association of Ordnance Contractors  
Ron Marnicio, Foster Wheeler/TetraTech

The review subgroup decided to not attempt a comment-by-comment response. This decision was arrived at for three primary reasons. First, a very large number of comments were received from reviewers. Response to each comment would require a substantial effort. Second, many of the comments were identified as being repetitious or falling into specific categories for response. Third, several commenters recommended streamlining the document, which the TWG will do. This effort will address many of the editorial comments (over 50% of comments received were editorial in nature). The approach developed by the review subgroup is to develop response on the 23 general categories described below. In addition, the review subgroup recommends that certain specific comments be addressed. Those are identified by reviewer organization and draft responses provided after the general categories. The general responses were reviewed by the MEC HA TWG during work group meetings in early May, and finalized over the next few weeks. The general responses and May meeting minutes will be provided to specific commenting organizations as part of the comment resolution process. These will also be posted on the MEC HA website listed below.

General Issues. The order these are presented reflects the order the general categories were identified while reviewing the comments on the draft MEC HA guidance document. As such they are reflective of the order of comments reviewed by organization. The initial listing of the General Comments is followed by a discussion of the comment and the response developed by the TWG.

1. Terminology & definitions. Need to use consistent terms, reflect DoD published definitions.
2. MEC HA and Munitions Response Site Prioritization Protocol (MRSPP) issues. MRSPP can perform all of the functions of the MEC HA.
3. Hazardous fragment arc distance, overpressure, etc. Need to revisit calculations and applications.
4. Retain/do not retain cultural/ecological/critical infrastructure aspects as general instructions.
5. Requests for evaluations, analysis of aspects that are outside of the scope of MEC HA (e.g. include Chemical Warfare Material, underwater sites).
6. Concern is addressed in another input factor (e.g. Net explosive weight (NEW) should be included in filler type factor. NEW is addressed in Hazardous Distance input factor). This is a function of the framework structure.
7. Site-specific issues for evaluation & resolution (e.g. inclusion of list of all weapons systems; rocket motors as HE or propellant.).
8. Disagree – comment noted.
9. Recommends changes to the relative order of categories within an input factor. Matter of professional judgment.
10. Output categories discussion. Qualitative descriptions do not reflect site conditions, and/or do not add value to tool/decision-making.
11. Recommend the use of predictive mathematical models for human behavior. Link this to “safe” threshold determinations.
12. LUC alone as a final remedy should be supported by the MEC HA.
13. Discussion of the land use paradigm (residential, commercial, recreational) versus intrusive nature of activities relative to depth/location of MEC should be better explained. Implications for risk/hazard management needs to be discussed.
14. Uncertainty – some scores do not change for some factors from Left to Right. Do they need to be included in the framework if there is no change ?.
15. Scoring & weights questions. What is the basis for the scores and weights?
16. Document is too long. Needs to be more concise, more user friendly.
17. Use density of MEC as part of the hazard assessment. See other comments on establishment of “safe” numerical threshold.
18. MEC HA does not set DQOs. (e.g. see USACE OE- CX comment #5).
19. Does not establish a threshold above which an action is required/below which site is safe.
20. Revisit MEC HA goals, application, uses within 2 to 3 years, and/or application at 40+ sites.
21. Pathway & interactions with MEC. Make sure usage is consistent with USACE Conceptual Site Model document.
22. Use of MEC HA is it/is it not mandatory. Compare to UFP QAPP directions.

23. Think about changing the titles of some of the input factor. (e.g. Amount of MEC).

#### Expanded discussion and responses to the General Issues

1. Terminology & Definitions. Several comments were received related to terminology & definitions. These included requests for consistent use of terminologies in the MEC HA as are used in other documents – particularly DoD publications. For comments where specific recommendations and references were provided, the TWG has made the requested changes. In other instances where specific recommendations were not made, or references not provided, TWG members will request clarification from the commenting organization. The TWG will avoid creating “new terminology”, especially where there are accepted, consistent terminology in use by DoD and project teams.

