

## Curriculum Vitae

**ROBERT J. LIPPENCOTT, Ph.D., CHMM**

### CONTACT INFORMATION

#### OFFICE

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#### HOME

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#### EDUCATION

B.S., Biology (Fish and Wildlife Option), Montana State University, 1984  
M.S., Environmental Science, New Jersey Institute of Technology (NJIT), 1993  
Ph.D., Environmental Science, Rutgers University and NJIT, 2005

#### PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Certified Hazardous Materials Manager (CHMM), Master Level, 1994 (# 7013)  
Certified UST Subsurface Evaluator, New Jersey, 1996 (#0011998)  
NJDEP Site Remediation Program Cleanup Star, 2003  
Certified Wetland Delineator, U.S. Army Corps of Engineers, 2008

#### PROFESSIONAL AFFILIATIONS

Member - Academy of Certified Hazardous Materials Managers (National and Local Chapters)  
Member - Institute of Certified Hazardous Materials Managers

#### TEACHING AND ADVISORY POSITIONS

New Jersey Institute of Technology, Adjunct Professor, Science, Technology and Environment,  
Undergraduate Full Semester Course – Honors Section, Department of Chemistry and  
Environmental Science, Spring 2006.

NJDEP Site Remediation Advisory Group (SRAG) Member

#### HONORS AND AWARDS

Alpha Lambda Epsilon, National Graduate Student Honor Society – NJIT Chapter, 1993

## **AREAS OF EXPERTISE**

Dr. Robert J. Lippencott has management and technical experience in the following areas:

- Environmental Investigations of Contaminated Sites
- Site Remediation Design, Implementation and Project Management
- Hazardous Site Science
- Environmental Due Diligence
- Hazardous Waste Management
- Analytical Data QA/QC
- Environmental Toxicology and Chemistry
- Surface and Ground Water Investigation and Permitting
- Surface Water and Sediment Quality Evaluation
- Ecological Evaluation and Wetlands Permitting
- Soil, Sediment and Ground Water Geochemistry
- Statistical Evaluation of Geochemical Data

## **BIOGRAPHICAL SKETCH**

Dr. Lippencott has over 24 years of combined experience and progressive responsibility in environmental science testing, investigations and project management at hundreds of hazardous waste sites and facilities in New Jersey. His experience represents a broad spectrum of applied sciences including chemistry, toxicology, geology, hydrogeology, microbiology, ecology and environmental statistics while providing remediation science and geology consulting for all aspects of site investigation and remediation project sites that represent a robust cross-section of New Jersey's past and current industrial sites and ecosystems. His experience covers technical and regulatory environmental compliance issues at a broad range of industrial and non-industrial facilities, including oil refineries, pharmaceutical facilities, printing concerns, chemical facilities, dry cleaners and brownfield sites, as well as undeveloped and natural areas.

As TRC Principal Environmental Scientist and Project Director, Dr. Lippencott currently manages environmental projects for compliance with New Jersey's ISRA, MOA, UST and Brownfields Programs, surface water discharge permitting and site remediation requirements, and USEPA's CERCLA, RCRA and TSCA regulatory requirements. Other responsibilities include directing technical staff in field activities involving soil/ground water/surface water sample collection, well installation, soil excavation, and management of technical staff preparing various plans, reports and permit applications. Dr. Lippencott also provides TRC's Project Managers in the New Jersey regional offices with advanced technical support and expertise for various projects including advanced data evaluation, statistically-based sampling plans, remediation standard development (including SESOIL and AT123D Modeling) and quality assurance planning. As TRC's Corporate Laboratory Certification Program Director, Dr. Lippencott provides oversight of staff, training, and maintenance of laboratory equipment and regulatory compliance.

