

PolyMet Category 1 Waste Rock Stockpile

Donald W, Lee, Ph.D., P.E.

December 10, 2015

These comments address the proposed method for the permanent disposal of Category 1 waste rock from the copper nickel mine proposed by PolyMet. These comments are derived from the material presented in the Final Environmental Impact Statement (FEIS) and referenced reports, which analyzed the impacts from the proposed PolyMet mine.

The long-term performance of the Category 1 waste rock stockpile is dependent on a water collection system composed of a cutoff wall surrounding the 526-acre 240-foot tall pile, and a drainage system within the cutoff wall. The cutoff wall is to be made of compacted soil, soil and bentonite, or a geomembrane placed on top of bedrock. Whatever materials are used, this cutoff wall is to have a hydraulic conductivity of less than $10E-5$ cm/s. Additionally, a drainage system is to be installed inside of the cutoff wall to collect any water seepage or runoff from the pile. The drainage system is to be set on bedrock and covered with gravel. Any water collected by the drain is allegedly to be transported by gravity to pumps at the NE or SW corners of the pile, and then pumped to the Waste Water Treatment Facility for treatment prior to being pumped to the tailings basin at the plant site.

In addition to the water collection system, a geomembrane is to be placed on top of the entire Category 1 stockpile. The 40 – 60 mm membrane is intended to substantially reduce any infiltration into the rock pile. The geomembrane is to be covered by two layers of soil to protect the membrane from degradation.

The Category 1 stockpile was modeled using MODFLOW to estimate the effectiveness of the proposed collection system in collecting water and reducing the discharge of any contaminants generated in the rock pile. The modeling was performed over a 200-year period of time using data inputs from field investigations and estimated parameters for the water collection system and the geomembrane cover. The results of this modeling effort, which is presented in the FEIS, suggest 91 - 99% of the available water would be collected by the proposed collection system.

The collection efficiency of the proposed Category 1 collection system is extraordinary, but the system as modeled in MODFLOW is not a sound basis for making decisions. The gravity driven drainage system for moving collected water to the NE and SW corners of the stockpile with subsequent pumping to the WWTF will not work as currently proposed. The bedrock surface is uneven and not uniformly sloped, as noted in Fig. 4.2.2-6 of the FEIS. Consequently, a significant number of pumps stationed around the perimeter of the stockpile will be necessary. How these pumps will be maintained over a lengthy performance period of several hundreds of years is not easily prescribed. The conductivity of the cutoff wall for the Category 1 facility is quite high. The details for selecting the inputs of the MODFLOW model

were not included in the FEIS, but the modeled facility must have been largely dependent on the drainage system for the high collection efficiency. However, the proposed drainage system is unlikely to work as anticipated.

The effect of freeze thaw and other degradation mechanisms on the long-term performance of the cutoff wall have not been fully considered in the modeling. The degradation of the cutoff wall over hundreds of years is a certainty, but the consequences are not established.

Finally, the supporting references to the FEIS provide an analysis of the geotechnical stability of the mine site. This analysis has the slopes of the facility defined by the angle of repose for the materials included in the Category 1 stockpile. The geotechnical stability of the Category 1 stockpile is significantly affected by the expansive geomembrane on top of the rocks but underneath the overlying cover soils. Presuming the overlying soils remain in place for hundreds of years is an unrealistic assumption given the presence of the geomembrane.

The modeling of the Category 1 Stockpile keeps the physical parameters for the facility as constant values through the time period of modeling, with the exception of the transition from active treatment to long-term mechanical treatment around mine year 50. Following the transition to mechanical treatment of collected water, the physical parameters remain constant for the remainder of the modeling period. As a consequence the degradation mechanisms for the collection system are not addressed. This leads to conclusions that are optimistic and not representative of the long-term performance of the collection system.

The optimistic characterizations of the long-term performance of the Category 1 Stockpile facility render the projections in the FEIS unsound for making decisions.

On page 5-37 of the FEIS statement is made that there is no evidence to suggest bedrock faults or fracture zones that provide enhanced groundwater flow to the Partridge or Embarrass Rivers. The FEIS fails to make any reference to or the information to be derived from the Dunka Pit mining operation that is just to the east of the proposed PolyMet mine. The Dunka Pit clearly shows significant fractures in the high wall of the pit. The integrity of the analysis presented in the FEIS is diminished for failing to acknowledge the available information from the Dunka mine.

Also on page 5-37 in the FEIS, the presence of buried channel deposits is acknowledged. The location of these buried channels is unknown. So, the analysis elects to treat the buried channel as a probabilistic increase in conductivity. A much more representative approach to treating these buried channels is to allow them to be present with the notion of there being a few for every spatial block and have the channels be significant conduits for transport of material. The number of channels in each spatial block could then be treated as a probabilistic value.

The analysis presented in the FEIS of the long-term performance of the Category 1 stockpile does not present the expected environmental impacts that can be attributed to the facility. At a minimum, additional analyses should be performed to properly represent the long-term impacts from the facility.

DONALD W. LEE

Winter Address

6400 Brandywine Dr.
Lenoir City, Tennessee 37772
(865) 986-2775 (H)
donaldwlee@bellsouth.net

Summer Address

515 East James Street
Ely, Minnesota 55731
(865) 696-8416 (C)

Technical Specialties:

Fluid Mechanics
Hydrology
Environmental Impact Analysis
Performance Assessment

Work Experience:

2000 – 2008 OAK RIDGE NATIONAL LABORATORY

Senior Research Scientist, Energy Division (2000 – 2001), Environmental Sciences Division (2001 – 2008). Research in waste management and safety analysis, preparation of Environmental Impact Statements for energy related projects.

1997 – 2000 OAK RIDGE NATIONAL LABORATORY

Program Manager, Waste Management and Safety Analysis Program, Center for Energy and Environmental Analysis, Energy Division. Manager of Division work in radioactive, hazardous, industrial, and mixed waste management and safety analysis. Major activities include performance assessment and safety analysis reports for DOE sites.

1989 – 1997 OAK RIDGE NATIONAL LABORATORY

Research and Development Group Leader, Applied Physical Sciences Group, Environmental Analysis and Assessment Section, Energy Division. Manager of Section work in radioactive waste management and safety analysis. Focus of research was on geologic and hydrologic analysis. Preparation of performance assessments for DOE low-level radioactive waste disposal facilities. Conduct of site-specific analyses for waste management, Safety Analysis Reports, Environmental Restoration, and Environmental Impact Statements. Manager of a staff of 7 with a budget of \$2 million.

