

DOMINIC M. DI TORO

EDWARD C. DAVIS PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING
UNIVERSITY OF DELAWARE

EDUCATION

Manhattan College: B.E.E., Electrical Engineering (with honor), 1963
Princeton University: M.A., Electrical Engineering, 1965
Princeton University: Ph.D., Civil and Geological Engineering, 1967

PROFESSIONAL HISTORY

2003 – Present Edward C. Davis Professor, Civil & Environmental Engineering, Univ. of Delaware
1999 – 2003 Donald J. O'Connor Professor of Environmental Engineering, Manhattan College
1986 – 1999 Research Professor of Environmental Engineering, Manhattan College
1980 – 2006 Principal Consultant, Partner, HydroQual, Inc.
1974 – 1986 Adjunct Associate Research Professor, Environmental Engineering
1969 – 1974 Adjunct Assistant Professor, Environmental Engineering
1969 – 1980 Senior Research Consulting Engineer, Hydrosience, Inc.
1967 – 1969 Research Associate, Environmental Engineering and Science Program

REPRESENTATIVE EXPERIENCE

Dr. Di Toro has specialized in the development and application of mathematical models of the fate and toxicity of pollutants in the water column, sediments, and soils. He has published over one hundred technical papers, as well as Sediment Flux Modeling, published by J. Wiley & Sons. He has participated as Expert Consultant, Principal Investigator, and Project Manager on numerous water quality studies for industry, research foundations, and governmental agencies. Recently his work has focused on the development of water and sediment quality criteria using toxicity models, sediment flux models for nutrients and metals, and integrated hydrodynamic, sediment transport and water quality models. His latest research area is developing mechanistic models of metal and organic chemical partitioning and toxicity that can make predictions from the molecular structure only.

HONORS

Environmental Toxicology and Chemistry Journal Top Ten Paper for 2019.
Association of Environmental Engineering and Science Professors Outstanding Publication Award 2018
Association for Environ. Health and Sciences Foundation, Lifetime Achievement Award 2015
Fellow, Society of Environmental Toxicology. & Chemistry Elected 2014
National Research Council Board on Environmental Studies and Toxicology Appointed 2013
National Academy of Engineering Elected, 2005
American Society of Civil Engineering Simon Freese Award, 2005
Institute of Scientific Information Highly Cited Researcher, Ecology and Environment, 2003
Gordon Conference Chairman (Elected) Environmental Sciences Water, 2002
Society of Environmental Toxicology and Chemistry The Founders Award. Society's highest award – 1997
New York Water Environment Association Kenneth Allen Memorial Award - 1994
Department of the Army Certificate of Achievement - 1991
International Association for Great Lakes Research The Chandler-Misener Award - 1983
American Society of Civil Engineers Wesley W. Horner Award, 1980
International Association for Great Lakes Research, The Chandler-Misener Award - 1978
American Society of Civil Engineers Samuel A. Greely Award - 1974

American Society of Civil Engineers Met Section Prize Paper Award - 1970
NSF Cooperative Fellowship Princeton University - 1963-1966
Institute of Radio Engineers - AIEE Prize Paper Contest - 1963

PROFESSIONAL AFFILIATIONS

American Chemical Society
American Society of Civil Engineers
National Academy of Engineering
Society of Toxicology and Environmental Chemistry

COURSES TAUGHT

Environmental Engineering Thermodynamics
Water Quality Modeling
Water and Sediment Quality Criteria
Mathematical Methods
Applied Environmental Statistics and Data Analysis (with Prof. Dentel)
Engineering Statistics
Simulation Analysis
Special Topics in Water Quality
Advanced Water Quality Modeling
Fate and Effects of Metals in the Environment (with Prof. Allen)

PUBLICATIONS

Books

Di Toro, D.M. Sediment Flux Modeling. J. Wiley and Sons., New York: (2001), 624p.

Edited Books

Paquin, P. R., K. Farley, R. C. Santore, C. D. Kavvas, K. G. Mooney, R. P. Winfield, K. B. Wu, and D. M. Di Toro, eds. (2003). *Metals in Aquatic Systems: A Review of Exposure, Bioaccumulation, and Toxicity Models*, SETAC Press, Pensacola, FL.

Reiley, M. C., W. A. Stubblefield, W. J. Adams, D. M. Di Toro, P. V. Hodson, R. J. Erickson, and E. J. Keating Jr., eds. (2003). *Reevaluation of the State of the Science for Water Quality Criteria Development*, SETAC Press, Pensacola, FL.

Aquatic Toxicity and Water Quality Criteria Models

Boone, K. S., Di Toro D.M. 2019a. "Target Site Model: Application of the Polyparameter Target Lipid Model to Predict Aquatic Organism Acute Toxicity for Various Modes of Action." *Environ. Tox. & Chem* 38 (1): 222–39.

