

US EPA ARCHIVE DOCUMENT

10.0 References

- Andres, T.H., Hajas, W.C.. (1993). Using Iterated Fractional Factorial Design to Screen Parameters in Sensitivity Analysis of a Probabilistic Risk Assessment Model. In *Proc. Of the Joint International Conference on Mathematical Methods and Supercomputing in Nuclear Applications*, Karlsruhe, Germany, 2:328-37.
- ASTM (1984). Standard Practice for Evaluating Environmental Fate Models of Chemicals. *ASTM Standard E 978-84*. American Society for Testing and Materials: Philadelphia, Pennsylvania, pp. 255-281.
- Babendreier J.E., Castleton, K. J.. (2002). Investigating Uncertainty and Sensitivity in Integrated, Multimedia Environmental Models: Tools for FRAMES-3MRA. In *Proc. Of 1st Biennial Meeting of International Environmental Modeling and Software Society*, (2) 90-95, Lugano, Switzerland.
- Beck, M.B., Chen, J.. (2000). Assuring the Quality of Models Designed for Predictive Tasks. In *Sensitivity Analysis* (Saltelli, A., Chan, K., Scott, E.M., eds.), John Wiley & Sons: West Sussex, England, pp. 401-420.
- Beck, M.B., Ravetz, J.R., Mulkey, L.A., Barnwell, T.O.. (1997). On the Problem of Model Validation for Predictive Exposure Assessments. *Stochastic Hydrology and Hydraulics*, 11:229-254.
- Beck, M.B.. (1987). Water Quality Modeling: A Review of the Analysis of Uncertainty. *Water Resources Research*, 23(8):1393-1442.
- Beck, M.B.. (1999). Coping With Ever Larger Problems, Models, and Databases. *Wat. Sci. Tech.*, 39 (4):1-11.
- Bogen, K.T., Spear, R.C.. (1987). Integrating Uncertainty and Variability in Environmental Risk Assessment. *Risk Analysis*, 7:427-436.
- Bogen, K.T.. (1995). Methods to Approximate Joint Uncertainty and Variability in Risk. *Risk Analysis*, 15(3):411-491.
- Box, G.E.P, Tiao, G.C.. (1973). *Bayesian Inference in Statistical Analysis*. Wiley-Interscience: New York, New York.

- Brightwell, R., Fisk, L.A., Greenberg, D.S., Hudson, T., Levenhagen, M., Maccabe, A.B., Riesen, R., (2000). Massively Parallel Computing Using Commodity Components. *Parallel Computing*, 26 (2-3) 243-266.
- Burns, L.A., Barber, M.C., Bird, S.L, Mayer, F.L., Suarez, A.. (1990). PIRANHA: Pesticide and Industrial Chemical Risk Analysis and Hazard Assessment. Internal Report, U.S. Environmental Protection Agency, Office of Research and Development, Athens, Georgia.
- Burns, L.A.. (1983). Validation of Exposure Models: The Role of Conceptual Verification, Sensitivity Analysis, and Alternative Hypotheses. In *Proc. 6th Symposium - Aquatic Toxicology and Hazard Assessment* (Bishop W.E., Cardwell R.D., Heidolph B.B., eds.), Vol. ASTM STP 802, American Society for Testing and Materials: Philadelphia, Pennsylvania, pp. 255-281.
- Burns, L.A.. (2001). Probabilistic Aquatic Exposure Assessment for Pesticides - I: Foundations. EPA/600/R-01/071, Office of Research and Development, National Exposure Research Laboratory, Ecosystems Research Division, Athens, Georgia.
- Campolongo, F., Braddock, R.. (1997). The Use of Graph Theory in the Sensitivity Analysis of the Model Output: A New Screening Method. *Reliability Engineering and System Safety*, 64:1-12.
- Campolongo, F., Kleijnen, J., Andres, T.. (2000b). Screening Methods. In *Sensitivity Analysis* (Saltelli, A., Chan, K., Scott, E.M., eds.), John Wiley & Sons: West Sussex, England, pp. 66-80.
- Campolongo, F., Saltelli, A., Sorensen, T., Tarantola, S.. (2000a). Hitchhiker's Guide to Sensitivity Analysis. In *Sensitivity Analysis* (Saltelli, A., Chan, K., Scott, E.M., eds.), John Wiley & Sons: West Sussex, England, pp. 15-47.
- Campolongo, F., Saltelli, A.. (1997). Sensitivity Analysis of an Environmental Model: Application of Different Analysis Methods. *Reliability Engineering and System Safety*, 57:49-69.
- Campolongo, F., Tarantola, S., Saltelli, A.. (1999). Tackling Quantitatively Large Dimensionality Problems. *Computer Physics Communications*, 117:75-85.
- Caswell. H. (1976). The Validation Problem. In *Systems Analysis and Simulation in Ecology*, Volume 4 (Patten, B.C., ed.), Academic Press: New York, New York, pp. 313-325.
- Chan, K., Tarantola, S., Saltelli, A., Sobol', I.M.. (2000). Variance-Based Methods. In *Sensitivity Analysis* (Saltelli, A., Chan, K., Scott, E.M., eds.), John Wiley & Sons: West Sussex, England, pp. 167-197.