1982 – 1989 OAK RIDGE NATIONAL LABORATORY

Research Staff, Energy Division. Preparation of technical analyses of water resource issues in radioactive waste management, in-situ uranium mining, uranium milling, synfuels technologies, and hydropower. Development of waste management strategies for Lockheed Martin facilities, performance of site characterization studies of low-level radioactive waste disposal sites. Preparation of Environmental Impact Statements and Environmental Assessments for energy related projects.

1977 – 1982 OAK RIDGE NATIONAL LABORATORY

Research Associate, Energy Division. Preparation of Environmental Impact Statements, Environmental Assessments, and environmental analyses of nuclear, coal, geothermal, and conservation technologies. Conduct research investigations in environmental monitoring, surface water hydrology, and groundwater hydrology using theoretical, numerical, and field methods.

1971 – 1976 UNIVERSITY OF MICHIGAN

Research/Teaching Assistant. Performance of laboratory research in the field of tire mechanics, Instructor for rigid body dynamics, statics, strength of materials, and advanced numerical analysis.

1975 – 1976 WAYNE STATE UNIVERISTY

Instructor in physics, energy, energy policy, values, and microbiology.

1970 – 1971 CLARKSON COLLEGE OF TECHNOLOGY

Teaching Assistant for Mechanical Engineering Laboratory.

1969 – 1970 FORD MOTOR COMPANY

Product Design Engineer, Engine and Foundry Division, Research and Development Center.

Education

1977 Ph. D., Applied Mechanics, University of Michigan, Ann Arbor, Michigan.

1973 M. S., Engineering Science, Clarkson College of Technology, Potsdam, New York.

1969 B. S., Mechanical Engineering, Clarkson College of Technology, Potsdam, New York.

Professional/Academic Honors

Pi Tau Sigma, Mechanical Engineering Honor Fraternity, 1969
Registered Professional Engineer,
State of Michigan, 1977
State of Tennessee, 1978
Significant Event Award, Martin Marietta Energy Systems, 1991
Significant Event Award, Lockheed Martin Energy Systems, 1995
Board Certified, American Academy of Environmental Engineers, 1996 – 2007
In Appreciation, American Society of Civil Engineers, Environmental Engineering Division, 1992
In Appreciation, American Society of Civil Engineers, Environmental Engineering Division, 1999
Certificate of Appreciation, Defense Logistics Agency, Department of Defense, 2005
Who's Who in Science and Engineering, 2007
Who's Who in America, 2007
Who's Who in the World, 2007
Retirement Certificate, Oak Ridge National Laboratory, 2008

Professional Activities

Reviewer, American Society of Civil Engineers, Hydraulics Division (1982 – 1996)
Reviewer, Elsevier Publishing Co. (1987)
Reviewer, Nuclear and Chemical Waste Management (1986 – 1995)
Member, American Society of Civil Engineers
Member, American Society of Mechanical Engineers
Member, Sigma Xi
Member, DOE Waste Classification Working Group, 1987
Member, DOE Task Force on Uranium Waste Problems, 1988
Member, DOE Low-Level Radioactive Waste Technical Resource Group for 40 CFR 193, 1988
Member, DOE Low-Level Radioactive Waste Peer Review Committee for DOE Order 5820.2A,
1988 – 1997
Member, DOE Performance Assessment Technical Resource Group for DOE Order 5820.2B,
1994 – 1995
Member, DOE Federal Facilities Compliance Act Disposal Work Group, 1994 – 1996
Member, DOE Defense Nuclear Facilities Safety Board Recommendation 94-2, Site Assessment
Team, 1995
Member, DOE Defense Nuclear Facilities Safety Board Recommendation 94-2, Research and
Development Task Team, 1995
Member, DOE Defense Nuclear Facilities Safety Board Recommendation 94-2. Working Group
Assessment Team, 1995
Member, DOE Order 435.1 Revision Team, 1996 – 2000
Adjunct Associate Professor, North Carolina State University, Department of Mechanical and
Aerospace Engineering, 1987 – 2000

Ph. D. Dissertation Committee Co-Chairman, North Carolina State University, Department of Mechanical and Aerospace Engineering, 1987 – 1993

Secretary, Air and Radiation Management Committee, Environmental Engineering Division, American Society of Civil Engineers, 1989 – 1990

Vice-Chairman, Air and Radiation Management Committee, Environmental Engineering Division, American Society of Civil Engineers, 1990 – 1981

Chairman, Air and Radiation Management Committee, Environmental Engineering Division, American Society of Civil Engineers, 1991 – 1992

Secretary, Programs Committee, Environmental Engineering Division, American Society of Civil Engineers, 1992 – 1994

Member, American Society of Civil Engineers Task Committee on Mixed Waste, 1988 – 1993

Vice-Chair, Professional Activities Committee, Environmental Engineering Division, American Society of Civil Engineers, 1994 – 1996

Chair, Professional Activities Committee, Environmental Engineering Division, American Society of Civil Engineers, 1996 – 1999

Secretary, Conference and Exhibits Council, Environmental and Water Resources Institute, American Society of Civil Engineers, 2001 – 2003

Member, Conference and Exhibits Council, Environmental and Water Resources Council, American Society of Civil Engineers, 1999 – 2001, 2003 – 2005

Session Moderator, Radiation Management, National Conference on Environmental Engineering, Reno, Nevada, 1991

Session Moderator and Organizer, Management of Low-Level Radioactive Waste, 1996 ASCE Annual Convention and Exposition, Washington, D.C.

National Abstract Review Committee, 1991 National Conference on Environmental Engineering, American Society of Civil Engineers

Reviewer, Journal of Environmental Engineering, American Society of Civil Engineers, 1995 – 2005

Session Moderator and Organizer, Low-Level Radioactive Waste, American Society of Civil Engineers National Meeting, 1996

National Abstract Review Committee, 1999 National Conference on Environmental Engineering, American Society of Civil Engineers

Technical Organizing Committee, 2000 National Conference on Environmental Engineering, American Society of Civil Engineers

Organizing Committee, International Water Congress 2001, American Society of Civil Engineers

Conference Chairman, 2002 Joint CSCE/ASCE International Conference on Environmental Engineering, Niagara Falls, Ontario

Session Moderator, Risk, 2002 Joint CSCE/ASCE International Conference on Environmental Engineering, Niagara Falls, Ontario

Session Moderator, Remediation, 2002 Joint CSCE/ASCE International Conference on Environmental Engineering, Niagara Falls, Ontario

Publications

“Final Environmental Impact Statement, Destruction of Chemical Weapons at Pine Bluff Army Depot, Pine Bluff, Arkansas,” U. S. Army, Program for Chemical Demilitarization, Aberdeen, MD (with others)