Boone, K. S., Di Toro D.M. 2019b. "Target Site Model: Predicting Mode of Action and Aquatic Organism Acute Toxicity Using Abraham Parameters and Feature-Weighted k-Nearest Neighbors Classification." *Environ. Tox. & Chem.* 38 (2): 375–86.

Marzooghi, S., Finch, B.E., Stubblefield, W.A., Di Toro D.M. 2018. "Predicting Phototoxicity of Alkylated PAHs, Mixtures of PAHs, and Water Accommodated Fractions (WAF) of Neat and Weathered Petroleum with the Phototoxic Target Lipid Model." *Environ. Tox. & Chem* 37 (8): 2165–74.

- McGrath, J.A., Fanelli, C.J., Di Toro D.M., et al., 2018. "Re-Evaluation of Target Lipid Model-Derived HC5 Predictions for Hydrocarbons." *Environ. Tox. & Chem* 37 (6): 1579–93.
- Paquin, P.R., McGrath, J. Fanelli, C.J. and Di Toro D.M. 2018. "The Aquatic Hazard of Hydrocarbon Liquids and Gases and the Modulating Role of Pressure on Dissolved Gas and Oil Toxicity." *Marine Pollution Bulletin* 133 (August): 930–42.
- Redman, A. D., Butler, J.D. Letinski, D. J. Di Toro, D. M. Paumen, L., Parkerton, T.F. 2018. "Technical Basis for Using Passive Sampling as a Biomimetic Extraction Procedure to Assess Bioavailability and Predict Toxicity of Petroleum Substances." *Chemosphere* 199 (May): 585–94.
- Torralba-Sanchez, T.L., Kuo, D.T. F., Allen, H.E., Di Toro D.M. 2017. "Bioconcentration Factors and Plant Water Partition Coefficients of Munitions Compounds in Barley." *Chemosphere* 189 (December): 538–46.
- Torralba-Sanchez, T.L., Liang, Y., and Di Toro D.M. 2017. "Estimating Grass-Soil Bioconcentration of Munitions Compounds from Molecular Structure." *Environ. Sci. & Technol* 51 (19): 11205–14.
- Finch, Bryson E., Solmaz Marzooghi, Dominic M. Di Toro, and William A. Stubblefield. "Evaluation of the Phototoxicity of Unsubstituted and Alkylated Polycyclic Aromatic Hydrocarbons To Mysid Shrimp (*Americamysis Bahia*): Validation of Predictive Models." *Environmental Toxicology and Chemistry* 36, no. 8 (August 2017): 2043–49.
- Finch, Bryson E., Solmaz Marzooghi, Dominic M. Di Toro, and William A. Stubblefield. "Phototoxic Potential of Undispersed and Dispersed Fresh and Weathered Macondo Crude Oils To Gulf of Mexico Marine Organisms." *Environmental Toxicology and Chemistry* 36, 2017: 2640–50.
- Marzooghi, Solmaz, and Dominic M. Di Toro. "A Critical Review of Polycyclic Aromatic Hydrocarbon Phototoxicity Models." *Environmental Toxicology and Chemistry* 36, no. 5 (May 2017): 1138–48
- Marzooghi, Solmaz, Bryson E. Finch, William A. Stubblefield, Olga Dmitrenko, Sharon L. Neal, and Dominic M. Di Toro. "Phototoxic Target Lipid Model of Single Polycyclic Aromatic Hydrocarbons." *Environmental Toxicology and Chemistry* 36, no. 4 (April 2017): 926–37
- Redman AD, Parkerton TF, McGrath JA, Di Toro DM. PETROTOX: An aquatic toxicity model for petroleum substances. *Environmental Toxicology and Chemistry*. 2012;31(11):2498-506.
- Redman, A. D., Mihaich, E., Woodburn, K., Paquin, P., Powell, D., McGrath, J. A., & Di Toro, D. M. (2012). Tissue-based risk assessment of cyclic volatile methyl siloxanes. *Environmental Toxicology and Chemistry*, 31(8), 1911-1919.
- Redman AD, McGrath JA, Stubblefield WA, Maki A, Di Toro DM. Quantifying the concentration of crude oil microdroplets in oil-water preparations. *Environmental Toxicology and Chemistry*. 2012;31(8):1814-22.
- Kipka, U., Di Toro D. M. (2009) Technical basis for polar and nonpolar narcotic chemicals and polycyclic aromatic hydrocarbon criteria. III. A polyparameter model for target lipid partitioning. *Environ. Toxicol. Chem.*, **27**(7), 11429-1438.
- McGrath J. A., Di Toro D. M. (2009) Validation of the target lipid model for toxicity assessment of residual petroleum constituents: Monocyclic and polycyclic aromatic hydrocarbons. *Environ. Toxicol. Chem.*, **28**(6), 1130-1148.
- Mathew R., McGrath J. A., and Di Toro D. M. (2008) Modeling polycyclic aromatic hydrocarbon bioaccumulation and metabolism in time-variable early life-stage exposures. *Environ. Toxicol. Chem.*, **27**(7), 1515-1525.
- Redman A., McGrath J., Febbo E., Parkerton T., Letinski D., Connelly M., Winkelmann D., and Di Toro D. (2007) Application of the target lipid model for deriving predicted no-effect concentrations for wastewater organisms. *Environ. Toxicol. Chem.*, **26**(11), 2317-2331.
- Di Toro, D. M., McGrath, J. A., and Stubblefield, W. A. "Predicting the toxicity of neat and weathered crude oil: Toxic potential and the toxicity of saturated mixtures." *Environ. Toxicol. Chem.*, 26(1) (2007): 24-36.
- McGrath, J., Parkerton, T., Hellweger, F., and Di Toro, D. "Validation of the narcosis target lipid model for petroleum products: Gasoline as a case study." *Environ. Toxicol. Chem.*, 24(9) (2005): 2382-2394.
- McGrath, J., Parkerton, T., and Di Toro, D. "Application of the narcosis target lipid model to algal toxicity and deriving predicted-no-effect concentrations." *Environ. Toxicol. Chem.*, 23(10) (2004): 2503-2517.

