

JING-JY CHENG

Radiological Health Risk Section
Environmental Science Division
Argonne National Laboratory

Education:

Ph.D.	Case Western Reserve University, Macromolecular Science, 1989
M.S.	National Tsing Hua University, Taiwan, Chemical Engineering, 1985
B.S.	National Tsing Hua University, Taiwan, Chemical Engineering, 1983

Professional Experience:

1996-Present	Environmental Systems Engineer
1992-1996	Assistant Environmental Systems Engineer
1990-1992	Post-doctoral Appointee Environmental Science Division Argonne National Laboratory

Developed computer models (RESRAD, RESRAD-CHEM, RESRAD-BUILD, RESRAD-RECYCLE, RESRAD-ECORISK, and RESRAD-BASELINE) for conducting human health and ecological risks resulting from exposures to hazardous chemicals and radioactive materials. Upgraded the computer models with the capability of conducting probabilistic sensitivity analysis for use in demonstrating compliance with regulatory requirements on license termination and property release.

Assisted Nuclear Regulatory Commission (NRC) in reviewing license termination plan (LTP) for a nuclear power facility with complex environmental contamination and in preparing rebuttal testimony to defend its acceptance decision of the LTP in a court hearing. Developed course materials and conducted training workshops for NRC staff on the evaluation of LTPs. Assisted DOE in conducting RESRAD family codes training workshops and evaluating dose assessment reports for the Formerly Utilized Sites Remedial Action Plan (FUSRAP) sites. Assisted DOE regional offices in evaluating environmental remediation efforts to cleanup contaminated sites and buildings for conditional and unconditional releases.

Lead the development of the operational guidelines and a computer tool for use by government agencies preparing for or responding to a radiological dispersal device (RDD) incident. Lead the assessment of radiological human health risks associated with the preparation of the Programmatic Environmental Impact Statement (PEIS) for the Depleted Uranium Hexafluoride (DUF₆) management program under NEPA.

Validated the RESRAD-RECYCLE code by participating in an internationally joint efforts using measurement data taken from a scrap metal recycling facility in Sweden. Participated in an internationally joint efforts in benchmarking the RESRAD-BIOTA code with other computer codes developed for evaluating radiation exposures of biota. Involved in inter-

agency efforts to benchmark three multimedia environmental transport computer models: RESRAD, MMSOILS, and MEPAS.

Conducted dose assessments for various projects concerning, e.g. potential radiological impacts to ecological species in a weapon test site, human radiation exposure resulting from the application and processing of radioactively contaminated sewage sludge, and worker safety related to shipment and storage of remote-handled transuranic (RH/TRU) waste. Developed soil remediation criteria for several FURAP and Argonne sites.

Compiled and analyzed literature data for developing distributions of input parameters for use in dose assessment modeling. Parameters include transfer and partitioning factors of radionuclides in different environmental media, human metabolic and behavioral parameters as well as geological and hydrological parameters.

Summary of Previous Experience:

1985-1990 Graduate Student and Research Assistant
 Macromolecular Science Department
 Case Western Reserve University

Conducted computer simulations to analyze mixing and dispersion of solid aggregates in highly viscous and elastic liquid inside a Banbury mixer, a mechanical equipment commonly used in the rubber industry. Applied numerical analysis techniques such finite difference and finite element methods for the analysis of polymer processing in search of optimal operational conditions.

Research Interests:

Environmental transport of radionuclides and chemicals in unsaturated and saturated soils
Applications of deterministic and probabilistic sensitivity analyses in risk assessments
Partitioning of radionuclides during melting of scrap metals

Professional Activities:

Health Physics Society

Publications:

Author or co-author of 90+ journal, technical report, and conference publications and presentations.