“Draft Environmental Impact Statement, Destruction of Chemical Weapons at Pine Bluff Army Depot, Pine Bluff, Arkansas,” U. S. Army, Program for Chemical Demilitarization, Aberdeen, MD (with others)

“Final Environmental Impact Statement, Destruction of Chemical Weapons at Tooele Army Depot, Tooele, Utah,” U. S. Army, Program for Chemical Demilitarization, Aberdeen, MD (with others)

T. D. Hylton, W. H. Hermes, D. W. Lee, P.T. Singley, J. W. Terry. “Thorium Nitrate Stockpile Drum Characterization Report,” ORNL/TM-2003/53, Oak Ridge National Laboratory, 2003

John Tauxe, Paul K. Black, Bruce M. Crowe, Donald W. Lee, “Modeling Uncertainty: Reality vs. Conservatism in Radiological Performance Assessment,” 2003 National Groundwater Association Mid-South Focus Conference, Nashville, Tennessee

“Review Team Report for the Idaho National Engineering Laboratory CERCLA Disposal Facility Landfill Compliance Demonstration for DOE Order 435.1 Radioactive Waste Management, Performance Assessment and Composite Analysis, U. S. Department of Energy EM-40, 2003 (with others)

“Final Environmental Impact Statement, North Umpquah Hydroproject, Oregon, (FERC 1927),” FERC/FEIS-0147F, Federal Energy Regulatory Commission, Office of Energy Projects, 2003 (with others)

“Final Environmental Impact Statement, Destruction of Chemical Weapons at Blue Grass Army Depot, Kentucky,” U. S. Army Program for Chemical Demilitarization, Aberdeen, MD, 2003, (with others)

D. W. Lee, K. W. Wills, “Accident Analysis for 9204-4 Facility (U),” DAC-FS-920202-Aoo3, BWXT Y-12 LLC, 2002 (Classified – Secret Restricted Data)

“Draft Environmental Impact Statement, North Umpquah Hydroelectric Project, Oregon, (FERC Project No. 1927)” FERC/DEIS – 0147D, Federal Energy Regulatory Commission, Office of Energy Projects, Washington, D. C., 2002 (with others)

“Draft Environmental Impact Statement, Destruction of Chemical Weapons at Blue Grass Army Depot, Kentucky,” U. S. Army, Program for Chemical Demilitarization, Aberdeen, MD, 2002 (with others)

“Final Report for the Nevada Test Site Area 5 Radioactive Waste Management Site Low-Level Waste Radiological Composite Analysis Review,” U. S. Department of Energy, Washington, D. C. , 2001 (with others)

D. A. Walker, D. W. Lee, "Y-12 Generic Threshold Analysis for Consequence Comparisons (U)," DAC - FS – 900000 – A004, BWXT Y-12 LLC, 2001 (Unclassified)

R. L. Miller, T. J. Blasing, D. W. Lee, "Y-12 Generic Threshold Dispersion Analysis Using ARCON96 for Use in Hazard Analysis (U)," DAC – 900000 – A003, BWXT Y-12 LLC, 2001 (with others)

D. A. Walker, D. W. Lee, R. L. Miller, "Use and Application of the ARCON96 Dispersion Model at the Y-12 Complex," in Proceedings of EFCOG 2001, U. S, Department of Energy, 2001

K. S. Gant, D. W. Lee, "Unclassified Hazardous Material Information for Use in Safety Basis Documentation(U), DAC – 900000-A001, Rev. 1, BWXT Y-12 LLC, 2001 (unclassified).

A. G. Croff, J. R. Hightower, D. W. Lee, G. E. Michaels, N. L. Ranek, "Assessment of Preferred Depleted Uranium Disposal Forms," ORNL/TM-2000/161, Oak Ridge National Laboratory, 2000

D. W. Lee, L. N. McCold, D.P. Vogt, K. L. Yurako, "Evaluation of Hazardous Materials Management Practices for Application to Range Residue Management," ORNL/TM-2000/87, 2000

"Depleted Uranium Storage and Disposal Trade Study Summary Report," ORNL/TM-2000/10. Oak Ridge National Laboratory, 2000 (with others)

"Final Report for the Idaho National Engineering and Environmental Laboratory Radioactive Waste Management Complex low-Level Radiological Composite Analysis Review, U. S, Department of Energy, Washington, D. C, 2000 (with others)

"Low-Level Waste Disposal Facility Review Group Manual," U. S, Department of Energy, Washington D.C., 1999 (with others)

"DOE Order 435.1, Radioactive Waste Management," U. S. Department of Energy, Washington D.C., 1999 (with others)

"DOE M 435.1-1, Radioactive Waste Management Manual," U. S. Department of Energy, Washington, D.C. 1999 (with others)

"DOE G 435.1-1 Implementation Guide for use with DOE M 435.1-1." U. S. Department of Energy. Washington, D. C., 1999 (with others)

"Appendix A, Technical Basis and Considerations for DOE M 435.1-1," U.S. Department of Energy, Washington, D. C. , 1999 (with others)

"Final Report for the Savannah River Site Composite Analysis Review," U. S, Department of Energy, Washington, D. C., 1998 (with others)

“Performance Assessment for Continuing and Future Operations at Solid Waste Storage Area 6,” ORNL-6783/R1, Vol. 1 and 2, Oak Ridge National Laboratory, 1997 (with others)

“Composite Analysis for Solid Waste Storage Area 6,” ORNL-6929, Oak Ridge National Laboratory, 1997 (with others)

“Performance Assessment for the Class L-II Disposal Facility,” ORNL/TM-13401, Oak Ridge National Laboratory, 1997 (with others)

“Safety Analysis Report, Paducah Gaseous Diffusion Plant, Paducah, Kentucky,” KY/E174, Lockheed Martin Energy Systems, 1996 (with others)

M. L. Socolof, D. W. Lee, “Radiological Dose Assessment of Department of Energy Pinellas Plant Waste Proposed for Disposal at Laidlaw Environmental Services of South Carolina, Inc.,” ORNL/TM-13234, Oak Ridge National Laboratory, 1996

M. L. Socolof, D. W. Lee, D. C. Kocher, “Radiological Dose Assessment of Department of Energy Pinellas Plant Waste Proposed for Disposal at United States Pollution Control Inc. in Tooele County, Utah,” ORNL/TM=1323, Oak Ridge National Laboratory, 1996

J. C. Wang, T.O. Johnson, D. W. Lee, “Risk Criterion and Index of Risk, in Proceedings of the International Topical Meeting on Probabilistic Safety Assessment, Park City, Utah, 1996

“Performance Evaluation of the Technical Capabilities of DOE Sites for Disposal of Mixed Low-Level Waste,” DOE/ID-10521/2, Sand-0721/2, Sandia National Laboratory, 1986 (with others)

D. W. Lee, D. C. Kocher, J. C. Wang, “Operating Limit Evaluation for Disposal of Uranium Enrichment Plant Wastes,” NORM, NARM Regulation and Risk Assessment, in Proceedings of the 29th Midyear Topical Meeting, Health Physics Society, Scottsdale Arizona, 1996

J. D. Tauxe, D. W. Lee, J. C. Wang, G. P. Zimmerman, “A Comprehensive Subsurface Transport Analysis for Radioactive Waste Disposal at Various DOE Sites,” 1993 Fall Meeting of the American Geophysical Union, San Francisco, California, 1995

R. O. Johnson, J. C. Wang, D. W. Lee, “Maximum Ponding Depths on Urbanized Surfaces During Extreme Storms,” in Proceedings of the 5th DOE Natural Phenomena Hazards Mitigation Conference, Denver, Colorado, 1995

J. C. Wang, J. D. Tauxe, D. W. Lee, “Estimation of Contaminant Transport in Groundwater Beneath Radioactive Waste Disposal Facilities,” in Transactions of the American Nuclear Society, Vol. 73 , pp. 505-506, 1995

J. C. Wang, J. D. Tauxe, D. W. Lee, Estimation of Contaminant Transport in Groundwater Beneath Radioactive Waste Disposal Facilities,” in Eleventh Proceedings of Nuclear Thermal Hydraulics, American Nuclear Society, LaGrange Park, Illinois, 1995

R. D. Waters, M. M. Gruebel, M.S.Y. Chu, D. W. Lee, “DOE’s Performance Evaluation Project for Mixed Low-Level Waste Disposal,” in Waste Management ’95, University of Arizona, 1995

D. W. Lee, J. C. Wang, D. C. Kocher, “Operating Limit Study for the Proposed Solid Waste Landfill at Paducah Gaseous Diffusion Plant,” ORNL/TM-13008, Oak Ridge National Laboratory, 1995

D. W. Lee, “Performance Assessment Experience at Oak Ridge National Laboratory,” in Proceedings of the 16th Annual DOE Low-Level Radioactive Waste Management Conference, CONF-941214, 1994

J. C. Wang, D. W. Lee, R. H. Ketelle, R. R. Lee, D. C. Kocher, “Determination of Operating Limits for Radionuclides for a Proposed Landfill at Paducah Gaseous Diffusion Plant,” in Transactions of the American Nuclear Society, Vol. 71, pp. 561-561, 1994

J. C. Wang, D. W. Lee, R. H. Ketelle, R. R. Lee, D. C. Kocher, “Determination of Operating Limits for Radionuclides for a Proposed Landfill at Paducah Gaseous Diffusion Plant,” in Tenth Proceedings of Nuclear Thermal Hydraulics, American Nuclear Society, La Grange, Illinois, 1994

D. W. Lee, M. W. Yambert, D. C. Kocher, “Uncertainty Analysis for Low-Level Radioactive Waste Disposal Performance Assessment at Oak Ridge National Laboratory,” in Proceedings of the International Topical Meeting on Nuclear and Hazardous Waste Management, Spectrum ’94, American Nuclear Society, LaGrange, Illinois, Vol. III, pp. 1534-1538. 1994

“Performance Assessment for Continuing and Future Operations at Solid Waste Storage Area 6,” ORNL-6783, Oak Ridge National Laboratory, 1994 (with others)

R. O. Johnson, J. C. Wang, D. W. Lee, “Local Drainage Analysis for the Paducah and Portsmouth Gaseous Diffusion Plants During Extreme Storms,” in Proceedings of the Fourth DOE Natural Phenomena Hazards Mitigation Conference, CONF-9310102, Vol. I, pp. 431-440, 1993

D. Munaf, A. S. Wineman, K. R. Rajagopal, D. W. Lee, “A Boundary Value Problem in Groundwater Motion Analysis – Comparison of Predictions based on Darcy’s Law and the Continuum Theory of Mixtures,” in Mathematical Models and Methods in Applied Sciences, Vol. 3, No. 2, PP. 231-248, World Scientific Publishing Company, 1993

R. O. Johnson, J. C. Wang, D. W. Lee, “Local Drainage Analysis of the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, During an Extreme Storm,” K/GDP/SAR-30, Martin Marietta Energy Systems, 1993

R. O. Johnson, J. C. Wang, D. W. Lee, "Local Drainage Analysis of the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio, During an Extreme Storm," K/GDP/SAR-29, Martin Marietta Energy Systems, 1993

D. W. Lee, D. C. Kocher, J. M. Bownds, "Interpretation of Results for Performance Assessments of Low-Level Radioactive Waste Disposal Facilities," in Proceedings of 14th Annual Department of Energy Low-Level Radioactive Waste Management Conference, CONF-921137-PROC, 1993

"System Safety Analysis, Suspension of Highly Enriched Uranium Production, Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio," K/GDP/SAR-20, Martin Marietta Energy Systems, 1993 (with others)

D. W. Lee, D. C. Kocher, "Use of Pathways Analysis as a Tool for Effective and Safe Waste Management," in Effective and Safe Waste Management, ed. R. Jolley, and R. Wang, Lewis Publishers, 1992

D. C. Kocher, D. W. Lee, "Disposal of Low-Level Radioactive Wastes on the Oak Ridge Reservation, I. Preliminary Screening Analysis for Identification of Important Radionuclides," in Radioactive Waste Management and the Nuclear Fuel Cycle, Harwood Academic Publishers GbmH, Vol. 16 (2), pp. 83-99, 1992

D. W. Lee, D. C. Kocher, "Disposal of Low-Level Radioactive Wastes on the Oak Ridge Reservation, II. Proposed Classification of Wastes for Management and Disposal," in Radioactive Waste Management and the Nuclear Fuel Cycle, Harwood Academic Publishers GbmH, Vol. 16 (2), PP. 161-171, 1992

R. O. Johnson, J. C. Wang, D. W. Lee, "Regional Flood Assessment of the Paducah and Portsmouth Gaseous Diffusion Plants," in Proceedings of third DOE National Hazard Mitigation Conference, CONF-9110122, pp. 302-311, 1992

J. C. Wang, R. O. Johnson, D. W. Lee, "Extreme Flood Estimates Along the Scioto River Adjacent to the Portsmouth Gaseous Diffusion Plant," K/GDP/SAR-6, Martin Marietta Energy Systems, 1992

R. O. Johnson, J. C. Wang, D. W. Lee, "Probable Maximum Flood Calculation for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, K/GDP/SAR-7, Martin Marietta Energy Systems Inc., 1992

"Thermal Engineering: Emerging Technologies and Critical Phenomena," National Science Foundation Report, Washington, D. C., 1002 (with others)

"Performance Assessment Review Guide for DOE Low-Level Radioactive Waste Disposal Facilities," DOE/LLW-93, EG&F Idaho, Idaho Falls, Idaho, 1991, (with others)

"Complex 21 – A Proposal for the Nuclear Weapons Complex Reconfiguration Site, Vol. 4, Environment, Safety and Health," Oak Ridge Operations Office, U. S. Department of Energy, 1991 (with others)

“Gaseous Diffusion Plant Safety Analysis Report Upgrade Program Plan,” K/GDP/ SAR-102, Martin Marietta Energy Systems, 1991 (with others)

D. W. Lee, A. S. Wineman, “Groundwater phenomena and the Theory of Mixtures,” in Recent Advances in Mechanics of Structured Continua, ed. M. Massoudi and K. R. Rajgopal, AMD – Vol. 117, American Society of Mechanical Engineers, 1991

W. R. Brock, D. W. Lee, “Proceedings of the Information exchange Workshop – Design Basis Floods, March 20, 1990, Oak Ridge, Tennessee,” K/GDP/ SAR-2, Martin Marietta Energy Systems Inc., 1990

D. W. Lee, D. C. Kocher, “Scoping Analysis for the Performance Assessment of SWSA 6.” ORNL/CF – 90/67, Oak Ridge National Laboratory, 1990

“Geosciences.” In Energy Technology R&D, What Could Make a Difference? ORNL – 6541/V1/P3, Oak Ridge National Laboratory, 1989 (with others)

D. W. Lee, “Applied Exposure Modeling for Residual Radioactivity and Release Criteria,” in Residual Radioactivity and Recycling Criteria, EPA 520/1-90-013, U. S. Environmental Protection Agency, 1989

D. W. Lee, D. C. Kocher, “Performance Assessment for Future Low-Level Waste Disposal Facilities at ORNL,” in Proceedings of the 11th DOE Low-Level Waste Management Conference, CONF-890854, Vol. 1, U. S. Department of Energy, 1989

D. C. Kocher, D. W. Lee, “A preliminary Performance Assessment for Near-Surface Land Disposal of Low-Level Radioactive Wastes,” in Proceedings of the 11th DOE Low-Level Waste Management Conference, CONF-890854, Vol. 1, U. S. Department of Energy, 1989

G. E. Butterworth, M. J. Morris, D. W. Lee. “Radioactive Waste Management Implementation Plan for Paducah Gaseous Diffusion Plant, ES/ESH-9, KY/H-86, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, 1989

G. E. Butterworth, M. J. Morris, D. W. Lee, “Radioactive Waste Management Implementation Plan for Portsmouth Gaseous Diffusion Plant, ES/ESH-10, POEF-2011, Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio, 1989

“Recommended Formant and Content for DOE Low-Level Waste Disposal Facility Radiological Assessment Reports,” DOE/LLW-81, DOE National Low-Level Waste Management Program, Idaho National Engineering Laboratory, 1989 (with others)

“Development of Riprap Design Criteria by Riprap Testing in Flumes: Phase II,” NUREG/CR-4651, ORNL/TM-10100/V2, U. S. Nuclear Regulatory Commission, Washington, D. C., 1988 (with others)

“Environmental Assessment, Navy TACAMO Squadrons, Tinker Air Force Base, Oklahoma,” Department of Air Force, Logistics Command, Wright Patterson Air Force Base, Ohio, August 1988, (with others)

D. W. Lee. “Low-Level Radioactive Waste Disposal at a Humid Site,: in Proceedings of the Joint CSCE-ASCE National Conference on Environmental Engineering, Canadian Society of Civil Engineers, Montreal, Quebec, Canada, 1988

C. W. Francis, M. P. Maskarinec, D. W. Lee. “Physical and Chemical Methods for Characterization of Hazardous Wastes,” in P. Baccini ed. Swiss Workshop on Land Disposal, Springer-Verlag, pp. 229-326, 1988

R, H, Ketelle and D. W. Lee, “Identification of Sites for the Low-Level Waste Disposal Development and Demonstration Program,” ORNL/TM-10221, Oak Ridge National Laboratory, 1988

J. M. Bownds, D. W. Lee, M. M. Stevens, “A new Analytical Model for a Pumped Leaky Aquifer System,” in International Ground Water Modeling Center, Newsletter, Vol. VII, No. 1, Holcomb Research Institute , Butler University, Indianapolis , Indiana. 1988

“Draft Environmental Assessment, Navy TACAMO Squadrons, Tinker Air Force Base, Oklahoma,” Department of Air Force, Headquarters, Air Force Logistics Command, Wright Patterson Air Force Base, Ohio. 1987 (with others)

“Development of Riprap Design Criteria by Riprap Testing in Flumes: Phase I,” NUREG/CR-4651, ORNL/TM-10100/V1, U. S. Nuclear Regulatory Commission, 1987 (with others)

D.W. Lee, “An Analysis of Groundwater Contamination from the Operation of a 6-GeV Electron Beam Accelerator,” in Health Physics of Radiation Generating Machines, Proceedings of the Twentieth Midyear Topical Symposium of the Health Physics Society, CONF-8602106, 1987

“Remedial Investigation Plan for the Subsurface Characterization of the ORNL Hydrofracture Sites, ORNL/RAP-7, Oak Ridge National Laboratory, 1987 (with others)

Environmental Assessment, Continuous Electron Beam Accelerator Facility, Newport News, Virginia, DOE/EA-0257, Oak Ridge Operations, U. S. Department of Energy, 1987, (with others)

J. B. Cannon, D. W. Lee, “Defense Waste Management: Shallow Land Burial Handbook,” in Waste Management Research Abstracts No. 17, IAEA/WMRA/17, International Atomic Energy Agency, Vienna, Austria, 1986

D. W. Lee, J. M. Bownds, “Hydrodynamics of Partially Penetrating Wells in a Leaky Aquifer System,” ORNL/NRC/LTR-86/14, Oak Ridge National Laboratory, 1986

“Revised Final Environmental Assessment, Seaway Complex, DOE/EA-0252, U. S. Department of Energy, 1986 (with others)

D. W. Lee, “Impacts of Continuous Electron Beam Accelerator Operations on Groundwater and Surface Water,” in Proceedings of CEBAF Workshop on Radiation Safety, Southeastern Universities Research Association, Newport News, Virginia, 1986

D. B. Hunsaker, Jr., D. W. Lee, “Environmental Impact Assessment of Abnormal Events: A Follow-up Study,” in Audit and Evaluation in Environmental Assessment: Canadian and International Experience II, Environment Canada, Ottawa, Ontario, Canada, 1985

“Environmental Assessment, Strategic Petroleum Reserve; Seaway Complex Distribution Enhancements, Brazoria, Galveston, and Harris Counties, Texas,” DOE/EA-0252, U. S. Department of Energy, 1985 (with others)

“Shallow Land Burial of Low-Level Radioactive Waste, ORNL/TM-9496, Oak Ridge National Laboratory, 1985 (with others)

F. G. Pin, J. P. Witherspoon, D. W. Lee, J. B. Cannon, R. H. Ketelle, “Radionuclide Migration Pathways Analysis for the Oak Ridge Central Waste Disposal Facility on the West Chestnut Ridge Site,” ORNL/TM-9231, Oak Ridge National Laboratory, 1984

“Draft Environmental Impact Statement, Susitna Hydroelectric Project, Alaska, FERC No. 7114,” FERC/DEIS-0038, Office of Electric Power Generation, Federal Energy Regulatory Commission, Washington, D. C., 1984 (with others)

D. W. Lee, R. H. Ketelle, “A Methodology for Selecting Low-Level Radioactive Waste Disposal Sites with Application to the Oak Ridge Reservation,” in Proceedings of Facility Siting and Routing’84, Energy and Environment, Environment Canada, Ottawa, Ontario, Canada, 1984

“Procedures and Technology for Shallow Land Burial of Low-Level Radioactive Waste, ORNL/NFW-84/10, Oak Ridge National Laboratory, 1984 (with others)

D. W. Lee, R. H. Ketelle, F. G. Pin, G. S. Hill. “Environmental Pathways Analysis for Evaluation of a Low-Level Waste Disposal Site,” in Radioactive Waste Management, Vol. 4, International Atomic Energy Agency, Vienna, Austria, 1984

R. D. Roop, W. P. Staub, D. B. Hunsaker, R. H. Ketelle, D. W. Lee, F. G. Pin, A. J. Witten, “Corrective Measures to Stabilize Subsidence in Low-Level Waste Trenches,” in Proceedings of Sixth Symposium on Uranium Mill Tailings Management, Colorado State University, Fort Collins, Colorado, 1984

“Procedures and Technology for Shallow Land Burial, Low-Level Radioactive Waste Management Handbook Series, National Low-Level Radioactive Waste Management Program,” DOE/LLW-13Td, U. S. Department of Energy, 1983 (with others)

D. W. Lee, R. H. Ketelle, L. H. Stinton, “Use of DOE Site Selection Criteria for Screening Low-Level Waste Disposal Sites on the Oak Ridge Reservation,” ORNL/TM-8717, Oak Ridge National Laboratory, 1983

R. D. Roop, W. P. Staub, D. B. Hunsaker, Jr., R. H. Ketelle, D. W. Lee, F. G. Pin, A. J. Witten, “A Review of Corrective Measures to Stabilize Subsidence in Shallow-Land Burial Trenches,” ORNL/TM-8715, Oak Ridge National Laboratory, Oak Ridge National Laboratory, 1983

R. Blumberg, J. B. Cannon, G. S. Hill, R. H. Ketelle, D. W. Lee, F. G. Pin, “GCEP Waste Pathways Analysis Study,” K/D-5375, Union Carbide Corporation-Nuclear Division, Oak Ridge, Tennessee, 1983

“Environmental Analysis of the Operation of Oak Ridge National Laboratory (X-10 Site),” ORNL-5870, Oak Ridge National Laboratory, 1982 (with others)

“Environmental Assessment, Low-Level Waste Disposal, Barnwell, South Carolina,” NUREG-0879, U. S. Nuclear Regulatory Commission, 1982 (with others)

L. W. Barnthouse, W. Van Winkle, J. Golumbek, G. D. Cada, C.P. Goodyear, S. W. Christiansen, J. B. Cannon, D. W. Lee, “The Impact of Entrainment and Impingement on Fish Populations in the Hudson River Estuary,” NUREG/CR-2220, Vol. II, ORNL/NUREG/TM-385/V2, Oak Ridge National Laboratory, 1982

D. W. Lee, “Analytical Model of the Round Buoyant Jet,” ASME81-FE-10, American Society of Mechanical Engineers, New York, New York, 1981

“Environmental Assessment, Aquifer Thermal Energy Storage Program,” DOE/EA-0131, U. S. Department of Energy, 1981 (with others)

C. F. Baes Jr., S. E. Beall, D. W. Lee, G. Garland, “The Collection, Disposal and Storage of Carbon Dioxide,” in Interactions of Energy and Climate, ed. W. Bach, J. Pankrath, J. Williams, D. Reidel Publishing Co. 1983

D. W. Lee, “Programmatic Environmental Assessment (Documentation),” in Proceedings of Mechanical, Magnetic, and Underground Energy Storage, 1980 Annual Contractor’s Review, CONF-801128, U. S. Department of Energy, 1980

D. W. Lee, “An Analytical Model for a Vertical Buoyant Jet,” ORNL/TM-7140, Oak Ridge National Laboratory, 1980

“Strategies for Ecological Effects Assessment at DOE Energy Activity Sites,” ORNL/TM-6783, Oak Ridge National Laboratory, 1980 (with others)

G. D. Pine, D. W. Lee, R. P. Intemann, "Commuter Transportation Options for Oak Ridge National Laboratory," ORNL/CF-80/10, Oak Ridge National Laboratory, 1980

D. W. Lee, "Analysis of Potential Salt Water Intrusion at NEP I& II Power Station," ORNL/TM-7138, Oak Ridge National Laboratory, 1980

C. F. Bases, Jr., S. E. Bell, D. W. Lee, G. Marland, "Options for the Collection and Disposal of Carbon Dioxide," ORNL 5657, Oak Ridge National Laboratory, 1980

J. B. Cannon, G. F. Cada, K. K. Campbell, D. W. Lee, A. T. Szluha, "Fish Protection at Steam Electric Power Plants: Alternative Screening Devices," ORNL/TM-6472, Oak Ridge National Laboratory, 1979

"Draft Environmental Impact Statement Related to Construction of New England Power Units 1 and 2 (NEP1&2) Docket Nos. STN-50-568 and STN-50-569," NUREG-0529, U. S. Nuclear Regulatory Commission, Washington, D. C., 1979 (with others)

D. W. Lee, "Suppression and Amplification of Lee Waves," in Developments in Theoretical and Applied Mechanics, Vol. , ed. R. M. Hackett, Vanderbilt University, Nashville, Tennessee, 1978

"Environmental Analysis for Pipeline Gas Demonstration Plants," ORNL/TM-6235, Oak Ridge National Laboratory, 1978, (with others)

Environmental Monitoring Handbook for Coal Conversion Facilities," ORNL-5319, Oak Ridge National Laboratory, 1978 (with others)

D. W. Lee, "Lee Wave Annihilation Over Two Barriers," in Symposium on Modeling of Transport Mechanisms in Oceans and Lakes, Manuscript Report Series No. 43, Department of Fisheries and Environment, Ottawa, Ontario, Canada, 1977

S. K. Clark, R. N. Dodge, D. W. Lee, J. R. Luchini, "Proof Pressure Evaluation of Worn Passenger Car Tire Carcasses," UM-0100654-6-F, U. S. Department of Transportation Cambridge, Massachusetts, 1975

S. K. Clark, R. N. Dodge, D. W. Lee, J. R. Luchini, "Pressure Effects on Worn Passenger Car Tire Carcasses," UM-010154-4-1, U. S. Department of Transportation, Cambridge Massachusetts, 1975

S. K. Clark, R. N. Dodge, D. W. Lee, J. R. Luchini, "Pressure Effects on Worn Passenger Car Tire Carcasses," UM-010654-2-1, U. S. Department of Transportation, Cambridge, Massachusetts, 1974

S. K. Clark, R. N. Dodge, D. W. Lee, R. N. Larson, "Measurements of Stress States in 20x4.4 Aircraft Tire," AFFDL-73-24. U. S. Air Force Flight Dynamics Laboratory, Wright Patterson Air Force Base, Dayton, Ohio, 1973

Technical Presentations

“Long Term Performance of Radioactive Waste Disposal Facilities,” Civil and Environmental Engineering Department, Vanderbilt University, September 8, 2003 (invited)

“Y-12 Dispersion Analysis Training Workshop,” Y-12 Plant, September 20 – 21, 2001 (with R. L. Miller and A. L. Sjoreen)

“Evaluation of Hazardous Materials Management Practices for Application to Range Residue Management,” 29th Biannual Meeting of the Department of Defense Explosives Safety Board, New Orleans, Louisiana, July 14, 2000 (invited)

“Composite Analysis of Oak Ridge Disposal Sites,” as part of Management of Disposal of Radioactive Waste by Dade Moeller & Associates for DOE-ORO, December 10, 1998

“Legal Disposition before Randy McDowell, Attorney, Commonwealth of Kentucky, Paducah, Kentucky on the matter of the Commonwealth of Kentucky vs. U. S. DOE,” Paducah, Kentucky, June 4, 1998

“Savannah River Site Composite Analysis Training,” DOE SRO, March 12, 1998

“Solid Waste Storage Area 6 – Performance Assessment and Composite Analysis – Implications to CERCLA and Land Use Planning,” DOE-ORO, March 6, 1998

“Solid Waste Storage 6 – Performance Assessment and Composite Analysis – An Overview,” Low-Level Waste Federal Review Group, Oak Ridge, TN, January 21, 1998

“Oak Ridge Reservation Composite Analysis Overview,” DOE Composite Analysis Workshop, Gaithersburg, Maryland, August 20, 1996

“Progress Toward the Implementation of the Operating Limit for the PGDP Landfill,” Paducah, Kentucky, June 11, 1996

“Performance Assessment of Low-Level Radioactive Waste Disposal Facilities – Oak Ridge Perspective,” Scientific Delegation from the United Kingdom, DOE – ORO, April 2, 1996

“Performance Assessment for All Sources for the Oak Ridge Reservation,” DOE All Sources Workshop, Gaithersburg, Maryland, January, 30 1996

“Operating Limit Evaluation for Disposal of Uranium Enrichment Plant Wastes,” 29th Midyear Meeting of the Health Physics Society, Scottsdale Arizona, January 9, 1996

“Implementation of the Operating Limit for the New Solid Waste Landfill,” DOE Paducah Field Office, Paducah, Kentucky, December 6, 1995

‘Performance Assessment Experience at Oak Ridge National Laboratory,” Scientific Delegation from the Republic of Korea, Oak Ridge National Laboratory, May 5, 1995

“Operating Limit Study for the Proposed Solid Waste Landfill at Paducah Gaseous Diffusion Plant,” Commonwealth of Kentucky, Frankfurt, Kentucky, February 2, 1995.

“Solid Waste Landfill Operating Limits Study,” DOE-ORO, January 11, 1995

“Performance Assessment Experience at Oak Ridge National Laboratory,” 16th Annual U. S. Department of Energy Low-Level Radioactive Waste Management Conference, Phoenix, Arizona, December 13, 1994

“Industrial Landfill Study – Radionuclide Operating Limits – Results,” Paducah Gaseous Diffusion Plant, Paducah, Kentucky, September 19, 1994

“Uncertainty Analysis for Low-Level Radioactive Waste Disposal Performance Assessment at Oak Ridge National Laboratory,” Spectrum '94, Atlanta, Georgia, August 17, 1994

“Environmental Transport,” FFCA Disposal Evaluation Workshop, Clearwater, Florida, August 10, 1994

“Performance Assessment Methodology,” FFCA Disposal Evaluation Workshop, Clearwater, Florida, August 10, 1994

“Performance Assessment for Continuing and Future Operations at Solid Waste Storage Area 6,” State of Tennessee, Tennessee Department of Environment and Conservation, Oak Ridge, Tennessee, March 7, 1994

“Evaluation of Disposal Site Capabilities on the Oak Ridge Reservation,” National Governor’s Association, Tucson, Arizona, March 3, 1994

“Scoping Calculations for Estimating Disposal Site Capabilities,” DOE – FFCA Disposal Work Group, Dallas, Texas, February 17, 1994

“Performance Assessment for Continuing and Future Operations at Solid Waste Storage Area 6,” DOE – ORO, January 21, 1994

“Safety Analysis Upgrade Program, What is It? Where Have We Been? Where Are We Going?” Energy Division Advisory Meeting, Oak Ridge National Laboratory, May 15, 1993

“DOE Order 5820.2A Performance Assessment Overview,” State of Tennessee, Tennessee Oversight Agreement Office, Oak Ridge, Tennessee, April 13, 1993

“Performance Assessment,” Japan Scientific Visitors Exchange Group, Oak Ridge National Laboratory, February 26, 1993

“SWSA 6 Performance Assessment Status,” DOE Low-Level Waste Management Program Steering Committee, Oak Ridge, Tennessee, February 2, 1993

“Performance Assessment for SWSA 6,” DOE-ORO, Oak Ridge, Tennessee, January 14, 1993