- Chen, J., Beck, M.B.. (1999). Quality Assurance of Multi-Media Model For Predictive Screening Tasks. USEPA, EPA/600/R-98-106. Office of Research and Development, Washington, D.C..
- Cotter, S.C.. (1979). A Screening Design for Factorial Experiments With Interactions. *Biometrika*, 66:317-320.
- Cruz, J., Park, K.. (1999). Toward Performance-Driven System Support For Distributed Computing In Clustered Environments. *Parallel Comput. & Distributed Process.*, 59(2):132-154.
- Cukier, R.I., Fortuin, C.M., Schuler, K.E., Petschek, A.G., Schaibly, J.H.. (1973). Study of the Sensitivity of Coupled Reaction Systems to Uncertainties in Rate Coefficients. I. Theory. *Journal of Chemical Physics*, 59(8):3873-3878.
- Cukier, R.I., Levine, H.B., Schuler, K.E.. (1978). Nonlinear Sensitivity Analysis of Multiparameter Model Systems. *Journal of Computational Phys.*, 26(1):1-42.
- Cukier, R.I., Schaibly, J.H., Schuler, K.E.. (1975). Study of the Sensitivity of Coupled Reaction Systems to Uncertainties in Rate Coefficients. III. Analysis of Approximations. *Journal of Chemical Physics*, 63(3):1140-1149.
- Cullen, A.C., Frey, H.C.. (1999). *Probabilistic Techniques in Exposure Assessment: A Handbook for Dealing with Variability and Uncertainty in Models and Inputs*. Plenum Press: New York, New York.
- Dakins, M.E., Toll, J.E., Small, M.J.. (1994). Risk-Based Environmental Remediation: Decision Framework And Role Of Uncertainty. *Env. Toxicology & Chemistry*, 13(12):1907-1915.
- Daniel, C.. (1973). One-At-A-Time Plans. *Journal Am. Statist. Association*, 68:353-360.
- Doherty, J. (2002b). Manual for PEST Surface Water Utilities. Watermark Numerical Computing, Brisbane, Australia, 2002.
- Doherty, J.. (2002a). Manual for PEST package – Fifth Edition. Watermark Numerical Computing, Brisbane, Australia, 2002.
- Frey H.C., Patil, R.. (2002). Identification and Review of Sensitivity Analysis Methods. *Risk Analysis*, 22(3):553-578.
- Frey, H.C., Rhodes, D.S., (1996). Characterizing, Simulating, and Analyzing Variability and Uncertainty: An Illustration of Methods Using an Air Toxics Emissions Example. *Human and Ecological Risk Assessment*, 2(4):762-797
- Funtowicz, S.O., Ravetz, J.R.. (1990). *Uncertainty and Quality in Science for Policy*. Kluwer Acad.: Dordrecht, The Netherlands.

