

BRUCE M. BIWER

Radiological Health Risk Section
Environmental Science Division
Argonne National Laboratory

Educational Background:

Ph.D.	Princeton University, Chemistry, 1985
M.S.	Princeton University, Chemistry, 1983
B.A.	St. Anselm College, Chemistry, <i>summa cum laude</i> , 1980

Professional Experience:

1992-Present	Environmental Systems Engineer Environmental Science Division Argonne National Laboratory
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Responsible for radiological pathway analysis and dose calculations for environmental impact assessments. Also involved in determinations of chemical fate and transport in the environment. Area of specialty is radiological transportation risk analysis. Project leader for RISKIND radioactive transportation risk computer program. Extensive experience in computer program conception and development. Strong background in risk assessment codes/models and in data analysis with custom and commercial software.

Summary of Previous Experience:

1987-1992	Chemical Technology Division, Argonne National Laboratory
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Investigated the leaching mechanism of radionuclides immobilized in glass for storage in a high level waste repository. Utilized a multi-disciplinary approach with optical microscopy, Raman, SIMS, SEM, and EXAFS to study radionuclide speciation within unreacted and leached nuclear waste glasses.

1985-1987	Chemistry Division, Argonne National Laboratory
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Investigated interfacial phenomena related to corrosion. Developed second harmonic generation as a new general purpose in-situ technique, in conjunction with voltammetry, to study metal corrosion in nuclear reactor cooling systems. Involved with other surface analysis projects using AES, SIMS, ELS, and PES techniques.

1980-1985 Chemistry Department, Princeton University

Studied the effect of catalyst support on catalyst performance from the perspective of electronic and structural modifications. Designed and constructed a surface analysis system incorporating AES, ELS, PES, and TDS analytical techniques to provide complementary methods for a comprehensive investigation of material interfaces.

Research Interests:

Interested in improving and applying state-of-the-art models and methods used in radiological risk assessment. A major thrust area is the development and implementation of new comprehensive computer models for analyzing the risks associated with the transportation of radioactive materials. One aspect of transportation risk that is of interest is the pursuit of a unified or complementary approach between radioactive and chemical risk assessment. Another area of interest is the exploration of geographical information systems (GIS) to handle the increasing amounts of data available for both transportation and other related risk assessments. An overriding concern for all types of risk assessments is to make the analysis understandable to not only the analyst, but also sponsors, stakeholders, and the public. Investigation and application of visualization methods, including (but not limited to) the use of GIS, is a potentially powerful way to promote understanding, not only for analyzing results, but also for understanding the problem itself, the input data, and the model used to describe the scenario under consideration.

Other interests include investigating the fate and transport of chemicals in the soil and groundwater at contaminated sites. Such an understanding requires knowledge of the chemical properties of the contaminant and how they relate to the local geochemistry and hydrogeology. This information is necessary for estimating any chemical and radiological risks to local populations. If the risks are high, understanding chemical fate and transport is also necessary in the selection and application of the most effective remediation technologies.

Professional Activities:

American Chemical Society
American Nuclear Society
Society for Risk Analysis

Publications:

Author or co-author of 60+ journal, book, report, and conference publications. Publication list available upon request.