## REPRESENTATIVE EXPERIENCE

***Site Remediation Project Management*** - Managed all aspects of remediation field and office work for numerous remediation sites mostly in New Jersey, including refineries, pharmaceutical facilities, printing concerns, chemical facilities, dry cleaners and brownfield sites. Conducted environmental assessments and field investigations at sites in New York, Pennsylvania, Ohio and Wisconsin. Contaminants of concern and media investigated and/or remediated include petroleum, organic solvents, PCBs, pesticides, radionuclides and heavy metals in soils, sediment, surface water and ground water from underground storage tanks, spill areas, manufacturing operations and historical sources. Examples:

- Oversight of 7-acre PCB landfill closure at a former pharmaceutical facility in Northern NJ, including evaluation of a large RI data set; development of compliance strategies under NJDEP and USEPA (TSCA) technical regulations, and wetlands remediation and mitigation.
- Directed decommissioning of an 80-year old chemical facility in Northern NJ, including all phases of field chemical classification of old drummed materials, and oversight of soil and ground water investigations, remedial activities and technical reporting.
- Designed and implemented on-site, ex-situ remediation of chlorinated solvents and petroleum hydrocarbons in 8,000 tons of high organic content soils using high vacuum vapor extraction and steam injection at a petro-chemical manufacturing plant in Northern NJ. Extracted vapors were captured with activated carbon, condensed to liquids and recovered for re-use in the on-site manufacturing process. Soils were approved by the NJDEP for on-site reuse in the original excavation.
- Completed forensic soil sampling and remediation program as expert witness and primary investigator for a litigation case involving a discharge of No. 2 heating oil during a delivery at a former greenhouse site in Central NJ. After removal of 1,500 tons of soil and a ground water investigation, the 16-acre site was closed under NJDEP's Cleanup Star Program, which required detailed review and evaluation of laboratory data quality assurance contingencies.

***Soil Reuse and Hazardous Waste Management*** - Provided evaluation, advisement and oversight of all aspects of soil reuse and waste management issues for various projects, including waste identification/classification determination, consultation, strategies for compliance and waste reduction and response to violations. Examples:

- Directed investigation and data evaluation programs for on-site reuse of over 70,000 tons of contaminated soils from multiple sources at a petroleum refinery in Northern NJ.
- Evaluated applicability of USEPA's "Area of Contamination" Policy (including correspondence and discussions with USEPA and NJDEP) for waste management options analysis at a former pigment manufacturing site in Newark, NJ.
- Provided oversight of soil sampling and data evaluation for reuse of 6,000 tons of soil at an ISRA/redevelopment site in Newark, NJ. A soil reuse plan was developed using the NJDEP's new impact to ground water (IGW) soil remediation standards (SRS) guidance, including partition equation, SPLP and SESOIL Model calculations. A soil reuse plan with proposed site-specific IGWSRS is pending with the SRP case team. During this

evaluation, several technical errors in the NJDEP's spreadsheets were identified and discussed with the NJDEP senior technical staff who are currently considering implementing revisions.

***Surface Water and Ground Water Discharge Permitting*** - Directed preparation of numerous permit applications and associated data collection, prepared draft and renewal permit comments submitted to state agencies, and advised on permit conditions and mitigating notices of violation. Examples:

- Directed technical staff in preparation of permit application and associated data collection, prepared draft and renewal permit comments for submission to state agencies, and advised client on negotiation of anticipated permit conditions.
- Completed an evaluation of ground water data and calculated weighted averages for estimating treatment system design and water quality conditions for an individual surface water discharge permit in support of a ground water remediation pump and treat system at a Northern NJ petro-chemical facility.
- Conducted an evaluation of over 10 years of quarterly ground water quality data collected under a NJPDES discharge to ground water permit at a rock quarry in Northern NJ to resolve notices of violation for multiple excursions above an iron permit limit. Monitoring wells were installed, sampling methods were revised and audited, and high quality hydrogeologic and water quality data were collected. Trend analysis was performed on the resultant data, which exposed a connection between iron excursions and suspended solids associated with poor sample collection methods. The permit was closed and NOVs were dismissed.

