

MEC HA Framework Option Paper #1: Performance Objectives and Criteria

1.0 INTRODUCTION

This paper identifies recommended performance objectives for the MEC HA process currently under development. Identification of these objectives will assist in choosing between different options for the MEC HA framework, as well as in assessing the overall usefulness of the process as it is developed. The performance objectives recommended in this paper are based on an analysis of the MEC HA purposes and applicable principles identified at the first meeting of the Hazard Assessment Technical Working Group.

In addition to identifying recommended performance objectives, the paper also describes criteria that can be applied to the different elements of the MEC HA framework to help ensure that the performance objectives are met.

1.1 Background

A MEC HA process should be designed to meet six major purposes:

- Organize site information in a consistent manner.
- Support hazard communication for the project team and with stakeholders.
- Provide site-specific information for selection of response alternatives.
- Provide site-specific information on land use decisions.
- Support site-specific prioritization efforts where there are multiple sites that will need responses actions.
- Build confidence in the decision-making process.

Certain underlying principles that will be significant in the development of the MEC HA process and subsequent guidance were also identified, including:

- The MEC HA process is to support the management of uncertainty throughout the site evaluation, characterization and decision-making processes.
- The MEC HA process will be dynamically linked to the Conceptual Site Model (CSM). The MEC HA guidance will provide criteria for determining when changes to the CSM (due to additional information) should trigger a reassessment of explosive hazard.
- The design of the MEC HA will balance the cost of data requirements with the benefit of the assessment. The MEC HA process will be designed to use data that can be reasonably expected to be collected in the course of the site evaluation, characterization and decision-making processes. The process will not require data collection simply for the sake of making the assessment.
- Communication with stakeholders is an inherent aspect of the MEC HA.

The purposes and principles summarized here are discussed in greater detail in the minutes of the MEC HA meeting held May 4-5, 2004.

2.0 PERFORMANCE OBJECTIVES AND CRITERIA

2.1 Performance Objectives for the MEC HA Process

Two broad functional categories emerge from the purposes and principles described above:

- The MEC HA process should support the hazard management decision-making process.
- The MEC HA process should support hazard communication.

The MEC HA process will support hazard management decision-making when it is used to help analyze response alternatives, to integrate information for land use decisions, and to help prioritize multiple sites within an MRA. The MEC HA will also support decision making by requiring only the data that is necessary to make the decision at the point in the process at which the decision is being made. The MEC HA process will support hazard communication by organizing information in a consistent manner and by building confidence in the decision-making process. The MEC HA will serve both functions linkage to the CSM and helping to manage uncertainty.

These two broad functional categories can help the group to identify desirable characteristics of the MEC HA process, and then develop appropriate performance objectives for those characteristics to support hazard management decision-making and hazard communication. These include the following recommended product and process characteristics:

- Sensitivity
- Accuracy
- Efficiency
- Consistency
- Transparency
- Representativeness

Recommended performance objectives have been developed to describe how each of these characteristics can support the two functional categories:

Sensitivity: The MEC HA process will support hazard management decision-making and hazard communication by being sensitive enough to:

- Discern the effects of different response alternatives and land use decisions on the site-specific hazard level.
- Differentiate between sites to the extent necessary to allow for prioritization of sites within an installation or other MRA.

Accuracy: The MEC HA process will support hazard management decision-making and hazard communication by:

- Accurately portraying the contribution and interaction of factors that lead to site-specific explosive hazard.

Efficiency: The MEC HA process will support hazard management decision-making and hazard communication by:

- Facilitating decision-making at the earliest possible point in the investigation/remediation process.
- Requiring only the data that is absolutely necessary to perform the required functions.

Consistency: The MEC HA process will support hazard management decision-making and hazard communication by:

- Providing a reproducible way of organizing site-specific information.
- Providing uniformity in application for internal (to an installation) and external (between installations) reproducibility.
- Achieving consistent results when site-specific inputs are the same.

Transparency: The MEC HA process will support practical hazard management decision-making and hazard communication by:

- Being easy to understand.
- Illuminating (rather than obscuring) the relationships between the required inputs and the resulting outputs.
- Being clearly documented by users to ensure a trackable decision-making process.

Representativeness: The MEC HA process will support hazard management decision-making and hazard communication by:

- Including and assessing all site characteristics that affect the site-specific hazard level.
- Being flexible enough to address all reasonably anticipated site-specific conditions.

One of the tasks during the development of the framework will be to find the optimum balance between the various performance objectives. For example, there is a potential conflict between the performance objectives for consistency and those for representativeness – it may be that the flexibility required to be representative of a wide range of site conditions will make it difficult to achieve consistency of results between installations. Options and recommendations to resolve conflicts between performance objectives will be used to develop consensus decisions.

2.2 Performance Criteria for MEC HA Framework Elements

The MEC HA framework will provide the means to implement the MEC HA process.

The framework consists of three elements:

- Input Factors – the characteristics of a site that define its explosive hazard.
- Structure – the method(s) used to score, weight and combine the input factors to assess the site hazard.

- Output – the description of the hazard level of the site.

The performance objectives described in the previous section suggest criteria that the MEC HA framework elements should meet. The recommended criteria are summarized in the following table, which also provides the performance characteristic or characteristics to which each criteria apply.

Framework Element	Criteria	Characteristic(s)
Input Factors	Input factors can be clearly and unambiguously defined.	Transparency; Consistency
	The values for input factors are easy to determine or estimate.	Efficiency; Transparency
	The ranges of possible input factor values encompass all likely values for that factor.	Representativeness; Transparency; Sensitivity
	Input factors included in the framework add to the functionality of the MEC HA process – each factor contributes to assessing the level of hazard for a site, and only the factors necessary to perform the assessment are required.	Efficiency; Accuracy; Sensitivity
	Input factors included in the framework address all site characteristics that may lead to explosive hazards – the input factors are sufficient to completely describe the hazards.	Accuracy; Sensitivity; Representativeness
Structure	The scores and weights assigned to input factors reflect the relative contribution of each factor to the overall site hazard level.	Accuracy; Transparency; Representativeness
	The method(s) used to combine input factors to assess the site-specific hazard level is easy to understand and implement.	Transparency; Efficiency
	The method(s) used to combine input factors to assess the site-specific hazard level accurately captures the effects of the interactions between input factors.	Accuracy; Representativeness; Sensitivity
	The scores, weights and combination method(s) are defined clearly and unambiguously.	Consistency; Transparency
Output	Output values are descriptive of the site hazard level.	Accuracy; Representativeness; Transparency

Framework Element	Criteria	Characteristic(s)
	The number of output levels is sufficient to reflect the relative impacts of different response alternatives and differences in choices of land use, as well as to allow differentiation between sites for prioritization.	Accuracy; Sensitivity; Representativeness