2. MEC HA & MRSPP complimentary uses and coordination issues. A few comments were received that stated the MRSPP can perform all of the functions that the MEC HA is designed to perform. The TWG does not agree with these statements. Specifically, the MEC HA performs additional site-specific analysis of the affects of different removal or remedial actions, including changes to land uses, activities, and access controls. The MRSPP does not have the capability of performing evaluations of these aspects at the site-specific level. Other comments recommended that the MEC HA rely on input factors consistent with the MRSPP. The MEC HA does rely on factors consistent with the MRSPP. This is stated at several locations in the text, as well as in the Issue Papers prepared as part of the MEC HA initiative. These are publicly available at <http://www.epa.gov/fedfacts>, and have been referred to in numerous outreach efforts, such as the recent review of the preliminary draft MEC HA Guidance. For a complete list of MEC HA outreach activities, please visit the website listed above, click on the Military Munitions button and follow that to the MEC HA site and then to the Outreach Matrix.

3. Hazardous fragmentation distance (HFD). Several comments were received on HFD uses, equations, and application for the Distance to Additional Receptors. At the May 2006 TWG meeting and in subsequent conversations with the Department of Defense Explosives Safety Board (DDESB) personnel, Department of the Army personnel, and Dr. Michelle Crull USACE, a decision was reached to change aspects of the MEC HA to address these issues. The revised guidance document will no longer have instructions regarding the application of the MEC HA at the PA/SI level. In general the level of data available at that stage will require conservative assumptions for input to the MEC HA. Along with this change, project teams will be provided instructions to initially apply the MEC HA as part of removal or remedial response activities (or RCRA Facility Inspection if the work is conducted under RCRA). In these stages of response work at an MRS, an Explosives Safety Submission (ESS), and/or and Explosives Siting Plan (ESP) will have been developed and approved. Those documents will contain Explosives Safety Quantity Distance (ESQD) arcs. The revised MEC HA will instruct project teams to relay on that information when evaluating the Distance to Additional Receptors input factor. The

references to calculation of HFD and other safety distances will be removed. General information will be included under Frequently Asked Questions in the appendices on the ESP/ESS/ESQD steps in the MRS response process.

4. Presence of Critical Infrastructure, Cultural Resources, or Ecological Resources. A few comments were received questioning the inclusion of discussion of Critical Infrastructure, Cultural Resources, or Ecological Resources in the MEC HA. The inclusion of these resources in the guidance document is intended to alert project teams of the need to take into account the potential for adverse effects to these resources at or near an MRS. These are separate from the human health focus of the MEC HA. The directions to project teams to identify these types of resources in the project planning, site characterization, and evaluation of removal/remedial site-specific alternatives under CERCLA will remain in the MEC HA Guidance. These are resources that are of significant importance to a variety of site users, including areas of cultural significance to Native Americans and Alaskan Natives. This directly reflects the EPA Systematic Planning Process and the DoD parallel Technical Project Planning Process. It is also consistent with EPA and DOD Tribal programs, as well as Community involvement programs.

5. Outside of the Scope of MEC HA. Several comments discussed why certain activities were not addressed in the MEC HA. These included addressing MEC present in underwater sites, and the inclusion of chemical warfare material. As stated in the Executive Summary and elsewhere in the guidance, these considerations are outside of the scope of the MEC HA that was established at the inception of the MEC HA Technical Work Group. The scope was agreed to by the Executive Sponsors from DoD, EPA, DOI, States, and Tribal interests.

6. Request for changes to Input Factors. Some commenters felt that some of the information used to populate input factors should be shifted to other input factors. For example one commentator felt that net explosive weight should be captured under a broader filler type input factor. The TWG has reviewed these requests and has decided to not shift any of the data inputs from one input factor to another, since this will not affect the overall application of the framework. The text and Appendix E contain discussions and analyses of the efforts undertaken to support the technical framework. Additional information on these efforts can be found in the Issue Papers and Meeting Minutes for the MEC HA TWG that is available at <http://www.epa.gov/fedfacs>. As discussed in those documents, a substantial effort of the analysis of the identification of input factors was undertaken. To a certain extent, both the efforts of the TWG and the requests by commentors reflect differences in professional judgment.

7. A few commenters requested that the MEC HA Guidance include a list of all known weapons systems and ordnance that may be encountered during an MMRP response action. This would serve as a technical reference for the MEC HA Guidance. The MEC HA TWG believes this request is too broad to be accommodated. In addition, this kind of information is already included in other technical references such as MIDAS and ORDATA that are readily available to project teams.