- Rader, K. J., Dombrowski, P. M., Farley, K. J., Mahony, J. D., and Di Toro, D. M. "The effect of thioarsenite formation on arsenic(III) toxicity." Environ. Toxicol. Chem., 23(7) (2004): 1649-1654.
- Paquin, P. R., J. W. Gorsuch, S. Apte, G. E. Batley, K.C. Bowles, P.G.C. Campbell, C. G. Delos, D. M. Di Toro, R. L. Dwyer, F. Galvez, R. W. Gensemer, G. G. Goss, C. Hogstrand, C. R. Janssen, J. C. McGeer, R. B. Naddy, R. C. Playle, R. C. Santore, U. Schneider, W. A. Stubblefield, Wood, C. M., and Wu, K. B. "The biotic ligand model: a historical overview." Comp. Biochem. Physiology, 133 (2002): 3-35.
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- Paquin, P. R., Zoltay, V., Winfield, R. P., Wu, K. B., Mathew, R., Santore, R. C., and Di Toro, D. M. "Extension of the biotic ligand model of acute toxicity to a physiologically-based model of the survival time of rainbow trout (*Oncorhynchus mykiss*) exposed to silver." Comp. Biochem. Physiology C, 133 (1-2) (2002): 305-343.
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- Santore, R.C., D.M. Di Toro, P.R. Paquin, H.E. Allen, and J.S. Meyer. "A biotic ligand model of the acute toxicity of metals. II. Application to acute copper toxicity in freshwater fish and daphnia." Environ. Tox. Chem. 20(10) (2001): 2397-2402.
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- Di Toro, D. M., Allen, H. E., Bergman, H. L., Meyer, J. S., Paquin, P. R., Santore, R. C., Wu, K. B., and Paquin, P. R. *The Biotic Ligand Model*. New York, NY. 10016-2401: International Copper Association, Ltd. Environmental Program. (2000).
- Di Toro, D.M., J.A. McGrath, and D.J. Hansen. "Technical Basis for Narcotic Chemicals and Polycyclic Aromatic Hydrocarbon Criteria. I. Water and Tissue." Environ Toxicol Chem 19(8) (2000): 1951-1970.
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Sediment and Soil Toxicity and Criteria Models

- Lin, Y., Allen, H.E., Di Toro D.M. 2018. "Validation of Cu Toxicity to Barley Root Elongation in Soil with a Terrestrial Biotic Ligand Model Developed from Sand Culture." *Ecotoxicology & Environ. Safety* 148 (February): 336-45.
- Lin, Y. Q.; Di Toro, D. M.; Allen, H. E., (2015) Development and validation of a terrestrial biotic ligand model for Ni toxicity to barley root elongation for non-calcareous soils. *Environ. Pollution* 2015, 202, 41-49.
- Burgess, R. M., Berry, W. J., Mount, D. R., & Di Toro, D. M. (2013). Mechanistic sediment quality guidelines based on contaminant bioavailability: Equilibrium partitioning sediment benchmarks. *Environmental Toxicology and Chemistry*, 32(1), 102-114.
- Di Toro, D. M. (2013). The interplay of environmental toxicology and chemistry in the development of sediment quality criteria. *Environmental Toxicology and Chemistry*, 32(1), 7-9.
- Allen H. E., Lin Y. Q., and Di Toro D. M. (2008) Ecotoxicity of Ni in soil. Mineralogical Magazine 72(1), 367-371.
- Thakali, S., Allen, H. E., Di Toro, D. M., Ponizovsky, A. A., Rooney, C. P., Zhao, F.-J., and McGrath, S. P. "A terrestrial biotic ligand model I: Development and application to Cu and Ni toxicities to barley root elongation in soils." Environ. Sci. Tech., 40(22) (2006): 7085-7093.