- Gropp, W., Lusk, E., Skjellum, A.. (1999). *Using MPI: Portable Parallel Programming With The Message-Passing Interface*, 2nd ed.. MIT Press: Cambridge, Mass..
- Hansen F. (1997). Policy for Use of Probabilistic Analysis in Risk Assessment at the U.S. Environmental Protection Agency. In Memorandum dated May 15, 1997: Use of Probabilistic Techniques (Including Monte Carlo Analysis) in Risk Assessment. U. S. Environmental Protection Agency, Washington, D.C..
- Hassanizadeh, S.M., Carrera, J.. (1992). Editorial: Special Issue on Validation of Geo-Hydrological Models. *Advances in Water Resources*, 15(1):1-3.
- Hazardous Waste Identification Rule (HWIR). (1995). Federal Register 60:245. December 21, pp. 66344-66469.
- Helton, J.C., Davis, F.J.. (2000). Sampling-Based Methods. In *Sensitivity Analysis* (Saltelli, A., Chan, K., Scott, E.M., eds.), John Wiley & Sons: West Sussex, England, pp. 101-153.
- Helton, J.C., Davis, F.J.. (2002). Illustration of Sampling-Based Methods for Uncertainty and Sensitivity Analysis. *Risk Analysis*, 22(3):591-622.
- Helton, J.C., Davis, F.J.. (2003). Latin Hypercube Sampling and the Propagation of Uncertainty in Analyses of Complex Systems, *Reliability Engineering and System Safety*, 81:xx-xx; Article in Press.
- Helton, J.C.. (1993). Uncertainty and Sensitivity Analysis Techniques for Use in Performance Assessment for Radioactive Waste Disposal. *Reliability Engineering System Safety*, 42:327-367.
- Hintze, J.. (1997). Users Manual – NCSS97 Statistical Software Package.
- Hornberger, G.M., Spear, R.C., (1980). Eutrophication in Peel Inlet – I. The Problem-Defining Behavior and a Mathematical Model for the Phosphorous Scenario. *Water Resources*, 14:29-42.
- IAEA (International Atomic Energy Agency). (1989). Evaluating the Reliability of Predictions Made Using Environmental Transfer Models. Safety Series, No. 100, Vienna, Austria.
- Iman, R.L., Conover, W.J.. (1982). A Distribution-Free Approach to Inducing Rank Correlations Among Input Variables. *Communications in Statistics*, B11(3):311-334.
- Iman, R.L., Hora, S.C., (1990). A Robust Measure of Uncertainty Importance for Use in Fault Tree System Analysis. *Risk Analysis*, 10:401-406
- Iman, R.L., Shortencarier, M.J., Johnson, J.D.. (1985). A FORTRAN 77 Program and User's Guide for the Calculation of Partial Correlation and Standardized Regression

- Coefficients. NUREG/CR-4122, SAND85-0044, Sandia National Laboratories. Albuquerque, New Mexico.
- Kahn, H., Marshall, A.W.. (1953). Methods of Reducing Sample Size in Monte Carlo Computations. *Journal of Operations Research Society of America*, 1:263-278.
- Kleijnen, J.P.C., Helton, J.C.. (1999a). Statistical Analyses of Scatterplots to Identify Important Factors in Large-Scale Simulations, 1: Review and Comparison of Techniques. *Reliability Engineering and System Safety*, 65:147-185.
- Kleijnen, J.P.C., Helton, J.C.. (1999b). Statistical Analyses of Scatterplots to Identify Important Factors in Large-Scale Simulations, 2: Robustness of Techniques. *Reliability Engineering and System Safety*, 65:187-197.
- Klepper, O., Hendrix, E. M. T.. (1994). A Method for Robust Calibration of Ecological Models Under Different Types of Uncertainty. *Ecological Modeling*, 74:161-182.
- Konikow, L.F., Bredehoeft, J.D.. (1992). Ground-water Models Cannot Be Validated. *Advances in Water Resources* 15(1):75-83.
- Kuczera, G., Parent, E.. (1998). Monte Carlo Assessment of Parameter Uncertainty in Conceptual Catchment Models: The Metropolis Algorithm. *Journal of Hydrology*, 211:69-85.
- Laure, E.. (2001). OpusJava: A Java Framework For Distributed High Performance Computing. *Future Generation Computer Systems*, 18 (2):235-251.
- Marin, C.M., Guvanasen, V., Saleem, Z.A.. (n.d.) The 3MRA Risk Assessment Framework - A Flexible Approach For Performing Multimedia, Multipathway, and Multireceptor Risk Assessments Under Uncertainty. *International Journal of Human and Ecological Risk Assessment* (in press; scheduled for publication December 2003).
- Marin, C.M., Guvanasen, V., Saleem, Z.A.. (1999). A Framework For Finite-Source Multimedia, Multipathway, and Multireceptor Risk Assessment 3MRA. U.S. EPA (Environmental Protection Agency), Office of Solid Waste, Washington, DC, July 1999. Draft Document Prepared by HydroGeoLogic, Inc, Herndon, Virginia, Under Contract No. 68-W7-0035.
- McKay, M.D., Conover, W.J., Beckman, R.J.. (1979). A Comparison of Three Methods for Selecting Values of Input Variables in the Analysis of Output from a Computer Code. *Technometrics*, 21(2):239-245.
- Metropolis, N., Ulam S.M. (1949). The Monte Carlo Method. *Journal of the American Statistical Association*, 44:335-341.