8. Disagree with comment/comment noted. Several comments were received that were not relevant to the MEC HA guidance document, or were reflective of mis-interpretations of the use or application of the MEC HA. The TWG will take these comments into advisement when modifying/re-writing the next version of the MEC HA to ensure that uses and applications are clearly identified and accurately stated.

9. Request for changes to Framework Scores, Weights, Order of Categories under an Input Factor. A few comments requested that scores or weights be revised, or that the order of categories under input factors be changed. The TWG has reviewed these requests and has decided to not adjust any of the scores, weights, or order of categories under input factors. The text and Appendix E contain discussions and analyses of the efforts undertaken to support the technical framework. Additional information on these efforts can be found in the Issue Papers and Meeting Minutes for the MEC HA TWG that are available at <http://www.epa.gov/fedfac> As discussed in those documents, a substantial effort of the analysis of modifications to scores, weights, and order of categories was undertaken. To a certain extent, both the efforts of the TWG and the requests by commenters reflect differences in professional judgment. This is particularly evident when discussing the relative order and associated score for specific categories under certain Input Factors. The scores, weights, and order of categories under the various input factors reflect the consensus judgment of the TWG and the results of several hundred sensitivity runs of changes to these aspects, as well as modifications over a one year period based on feedback from numerous briefing and outreach efforts.

10. Several comments were received in regard to the qualitative description of the Output Categories. The TWG has consistently sought feedback on the output categories. Previous outreach efforts, as well as meeting minutes, reflect this fact. The TWG has proposed the qualitative descriptions as one way to capture the broader descriptions of site conditions reflective of the four output categories. The TWG continues to seek feedback on the output categories. Options for consideration include: use of the existing language or similar language that reflects the evaluation of compatibility with land use activities; other qualitative summary descriptions; not using a summary qualitative description and instead rely on a Category 1, 2, 3, 4 or Category A,B,C,D or similar approach.

11. Use of models that are predictive of human behavior. A few comments were received that recommended the development and application of numerical models that are predictive of human behavior to establish a numerical threshold value to help determine protectiveness of human health under CERCLA. As noted in the text of the MEC HA and in the Issue Papers available at <http://www.epa.gov/fedfac> the TWG chose not to pursue this approach for several reasons. These include the need for transparency of communication with stakeholders and among project team members. Furthermore, there has been a lack of acceptance of this approach by several State and Federal organizations involved with the planning, execution, and oversight of sites containing MEC.

12. Use of Land Use Controls (LUCs) Alone as a Final Remedy. A few comments were received that expressed the view that LUCs alone could be sufficient to eliminate potential complete pathways for human interaction with MEC items. Based on this view, the comments expressed the concern that the MEC HA technical framework does not give sufficient weight to changes in input factors that reflect changes to land use activities or accessibility to sites through land use controls. The input factors that will change as a result of surface and/or subsurface cleanup actions include Potential Contact Hours, Amount of MEC, Minimum MEC Depth, and Migration Potential. Collectively these have a weighting of 57%. The input factors that will change as a result of a change in land use activities include Site Accessibility, Potential Contact Hours, and Minimum MEC Depth. Collectively these have a weighting of 44%. These relative weights were adjusted in late 2005 based on feedback from presentations made to organizations represented by the MEC HA TWG. Those adjustments gave a greater relative weight to land use activity changes than what was previously expressed in the MEC HA framework. The higher relative weight for cleanup versus land use activity changes is reflective of CERCLA statutory requirements, as well as NCP requirements. The NCP 300.430(a)(iii)(D) states that...*"The use of institutional controls shall not substitute for active response measures (e.g. treatment and/or containment of source material, restoration of groundwaters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy."*

13. HTRW Land Use Paradigm versus MEC HA Intrusive Activity Approach. A few comments were received from the U.S. Navy on this topic that seemed to be reflective of a cursory review. For example, the discussion that the Residential, Commercial, Recreational paradigm for chemical exposure does not have direct application to MEC explosive safety. The text is meant to illustrate that explosive safety hazards have different considerations than Incremental Cancer Risk/Hazard Assessment for potential chemical exposure. This is an important consideration in evaluation and expression of MEC HA. The expressed notion that residential uses will always result in a higher explosive hazard is "flawed" demonstrates a lack of understanding of the text as written. The TWG will endeavor to make the language easier to read and understand.

14. Uncertainty. Three Input Factors do not change from Left to Right under the No Clearance, Surface Clearance, Subsurface Clearance columns. The MEC HA text discusses that certain input factors do not change with cleanup actions. This approach was undertaken to address uncertainty associated with the state of art to find and remove all MEC items at a site. For example, under Filler Type, the identification of High Explosives at a site will not change with cleanup.

15. There were several comments received that questioned the scores for individual input factor categories. As noted in General Response # 9, the background information on the specific scores can be found in the MEC HA TWG meeting minutes, and in Appendix E to the MEC HA.

16. Document is too long. Numerous comments were received that recommended the next version of the MEC HA Guidance be condensed in order to support ease of use by project teams. The MEC HA TWG agrees and will make the next version of the document more concise.

17. A few comments recommended using numerical estimates of density within the MEC HA Framework. The TWG chose early in the development of the MEC HA not to rely on estimates of density, rather to rely on “MEC Amount” associated with past uses. There are several reasons for this that are discussed in the Issue Papers contained at the MEC HA website. Among the reasons are the difficulty in estimating an accurate density based on statistical extrapolations. The current state of the art for geophysical investigations does not readily allow for discrimination among target anomalies between MEC and non-MEC items. True MEC density is an “after the fact metric” in terms of intrusive investigations.

18. MEC does not set requirements for Data Quality Objectives (DQOs). The TWG chose to leave the development of site-specific Data Quality Objectives with the project team members. It would be very difficult for the TWG to attempt to develop DQOs for the wide range of MMRP sites. This is a task most suitably undertaken by the site-specific project teams based on site-specific metrics and data needs.

19. MEC HA does not establish a numerical threshold that requires actions, below which supports No Action. This is correct. Previous efforts to attempt to establish this kind of metric have used mathematical tools that were not acceptable to many organizations. As noted in the previous general responses on the use of models to predict human behavior, and tools to estimate MEC density, these approaches have been very contentious, and have not helped project teams to make consensus decisions. In fact, they have lead to fundamental disagreements between organizations on a national level. The MEC HA TWG decided early in the process of evaluating approaches to the technical framework to rely on other expressions of site-specific hazards. The other expressions and the reasons for not attempting use density estimates or predictive models have been discussed at informational briefings going back to the summer of 2004. These approaches have been presented to the Executive Sponsor group and have been supported by its members.

20. The USAF recommended that the MEC HA be revisited in a set period of time and/or establish a sunset provision for the termination of its use. The TWG agrees with the recommendation that the MEC HA sponsoring organizations should review its implementation and effectiveness in 2 to 3 years, and/or after 40+ project team applications. The TWG will recommend to the Executive Sponsors that this concept be described in the final guidance. It is of note that Appendix E describes the results of sensitivity runs on over 400 site types that are representative of virtually all of the MEC terrestrial MRS sites in the MMRP inventory.

21. There were a few comments on exposure pathway and human interactions with MEC. The MEC HA TWG will review these comments in conjunction with the updates to the USACE Publication titled “Conceptual Site Models For Military Munitions Response

Program (MMRP) And Hazardous, Toxic, and Radioactive Waste (HTRW) Projects. EM 1110-1-1200. 3 February 2003”. This will be done to ensure that descriptions and usage in the MEC HA is consistent with the USACE document.

22. Some commenters wanted to know if use of the final guidance will be mandatory. While that decision has not been made, the TWG and the Executive Sponsors have discussed an approach that would be along the lines of the Uniform Federal Policy for Quality Assurance Project Plans. That document, which is also a joint publication of several federal agencies and organizations, does not make its use “mandatory” but it does express expectations that the participating organizations will follow it to promote consistency.

23. Some commenters thought that the descriptive titles of some of the input factors were not accurately reflective of the input factor. The TWG will evaluate alternative descriptive terms during the revisions to the draft guidance.