FRAMES and MEPAS References

- MEPAS Formulation Documents
- Selected MEPAS Technical Articles
- Methodology Guidance and Database Documents
- Model Evaluation, Comparison, and Benchmarking

Formulation Documents


*Brief Description:* This report contains equations and assumptions used in exposure and human health risk computations.


*Brief Description:* This report is one of original MEPAS formulation reports.


*Brief Description:* Original mathematical formulations composing RAPS and subsequently, MEPAS methodology are given along with a listing of members of external peer-review panel.

**Selected MEPAS Technical Articles**


*Brief Description:* A modular approach to conducting risk computations for large complex sites is described.


*Brief Description:* This paper provides an overview of updated MEPAS methodology in terms of application to environmental restoration activities. Role of MEPAS for environmental restoration activities is discussed in context of various types of models used to compute public health risks.

**Brief Description:** This paper discusses enhancement was made to baseline RADCON code to accommodate an infiltration rate varies with time to account for influence of using a cap to remediate a hazardous waste site.


**Brief Description:** This journal article provides an overview of structure and mathematical formulations of underlying structure of MEPAS methodology.


**Brief Description:** This paper describes detailed dry deposition models are used by MEPAS to account for site-specific processes.


**Brief Description:** This paper discusses method is used in MEPAS of estimating quantities of fish in rivers.


**Brief Description:** This chapter in a book on multimedia transport gives an early overview of original mathematical basis of RAPS/MEPAS methodology.
Methodology Guidance and Database Documents


*Brief Description:* This document is user's guide is distributed with MEPAS. Detailed guidance is provided for defining each input parameter.


*Brief Description:* MPG is an add-on graphics software package developed for INTERA for Environment and Health, Canada for plotting MEPAS results. This manual is a user's guide for using MPG.


*Brief Description:* This document is user's guide is distributed with Multimedia Modeling Environmental Database and Editor (MMEDE). MMEDE contains MEPAS environmental database and can be used in conjunction with MEPAS or as a stand alone product. This document includes formulations for parameter estimation routines are incorporated both in MMEDE interface and MEPAS.


*Brief Description:* This document contains environmental setting data used in Hanford PEIS risk evaluation.

Brief Description: This report contains technical information on how MEPAS was used to define normalized factors for evaluating human health risks in an application at U.S. DOE Hanford Site.


Brief Description: This report was prepared by Oak Ridge National Laboratory to provide an overview of MEPAS and an understanding of how MEPAS is used to quantify potential risks to human health.


Brief Description: Guidance is provided for process of defining a problem for analysis by MEPAS. Although parts of this volume refer to an early version of MEPAS user interface, problem definition guidance continues to be useful.


Brief Description: MEPAS methodology uses a constituent data base containing standard values of physical, chemical, and exposure parameters. This volume contains data values with citations and distribution coefficient estimation methods used in a major environmental survey by U.S. DOE.

Model Evaluation, Comparison, and Benchmarking


Brief Description: This report contains results of a model benchmarking effort cosponsored by U.S. EPA and U.S. DOE. Comparisons are based on model runs for both simplified and real site conditions. Information is provided on reasons for comparability, or lack of comparability, of results.

*Brief Description:* This journal article compares relative merits and capabilities of models based on published information.


*Brief Description:* This report contains results of a review of models for DOE applications.


*Brief Description:* This report is a review of two multimedia exposure models, MEPAS and MULTIMED. Assessments were made of software, models of individual pathways and exposures, and test cases.


*Brief Description:* Case studies comparing atmospheric monitoring data and MEPAS predicted values are discussed.


*Brief Description:* A comprehensive component testing effort conducted for RAPS/MEPAS effort is documented.

**Brief Description:** This paper presents results from comparison of monitoring data and simulated values.


**Brief Description:** As part of EPA's revision of their Hazardous Ranking System, they evaluated models for hazardous waste sites, including RAPS/MEPAS to determine strengths and weaknesses of these models.


**Brief Description:** This document evaluates MEPAS methodology for use in support of U.S. DOE Hazardous Waste Remedial Action Program.


_Brief Description:_ This paper provides a historical view of development of technical tools and approaches for computing human health risks associated with U.S. DOE sites and their operations. Paper starts with development of MEPAS and proceeds to Modular Risk Assessment approach.


_Brief Description:_ As one portion of a baseline risk assessment for an Operable Unit at an Air Force Base in Alaska, MEPAS was used in fate and transport analysis to evaluate temporal implications of site monitoring data. These results are presented in Chapter 8 of this report.


_Brief Description:_ MEPAS is used in an Environmental Impact Statement (EIS) analysis. Assessments are made of five alternatives for managing spent nuclear fuel using MEPAS to evaluate potential environmental consequences.

_Brief Description:_ This document describes development of data quality objectives (DQOs) for Hanford Site Single-Shell Tank Waste Characterization Program. These DQOs include priority of analytes, concentrations at which analytes are significant risk contributors (concentration threshold concept [CT]), and detection limit goals (DLGs) for analytical methods. MEPAS code was used to evaluate public health risk for these DQOs based on site- and constituent-specific data.


_Brief Description:_ This document describes use of MEPAS code to prioritize large number of analytes of interest for Hanford Single-Shell Tanks (SSTs) Waste Characterization Project. Analysis divides SST analytes into carcinogen and noncarcinogenic groups. These groups are then ranked to indicate highest risk analytes in SSTs. Sensitivity analysis runs were made for varying infiltration rates and adsorption coefficients. This work was done for Hanford Westinghouse Company, which operated Hanford Site for U. S. Department of Energy.


_Brief Description:_ Results of a sensitivity study of MEPAS model inputs are presented. This report was prepared to support a major U.S. DOE application of MEPAS.


_Brief Description:_ This document provides an overview of DOE Risk Information System as well as results of an analysis of preliminary application of MEPAS to potential environmental problems at 16 DOE facilities (DOE 1988).
Brief Description: This document discusses proposed additions to Model Toxics Control Act Cleanup Regulation in Washington State (Chapter 173-340 WAC). The regulation specifies basic requirements for cleanup actions, along with criteria for selecting among alternative cleanup actions, and establishes requirements for leaking underground storage tank corrective actions. MEPAS methodology was used to evaluate alternative actions with respect to cleanup criteria. MEPAS applications are discussed in technical appendices associated with this document.


Brief Description: Application of MEPAS methodology to DOE's Environmental Survey and other applications are discussed.


Brief Description: This paper presents analysis of several ranking parameters provided by MEPAS methodology. This analysis includes comparing and combining parameters to help assess environmental problems.


Brief Description: This report presents results of a preliminary application of MEPAS to ranking environmental problems at 16 of DOE's defense waste facilities.


Brief Description: This paper compares atmospheric model rankings from DOE's Environmental Survey to groundwater and surface water pathway rankings to determine biases.

_Brief Description:_ integration of MEPAS methodology into RI/EA/FS process required by Superfund program is discussed.