- Morgan, M.G., Henrion, M.. (1990). *Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis*. Cambridge University Press: New York, New York.
- Morris, M.D.. (1991). Factorial Sampling Plans for Preliminary Computational Experiments. *Technometrics*, 33:161-174.
- NCRP (National Council on Radiation Protection and Measurements). (1996). A Guide for Uncertainty Analysis in Dose and Risk Assessments Related to Environmental Contamination. NCRP Commentary No. 14, Bethesda, Maryland.
- Newell, C. J., Hopkins, L.P., Bedient, P.B.. (1989). Hydrogeologic Database for Ground Water Modeling. API Publication No. 4476. American Petroleum Institute. Rice University, Department of Environmental Science and Engineering, Washington, D.C.. February.
- NRC (National Research Council). (1994). *Science and Judgment in Risk Assessment*. National Academy Press: Washington, D.C..
- Oreskes N. (1998). Evaluation (Not Validation) of Quantitative Models for Assessing the Effects of Environmental Lead Exposure. *Environ. Health Perspect.*, 106 (Supplement 6):1453-1460.
- Oreskes N., Shrader-Frechette, K., Belitz, K.. (1994). Verification, Validation, and Confirmation of Numerical Models in the Earth Sciences. *Science*, 263:641-646.
- Osidele, O.O, Beck., M.B.. (2001a). Identification of Model Structure for Aquatic Ecosystems Using Regionalized Sensitivity Analysis. *Water Science and Technology*, 43(7):271-278.
- Osidele, O.O, Beck., M.B.. (2001b). Analysis of Uncertainty in Model Predictions for Lake Lanier, Georgia. In *Proc. 2001 Annual Spring Specialty Conference of the American Water Resources Association*, (Warwick, J.J., ed.), Middleburg, Virginia, pp 133-137.
- PNNL (1999). Overview of the FRAMES-HWIR Technology Software System. PNNL-11914 Vol. 1, Pacific Northwest National Laboratory: Richland, Washington.
- Raleigh (Lord). (1899). On James Bernoulli's Theorem in Probabilities. *Philosophical Magazine*, 47:246-251.
- Resource Conservation and Recovery Act. (1976). 42 U.S.C. s/s 6901 et seq. Available online: <http://www4.law.cornell.edu/uscode/42/ch82.html>.
- Robert, C.P, Casella, G.. (1999). *Monte Carlo Statistical Methods*. Springer-Verlag: New York, New York.
- Ross, S.M., (1976). *A First Course in Probability*, 2nd ed.. Macmillan: New York, New York.

- Ross, S.M., (1997). *Introduction to Probability Models*, 6th ed.. Academic Press: San Diego, California.
- Rubensien, R. (1981). *Simulation and Monte Carlo Methods*. John Wiley & Sons: New York, New York.
- Saltelli, A., Chan, K., Scott, E.M.. (2000). *Sensitivity Analysis*. John Wiley & Sons: West Sussex, England.
- Saltelli, A.. (2002a). Sensitivity Analysis for Importance Sampling. *Risk Analysis*, 22(3):579-590.
- Saltelli, A.. (2002b). Making Best Use Of Model Valuations To Compute Sensitivity Indices. *Computer Physics Communications*, 145:280-297.
- Sample, B.E., Aplin, M.S., Efroymsen, R.A., Suter II, G.W., Welsh, C.J.E.. (1997). Methods and Tools for Estimation of the Exposure of Terrestrial Wildlife to Contaminants. ORNL/TM-13391. Office of Environmental Policy and Assistance, U.S. Department of Energy. Oak Ridge National Laboratory, Oak Ridge, Tennessee. October.
- Sobol', I.M.. (1993). Sensitivity Analysis for Nonlinear Mathematical Models. *Mathematical Modeling and Computational Experiments*, 1(4):407-414.
- Spear, R.C., Grieb, T.M, Shang, N.. (1994). Parameter Uncertainty and Interaction in Complex Environmental Models. *Water Resources Research*, 30(11):3159-3169.
- Spear, R.C., Hornberger, G.M.. (1980). Eutrophication in Peel Inlet – II. Identification of Critical Uncertainties Via Generalized Sensitivity Analysis. *Water Resources*, 14:43-49.
- Stein, M.. (1987). Large Sample Properties of Simulations Using Latin Hypercube Sampling. *Technometrics*, 29:143-151.
- Stephan, C.E., Mount, D.I., Hansen, D.J., Gentile, J.H., Chapman, G.A., Brungs, W.A.. (1985). Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. PB85-227049. National Technical Information Service, Springfield, Virginia.
- Sunderam, V., Geist, A., Dongarra, J., Manchek, R.. (1994). The PVM Concurrent Computing System - Evolution, Experiences, And Trends. *Parallel Computing*, 20(4):531-545.
- U.S. EPA (Environmental Protection Agency). (1996a). Summary Report for the Workshop on Monte Carlo Analysis. EPA-630/R-96/010. Risk Assessment Forum. Office of Research and Development, Washington, D.C..
- U.S. EPA (Environmental Protection Agency). (1996b). An SAB Report: Review of a Methodology for Establishing Human Health and Ecologically Based Exit Criteria for the

- Hazardous Waste Identification Rule (HWIR). EPA-SAB-EC-96-002. Washington, D.C.: Science Advisory Board. May.
- U.S. EPA (Environmental Protection Agency). (1997a). Guiding Principles for Monte Carlo Analysis. EPA-630/R-97/011. Risk Assessment Forum. Office of Research and Development, Washington, D.C..
- U.S. EPA (Environmental Protection Agency). (1997b). Proposed Policy for Use of Monte Carlo Analysis in Agency Risk Assessment. In Memorandum dated January 29, 1997 from W.P. Wood, Executive Director, Risk Assessment Forum, to Dorothy E. Patton, Executive Director of Science Policy Council.
- U.S. EPA (Environmental Protection Agency). (1987). 1986 National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (TSDR) Database. U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC.
- U.S. EPA (Environmental Protection Agency). (1993). Wildlife Exposure Factors Handbook. Volumes I and II. EPA/600/R-93/187. Office of Health and Environmental Assessment and Office of Research and Development, Washington, D.C.. December.
- U.S. EPA (Environmental Protection Agency). (1997c). EPA's Composite Model for Leachate Migration with Transformation Products. EPACMTP: User's Guide. U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C..
- U.S. EPA (Environmental Protection Agency). (1997d). Exposure Factors Handbook, Volume I, General Factors. Office of Research and Development, Washington, D.C.. August.
- U.S. EPA (Environmental Protection Agency). (1997e). Exposure Factors Handbook, Volume II, Food Ingestion Factors. Office of Research and Development, Washington, D.C.. August.
- U.S. EPA (Environmental Protection Agency). (1997f). Exposure Factors Handbook, Volume III, Activity Factors. Office of Research and Development, Washington, D.C.. August.
- Ulam S.M., von Neumann J.. (1945). Random Ergodic Theorems. *Bulletin of the American Mathematical Society*, 51:660.
- Vose, D. (2000). *Risk Analysis: A Quantitative Guide*, 2nd ed.. John Wiley & Sons: West Sussex, England.
- Westat, Inc.. (1987). Screening Survey of Industrial Subtle D Establishments. Draft Final Report. U.S. Environmental Protection Agency, Westat, Inc., Rockville, MD. December 29.

Young, P.C., Hornberger, G.M., Spear, R.C., (1978). Modelling Badly Defined Systems – Some Further Thoughts. In *Proc. SIMSIG Simulation Conference*, Australian National University, Canberra, pp. 24-32.

Zar, J. H.. (1999). *Biostatistical Analysis*, 4th ed.. Prentice-Hall: Upper Saddle River, NJ.