***Ecological Evaluation*** - Performed over 50 baseline ecological evaluations (BEEs) for industrial clients in New Jersey, including a pharmaceutical site, petroleum refinery, cosmetic manufacturer, industrial dry cleaner and various redevelopment properties. Developed standard approach and reporting format for completing BEEs under the NJDEP's Technical Requirements for Site Remediation. Completed several, more advanced industrial impact evaluations of surface water and sediment for fresh water and tidal salt water environments. Examples:

- Directed and performed an in-depth BEE for a large petro-chemical R&D campus pursuant to NJDEP requirements, including an advanced impact evaluation of surface water and sediment for fresh water environments that was complicated by a large amount of legacy data of varying quality. Contaminants of concern included evaluation of potential ecological impacts from radionuclides and legacy pesticides associated with farmland.
- Provided advanced technical consultation for ecological evaluations at two of New Jersey's older electrical generating plants located on the Delaware River and the southern Atlantic coast. Project tasks included review of a large set of legacy and current site data, site inspections of operational and ecological areas and migration pathway analysis, development of ecological screening values, identification of data gaps, and preparation of work plans for completing evaluation of potential ecological impacts from site operations.

- Completed an ecological evaluation of a 117-acre municipal landfill closure/redevelopment site in Central NJ located on an impaired, tidal waterway. A multi-media approach was used to assess site soil, ground water, surface water and sediment data and link site contaminant with potential off-site impacts. The ecological evaluation findings were incorporated into the remedial/mitigation plan for the site to provide for mitigation of impacts to the on- and off-site ecosystem.

***Statistical Evaluation*** – Provide advanced statistical data evaluation support to TRC project managers and engineers on a variety of projects and data sets, including biogeochemical data and ground water, wetland soil and sediment quality data. Examples:

- Directed staff in development of non-parametric statistical analysis of ground water data for compliance with a NJPDES ground water discharge permit at a pharmaceutical manufacturing site on the upper Delaware River;
- Developed a non-routine statistical method to sediment data assessment for a NJ redevelopment site that employed an academic evaluation approach for assessing a large volume of three dimensional spatio-chemical data (PAHs) in near-shore sediments of the Lower Hudson River - NY/NJ Harbor estuary;
- Performed a preliminary evaluation of physical and PCB chemical data at a former landfill remediation site and developed a statistical data evaluation program for site data collection and analysis to support remedial decisions.
- Completed trend and correlation/regression analysis for arsenic-contaminated soils and ground water for a redevelopment site in Northern NJ.

***Geochemistry Data Evaluation*** - Completed evaluation of geochemical data at various sites in support of conceptual site model and remedial program development that included spatio-temporal analysis of ground water plume size and contaminant mass calculation, effects of subsurface redox and pH conditions on speciation and mobility/toxicity of metals, and evaluation of mass transfer reduction capacity/reversibility evaluation of metal ion reactions with naturally occurring minerals. Examples:

- Conducted a review of legacy data and directed collection of supplemental data for evaluation of arsenic in ground water at a former wood treating plant in central New Jersey. Determined the impact of biogeochemical factors effecting local redox conditions due to natural decay of site derived ammonia and nitrogen cycling. A predictive natural attenuation model was confirmed through ground water monitoring and the NJDEP approved a recommendation for no further action.
- Completed a quantitative evaluation of the potential for natural attenuation of hexavalent chromium in soils located in an inaccessible area under an existing metals facility in Central NJ. This assessment used USEPA guidance and site-specific mineralogical and hydrogeologic data to calculate the capacity for iron-rich native soils to convert chromium to an insoluble, non-toxic trivalent form.
- Performed an assessment of arsenic speciation and occurrence in the subsurface at a North Jersey redevelopment site on the Hudson River. Site biogeochemical data, ground water and soil arsenic data and hydrogeologic data were evaluated to assess arsenic mobility in the subsurface. Redox-pH speciation phase diagrams were constructed with

site data and correlation of soils and ground water data was completed. A very good positive correlation between arsenic soil and ground water concentrations was found, indicating arsenic concentrations under ambient ground water conditions were driven primarily by arsenic soil concentrations. The study results were incorporated into the overall site remedial program.

## **PROFESSIONAL EXPERIENCE**

2003 to Present: Principal Environmental Scientist/Senior Project Manager/Project Director, TRC Environmental Corp. (Formerly Dan Raviv Associates and TRC Raviv), Millburn, NJ. Manages environmental projects for compliance with New Jersey's ISRA, MOA, UST and Brownfields Programs, surface water discharge permitting and site remediation requirements; areas of specialization include hazardous waste management, regulatory compliance, surface water and sediment evaluations, ecological risk assessment, data quality evaluations and statistical analysis. In addition, Mr. Lippencott provides litigation support and expert reports for pollution cases involving site remediation, ground water, PCB and waste disposal issues.