- Thakali, S., Allen, H. E., Di Toro, D. M., Ponizovsky, A. A., Rooney, C. P., Zhao, F.-J., and McGrath, S. P. "A terrestrial biotic ligand model 2. Application to Ni and Cu toxicities to plants, invertebrates, and microbes in soil." Environ. Sci. Technol., 40 (22) (2006): 7094-7100.
- Di Toro, D. M., McGrath, J. M., Hansen, D. J., Berry, W. J., Paquin, P. R., Mathew, R., Wu, K. B., and Santore, R. C. "Predicting Sediment Metal Toxicity Using a Sediment Biotic Ligand Model: Methodology and Initial Application." Environ. Toxicol. Chem., 24(10) (2005): 2410-2427.
- Di Toro, D. M., Berry, W. J., Burgess, R. M., Mount, D. R., O'Connor, T. P., and Swartz, R. C. "Predictive ability of sediment quality guidelines derived using equilibrium partitioning." In R. J. Wenning, G. E. Batley, C. E. Ingersoll, & D. W. Moore (Eds.), *Use of sediment quality guidelines and related tools for the assessment of contaminated sediments* Pensicola, FL: Society of Environmental Toxicology and Chemistry. (2005).
- Di Toro, D.M. and J.A. McGrath. "Technical Basis for Narcotic Chemicals and Polycyclic Aromatic Hydrocarbon Criteria. II. Mixtures and Sediments." Environ. Toxicol. Chem. 19(8) (2000): 1971-1982.
- Ankley, G.T., D.M. Di Toro, D.J. Hansen, and W.J. Berry. "Assessing the ecological risk of metals in sediments." Environ. Toxicol. Chem. 15(12) (1996): 2053-2055.
- Ankley, G. T., Berry, W. J., Di Toro, D. M., Hansen, D. J., Hoke, R. A., Mount, D. R., Reiley, M. C., Swartz, R. C., and Zarba, C. S. "Use of equilibrium partitioning to establish sediment quality criteria for nonionic chemicals: A reply to Iannuzzi et al." Environ. Toxicol. Chem., 15(7) (1996): 1019-1024
- Ankley, G.T., D.M. Di Toro, D.J. Hansen, and W.J. Berry. "Technical basis and proposal for deriving sediment quality criteria for metals." Environ. Toxicol. Chem. 15(12) (1996): 2056-2066.
- Berry, W.J., D.J. Hansen, J.D. Mahony, D.L. Robson, D.M. Di Toro, B.P. Shipley, B. Rogers, J.M. Corbin, and W.S. Boothman. "Predicting the toxicity of metals-spiked laboratory sediments using acid volatile sulfide and interstitial water normalizations." Environ. Toxicol. Chem. 15(12) (1996): 2067-2079.
- Hansen, D.J., W.J. Berry, J.D. Mahony, W.S. Boothman, D.M. Di Toro, D.L. Robson, G.T. Ankley, D. Ma, Q. Yan, and C.E. Pesch. "Predicting the toxicity of metals-contaminated field sediments using interstitial concentrations of metal and acid volatile sulfide normalizations." Environ. Toxicol. Chem. 15(12) (1996): 2080-2094.
- Hansen, D.J., J.D. Mahony, W.J. Berry, S.J. Benyi, J.M. Corbin, S.D. Pratt, D.M. Di Toro, and M.B. Able. "Chronic effect of cadmium in sediments on colonization by benthic marine organisms: An evaluation of the role of interstitial cadmium and acid volatile sulfide in biological availability." Environ. Toxicol. Chem. 15(12) (1996): 2126-2137.
- Ankley, G.T., N.A. Thomas, D.M. Di Toro, D.J. Hansen, J.D. Mahony, W.J. Berry, R.C. Swartz, R.A. Hoke, A.W. Garrison, H.E. Allen, and C.S. Zarba. "Assessing potential bioavailability of metals in sediments: A proposed approach." Environmental Management 18(3) (1994): 331-337.
- Di Toro, D. M., J D. Mahony, D J. Hansen, K J. Scott, A R. Carlson, and G T. Ankley. "Acid volatile sulfide predicts the acute toxicity of cadmium and nickel in sediments." Environ. