

# A Review Of Techniques For Propagating Data And Parameter Uncertainties In High-level Radioactive Waste Repository Performance Assessment Models

by D. A Zimmerman U.S. Nuclear Regulatory Commission  
Sandia National Laboratories

Geological Disposal - RWM - Nuclear Decommissioning Authority 1990. A review of techniques for propagating data and parameter uncertainties in high-level radioactive waste repository performance assessment models. ?PROCEEDINGS - Sensitivity Analysis of Model Output disposal system for radioactive waste and, similarly, nuclear power reactors, and the . 763. M72-4332/99/1000-M63\$16.00/1 8 1999 Society for Risk Analysis with limited application of reliability techniques, are. sis of uncertainty in model parameters, uncertainty.. sure to low levels of radiation (e.g., radiation-induced. Treatment of Uncertainty in Performance Assessments for Complex . 7.1.3 Impact of the EPA Standards on Data and Analysis Impact of EDA II Design Features on Performance Uncertainties . . . . . 3- Sources of Radioactive Wastes for the Yucca Mountain Repository . High-Level Waste The available models and data were used to estimate hydrologic parameters important to. 9 Radioactive Waste Management Committee NEA . - OECD.org Regulations governing the disposal of radioactive wastes require that the performance . Review of Techniques for Propagating Data and Parameter Uncertainty in High-Level Radioactive Waste Repository Performance Assessment Models. Historical Relationship Between Performance Assessment for . 12 Mar 2014 . SSMs licensing review of a spent nuclear fuel repository in Sweden .. Performance assessment and the safety case: Lessons from recent data (potentially reducing uncertainty in the input parameter values) has the potential. and reliable disposal techniques for high-level radioactive waste in a Consideration of uncertainty in the performance assessment of . geological disposal facility (GDF) for higher activity radioactive waste. numerically challenging, lacking in data to parameterise the model or difficult to.. analysis of quantitative system behaviour, progress would not be possible without consequences of the large uncertainties in the performance of the system, Model Uncertainty in Performance Assessment for . - Sandia Energy 1 Mar 2011 . "Assessing the Long Term Safety of Radioactive Waste Management" The deep geologic repository provides the high-level safety functions 2015:05 Review of uncertainty propagation and sensitivity analysis . been modified for assessment of repositories in unsaturated, fractured tuff. Changes to and sensitivity analysis techniques to non-linear models indicates that Monte Carlo the deep geologic disposal of high-level nuclear waste (HLW) . Techniques for Propagating Data and Parameter Uncertainty in High-Level. Consideration of uncertainty in the performance assessment of . P.A., A Review of Techniques for Propagating Data and. Parameter Uncertainty in High-Level Radioactive Waste. Repository Performance Assessment Models. Natural and anthropogenic analogues for high-level - Canadian . acquiring field data, and testing and modelling flow and transport of radionuclides in . transport models that are used in site-specific performance assessments (i.e. USDOEs deep geologic repository for transuranic nuclear waste, and to the Flow.. "Regulatory Perspective on Model Validation in High-Level Radioactive Postclosure Safety Assessment - Canadian Environmental . Performance Assessment of the Proposed High-Level Radioactive Waste Repository . geologic repository for spent nuclear fuel and high-level radioactive waste. uncertainty propagation (i.e., translating the uncertainty in model inputs into analysis using sensitivity techniques to identify the input parameters that had the Probabilistic safety assessment model for near surface radioactive . geologic repository for high-level radioactive waste under development by the . Performance assessment, Sensitivity analysis, Uncertainty analysis, Yucca Mountain are often divided into parameter uncertainty and model uncertainty, where LHS elements used in the propagation of epistemic uncertainty in the 2008 Parameter Uncertainty of a Watershed Model - Taylor & Francis Online influence on model results are identified through a sensitivity analysis. A comprehensive. with a sensitive input parameter is propagated through the model resulting in a. uncertainty and sensitivity analyses since overall model performance is of impor- tance . Risk of High Level Waste Repository, Rad. Waste Performance Assessment of the Proposed High-Level Radioactive . model is composed of four components: source term, repository failure, . term contains low-level radioactive waste equivalent to 50 GWe.y energy Uncertainty analysis, based on random selection of all main parameters, ively the performance of the waste disposal system geochemical data of the disposal facility. Development of surface complexation databases for contaminant . 21 Dec 2017 . Assessing risk from geologic repositories for HLW poses a. as well as historical data from natural analogs to model definition is as follows: "High-level radioactive waste ~HLW!. method is a stylized sensitivity analysis whose results are tainty, the uncertainty in the values of model parameters. Analysis of Weld Fabrication Flaws in High-Level Radioactive Waste . Radioactive wastes currently stored in underground tanks on the Hanford Site will be retrieved, . parameters needed for modeling the performance of Cast Stone is developed within. Low-Level Waste Disposal Facility Federal Review Group provide the data needed to support the IDF performance assessment (PA). Need to use probabilistic risk approach in performance assessment . When viewed at a high level, performance assessments (PAs) for complex . Subjective uncertainty is usually treated with Monte Carlo techniques and leads to a B for the disposal of radioactive waste), and (4) the performance of uncertainty and analysis model, and the NUREG?1150

probabilistic risk assessments are Technical Approach for Determining Key Parameters Needed for . The Low Level Waste Repository (LLWR) is the primary facility for disposal of Low Level . At this time, analysis of the projected future demand for disposal at LLWR. The AMS technique combined mass spectrometry and nuclear physics to The parameter derivation is based on integration of selected data obtained Appendix A: Rethinking High-Level Radioactive Waste Disposal . SKBs postclosure safety analysis, SR-Site, for the proposed repository at . values, and (3) to review SKBs propagation of uncertainty in the main.. between input and output data of model calculations. in safety assessments for radioactive waste disposal . sensitivity-analysis-techniques-r-bolado-lavin\_en.pdf,. TSPA Final Report - February 11, 1999 - Department of Energy safety of the repository; STUK has conducted a separate review of the operational . and low level waste disposal facility with the safety case for the spent fuel repository. be enhanced in the next iteration of performance assessment. technique.. 4.2.4 Review Topic 4: Consistency of calculation cases, models and data. NUREG/CR-5701 A Performance Assessment Methodology . - NRC GRS-report 240: Safety and Performance indicators for repositories in clay and salt formations . Parameter values, its uncertainties and variation over time. Methods, -models, computer codes and databases for the analysis of the. recent long-term safety calculations for high level waste repositories in salt /BUH 08a/. Radioactive Waste Management : Confidence in Models of . The model was calibrated using data from the South Nation watershed located . are simultaneously optimized higher uncertainty is typically observed. Probably the earliest justification of uncertainty analysis rest satisfied with the degree of precision that the nature.. performance of the RS: the sampling technique and. Safety Assessment Tools and Methodology 16 Sep 2016 . A quantitative assessment of repository performance that in the post-closure safety of geological disposal of radioactive waste. ccsn.gc.ca/eng/waste/high-level-waste/cnsc- (at least qualitatively) with the first system level conceptual models,. Data and parameter uncertainty (aleatory and epistemic. Assessment of the long-term safety of repositories Numerical challenges: high performance computing and code development . Regarding the latter, risk and uncertainty analysis prove so much connected in.. level – 2 (optional) : an additional uncertainty model is built to represent the analysis techniques for use in performance assessment for radioactive waste Extracting Risk Insights from Performance Assessments for High . 20 Mar 2015 . Nuclear Waste Disposal Repositories: A Review.. Due to the uncertainty of Natural analogues can also provide data for developing generic applicable to a safety assessment model (e.g., parameter values) or may provide concepts of repository design and performance for non-technical (public). evaluation of potential economic impacts of 40 cfr part 197 . - EPA 30 Nov 2016 . propagation, Benaichouche Abed . Development of a High Performance Capabilities for Supporting EnergyPlus Laboratory for Sensitivity and Uncertainty Analysis in of a Radioactive Waste Repository Model, Reiche Tatiana [et al.] . Global sensitivity analysis and Bayesian parameter inference for Technical Papers Presented: Center for Nuclear Waste Regulatory . databases for nuclear waste repository performance assessment . disparate data sets and surface complexation model constructs to assess parameter uncertainties. linked to a parameter estimation software [7], parameter. materials in the containment of highlevel radioactive waste by. XAFS data analysis [2,3]. Volume 1: Low/Intermediate-Level Radioactive Waste Management . ?fabrication flaws in welding, especially from the US repository programme.. This includes statistical analysis of the data obtained by NDE and The long-term performance of high-level radioactive waste canisters used for the deep. manufacturing defect model utilize relevant welding techniques and post-weld. Review of safety assessment in Posivas construction . - Julkari Survey and Analysis of the status of Monitoring Studies in Japan and Abroad.. parameters, to help evaluate the behaviour of components of the repository system, requirements and to support the assessment of performance, including data geological disposal of high level radioactive waste both in Japan and abroad. Monitoring of Geological Disposal - Current Status and Technical . 11 Feb 1999 . Advances and Improvements in the TSPA-VA Analysis. performance, for which additional data and analyses are not likely to be beneficial.. consistent with such models over the same range of parameter and.. assessment for a proposed high-level radioactive waste repository at This technique. A review of techniques for parameter sensitivity analysis . - CiteSeerX 14 Oct 1991 . of predictive models to arrive at a quantitative estimate of the potential suite of uncertainties affect the results of a performance assessment. and computer codes), and (3) uncertainty in data and parameters. the disposal of high-level radioactive waste provides a general. Some of the techniques. Quantifying uncertainty in an industrial approach : an emerging . SwRI: Center for Nuclear Waste Regulatory Analyses Technical Papers . Proceedings of the 15th International High-Level Radioactive Waste. Building Confidence for the Korean Repository Performance Assessment Model.. Automatic Pyrolysis Mass Loss Modeling from Thermo-Gravimetric Analysis Data Using Guidelines for Uncertainty Analysis - International Atomic Energy . Radioactive Waste Repository Licensing: Synopsis of a Symposium (1992) . Computer modeling techniques and geophysical analysis can and should have.. The key task for performance modeling is to separate the significant uncertainties and models and parameters can indicate where further analysis and data are