Responsibilities include directing technical staff in field activities including soil/ground water/surface water sample collection, well installation, soil excavation and monitoring. Organizes and schedules field work; performs waste classification and hazardous waste management evaluations; manages technical staff preparing Phase I/II environmental assessments, and preliminary assessments, soil and ground water sampling and remediation plans and reports, and ecological evaluations under NJDEP's Site Remediation Program. Directs preparation of environmental permit applications for ground water, surface water and stormwater discharges, wetlands projects, and air emissions from remediation system vents. Prepares new project proposals and cost estimates. Corresponds with contractors, clients, attorneys and government agencies to set project schedules, negotiate technical /regulatory compliance issues and obtain permits and approvals. Directs TRC's Corporate Laboratory Certification Program and provides oversight of staff in maintenance of laboratory equipment and regulatory compliance.

1997 to 2003: Senior Environmental Scientist/Project Manager II, Dan Raviv Associates, Inc., Millburn, NJ. Conducted environmental audits and industrial site evaluations. Directed field activities including soil/ground water sample collection, well installation, soil excavation and monitoring. Performed waste classification and hazardous waste management evaluations. Managed junior staff preparing Phase I/II environmental assessments, preliminary assessments, soil and ground water sampling and remediation plans and reports, and ecological evaluations. Directed preparation of environmental permit applications for ground water, surface water and stormwater discharges, wetlands and stream encroachment projects (NJDEP and ACE), and air emissions from remediation system vents. Prepared new project proposals and cost estimates. Corresponded with contractors, clients, attorneys and government agencies to set project schedules, negotiate technical /regulatory compliance issues and obtain permits and approvals. Directed corporate laboratory certification program and provided oversight of staff in maintenance of laboratory equipment and regulatory compliance.

1990 to 1997: Assistant Project Manager, Dan Raviv Associates, Inc., Millburn, New Jersey. Conducted environmental audits and industrial site evaluations. Directed field activities including soil/ground water sample collection, well installation, soil excavation, installation of remediation systems, and remediation system monitoring. Organized, scheduled and performed field work. Performed waste classification and disposal evaluations. Prepared Phase I/II, PA, soil and ground water sampling and remediation plans and reports. Reviewed analytical data and prepared assisted in preparations of report conclusions and recommendations. Prepared environmental permit applications for ground water, surface water and stormwater discharges, wetlands and stream encroachment projects, and air emissions from remediation system vents. Prepared new project proposals and cost estimates. Corresponded with contractors, clients and government agencies and programs, such as NJDEP, ISRA, BUST, NJPDES; Ohio EPA/BUSTR; Wisconsin EPA and USEPA. Directed corporate laboratory certification program and staff in maintenance of laboratory equipment and regulatory compliance.

1988 to 1990: Environmental Scientist, Dan Raviv Associates, Inc., Millburn, New Jersey. Assisted Project Managers with environmental audits and industrial site evaluations; performed field activities including soil/ground water sample collection, well installation, soil excavation, installation and operation of remediation systems. Conducted Phase I/II environmental assessments, soil and ground water sampling, and prepared reports. Organized and review laboratory analytical data into table. Assisted with preparation of project proposals and cost estimates.

1987 to 1988: Biologist, Laboratory Supervisor, U.S. Testing Company, Inc., Hoboken, New Jersey. Performed EPA Ocean Disposal Program bioassays. Conducted comprehensive bioassay studies evaluating EPA oil dispersant efficacy and toxicity. Performed both acute and chronic bioassay projects in freshwater and marine media for industrial/municipal facilities throughout New Jersey under the NJPDES Permit Program. Designed and constructed bioassay diluter systems, and cultured freshwater, marine and estuarine species used in laboratory testing and research for aquatic and ecological toxicology.