“Integration and Interpretation of Results from Performance Assessments of Low-Level Radioactive Waste Disposal Facilities,” 14th Annual Department of Energy Low-Level Radioactive Waste Management Conference, Phoenix, Arizona, November 20, 1992

“Program Highlights, Facility Safety/Waste Management Chapter,” GDP/SAR Upgrade Program Review, Oak Ridge, Tennessee, May 7, 1992

“Performance Assessment of Low Level Radioactive Waste Disposal at Oak Ridge National Laboratory,” Waste Management '92, Tucson, Arizona, March 3, 1992

“Groundwater Phenomena and the Theory of Mixtures,” Applied Mechanics Conference, American Society of Mechanical Engineers, The Ohio State University, Columbus, Ohio, June 1991

“Interpretation of Results of SWSA 6 Performance Assessment,” DOE Peer Review Panel, Oak Ridge, Tennessee, March 1991

“Use of Pathways Analysis as a Tool for Effective and Safe Waste Management,” American Chemical Society, 200th National Meeting, Washington, D. C., August 1990

“Applied Exposure Modeling for Residual Radioactivity and Release Criteria,” EPA Workshop on Residual Radioactivity and Release Criteria, St. Michaels, Maryland, September 1989

“Performance Assessment for Future Low-Level Waste Disposal Facilities at ORNL,” 11th Annual DOE Low-Level Waste Management Conference, Pittsburgh, PA, August, 1989

“Workshop on Pathways Analysis,” State of Tennessee, Department of Health and Environment, Nashville, TN, June 1989

“Classification of Groundwaters at Portsmouth Ohio,” DOE Steering Group for 40 CFR 193, Washington, D. C., January 1989

“Performance Based Model for Portsmouth Facility,” Workshop on the Management of Contaminated Soils, Knoxville, Tennessee, November, 1988

“DOE Model Strategy for BRC Uranium Wastes,” DOE Model Conference, Oak Ridge, Tennessee, October 1988

“Low-Level Radioactive Waste Disposal in a Humid Environment: A Site Specific Approach with Generic Application,” Joint CSCE/ASCE National Conference on Environmental Engineering, Vancouver, Canada, July, 1988

“The Role of the Intruder in the Management of Low-Level Radioactive Waste,” Oak Ridge Waste Management Advisory Committee, Oak Ridge, Tennessee, June, 1988

“LLWDDD Strategy for BRC Uranium Wastes,” Workshop on the Management of Uranium Bearing Wastes, Oak Ridge Associated Universities, Oak Ridge, Tennessee, May, 1988

“Evaluation of Uranium Leaching from Solid Wastes, Solid Waste Forms: Characteristics and Evaluations,” Workshop on Waste Forms, Oak Ridge National Laboratory, April, 1988 (with R. B. Clapp, J. E. Cline)

“Impact of Below Regulatory Concern on LLWDDD Strategy,” Oak Ridge Waste Management Advisory Committee, Chattanooga, Tennessee, March 1988

“Below Regulatory Concern Pathways Analysis,” Oak Ridge Waste Management Advisory Committee, Chattanooga, Tennessee, March, 1988

“Review of LLWDDD Program Waste Management Strategy,” Ad-Hoc Industry Waste Management Advisory Committee, Oak Ridge, Tennessee, October, 1987

“Low-Level Radioactive Waste Disposal Strategy for the Oak Ridge Reservation,” Southeastern Compact States Association, Oak Ridge, Tennessee, April, 1987

“LLWDDD Waste Disposal Strategy,” Oak Ridge Waste Management Advisory Committee, Oak Ridge, Tennessee, March, 1987

“Pathways Analysis Considerations for Disposal of Melton Valley Storage Tank Waste in SWSA 6,” Oak Ridge Waste Management Advisory Committee, Oak Ridge, Tennessee, March, 1987

“An Analysis of Groundwater Contamination of a 6-GeV Continuous Electron Beam Accelerator,” Twentieth Midyear Topical Symposium of the Health Physics Society, Reno, Nevada, February, 1987

"Hydrodynamics of Leaky Groundwater Systems with Partially Penetrating Wells," Energy Division Annual Information Meeting, Oak Ridge National Laboratory, August, 1986 (with J. M. Bownds)

"Siting Considerations for Disposal of Low-Level Radioactive Waste on the Oak Ridge Reservation," Oak Ridge Waste Management Advisory Committee, Chattanooga, Tennessee, June, 1986

"Impacts of Continuous Electron Beam Accelerator Facility Operations on Groundwater and Surface Water," CEBAF Workshop on Radiation Protection, Newport News, Virginia, April, 1986

"Assessment of Greater Confinement Disposal Systems for Transuranic Waste," TRU Waste Update Meeting #11, Las Vegas, Nevada, October, 1985

"Hydrodynamics of Partially-Penetrating Wells in Leaky Aquifer Systems," Symposium on Fluid Mechanics Honoring C. S. Yih, University of Michigan, Ann Arbor, Michigan, 1985

"Greater Confinement Disposal Systems for Transuranic Waste," TRU Update Meeting #10, Denver, Colorado, April, 1985

"Site Selection for Disposal of Low-Level Radioactive Waste," Oak Ridge Waste Management Advisory Committee, Chattanooga, Tennessee, April, 1985

"Groundwater Transport and Radioactive Waste Disposal – Research Applied to National Issues," Department Seminar, Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, North Carolina, November, 1984

"A Methodology for Selecting Low-Level Radioactive Waste Disposal Sites with Application to the Oak Ridge Reservation," Facility Siting and Routing '84, Energy and Environment, Banff, Alberta, Canada, 1984

"Environmental Pathways Analysis for Evaluation of Low-Level Waste Disposal Site," IAEA International Conference on Radioactive Waste Management, Seattle, Washington, May 1983

"An Analytical Model for a Round Buoyant Jet," Joint ASME/ASCE Conference on Mechanics, Boulder, Colorado, June, 1981

"An Analytical Model for a Vertical Buoyant Jet," Department Seminar, Department of Chemical and Environmental Engineering, Rensselaer Polytechnic Institute, Troy, New York, September, 1980

Expert Witness for U. S. Environmental Protection Agency Region II, in the matter of National Pollutant Discharge Elimination System Permits for Central Hudson Gas & Electric Corp., Roseton Generating Station, et al., New York, New York, February 1980

“Suppression and Amplification of Lee Waves,” Ninth Southeastern Conference on Theoretical and Applied Mechanics, Vanderbilt University, Nashville, Tennessee, May 1978

“Lee Wave Annihilation over two Barriers,” Symposium on Modeling and Transport Mechanisms in Oceans and Lakes, Canada Centre for Inland Waters, Burlington, Ontario, October 1975