1985 to 1987: Environmental Chemist, U.S. Testing Company, Inc., Hoboken, New Jersey. Performed organic and inorganic chemical analyses for environmental parameters. Routinely conducted wet-chemistry procedures and used instrumentation (I.C.P., I.R., A.A., I.C) for analysis of soil, water and tissue (bio-accumulation) samples using EPA, ASTM and Standard Methods protocols. Analyzed soil and water samples for environmental parameters under the USEPA and NJDEP contract lab programs.

1985: Chemist/Intern, Hackensack Meadowlands Development Commission's Environment Center, East Rutherford, New Jersey. Conducted surface and ground water sampling as part of monitoring program designed to assess the impact of local landfills on the environmental quality of the Hackensack River estuary. Performed chemical and microbiological analyses of surface water, ground water, leachate, and sediments. Initiated and completed research on water and sediment conditions at the Hackensack Meadowlands Sports Complex.

1982 to 1983: Biologist/Consultant, McGuire Aquatic Services, Bozeman, Montana. Completed both field and laboratory work to determine aquatic invertebrate population structure in Missouri River benthos, including invertebrate identification, river sediment biological analysis and fish stomach content analysis.

1979 to 1982: Biologist/Laboratory Technician, Montana State University, Department of Agriculture and Department of Biology, Bozeman, Montana. Performed greenhouse maintenance duties, aquatic invertebrate identification and preparation of laboratory specimens.

## **PUBLICATIONS AND PRESENTATIONS**

Nichols, H.F. III, Lazar B.J., Rabah, N.M., Lippencott, R.J., Hicks, P. and B. Carlson, 2009. Optimization of In-Situ Injection and Bioremediation Design at a Brownfield Site. *10<sup>th</sup> International In-Situ and On-site Bioremediation Symposium*, Battelle, Baltimore, MD. (Accepted for Symposium Proceedings, publication pending).

Lippencott, R. J., 2005. Evaluating Rhizodegradation of Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons in Wetlands Sediment Using *Spartina patens*. *Doctoral Dissertation*, New Jersey Institute of Technology and Rutgers University, Newark, New Jersey.

Lippencott, R. J., 2005. Evaluating Rhizodegradation of Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons in Wetlands Sediment Using *Spartina patens*. Invited Presentation to the Department of Biology Seminar, Rutgers University, Newark, New Jersey.

Lippencott, R. J., 2004. Evaluating Biodegradation of Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons in the Rhizosphere of *Spartina patens*. *Invited Presentation to the Department of Chemistry and Environmental Science Seminar*, New Jersey Institute of Technology, Newark, NJ.

Tepper, B. and R.J. Lippencott, 1988. Cadmium Toxicity to *Mysidopsis bahia* Using Different Diluents. *9<sup>th</sup> Annual Meeting - Reducing Uncertainty in Environmental Risk Assessment*. Society of Environmental Toxicology and Chemistry, Arlington, VA.

Tepper, B., D. Drosdowski and R.J. Lippencott, 1987. No Deposit, No Return Bioassay Diluters. *8<sup>th</sup> Annual Meeting - Environmental Risk: Recognition, Assessment, and Management*. Society of Environmental Toxicology and Chemistry, Pensacola, FL.

Konsevick, E. and R.J. Lippencott, 1985. A Report on the Water Quality and Sediment Conditions of the Sports Complex Lagoon System. *National Science Foundation Presentation*, Hackensack Meadowlands Development Commission - Environment Center, Lyndhurst, NJ.

## **LITIGATION SUPPORT AND EXPERT TESTIMONY**

Testified as Expert Witness for property owner located adjacent to Laidlaw Bus Co., Re Site Plan Approval (Storm Water and Petroleum Storage) before Township of Clinton Planning Board, Hunterdon County, NJ.

Testified as Expert Witness for property owner Re Site Plan Approval (Wetlands Permit) before Mayor and Council, Borough of North Haldon, Passaic County, NJ.

Provided Litigation Support for PCB-contaminated site on behalf of Royce Associates Re NJ Spill Control Act cost recovery action (Site Remediation – Soil and Ground Water), City of Newark, Essex County, NJ.

Deposed as Fact Witness Re Site Remediation Activities for a petro-chemical facility in Bergen County, NJ.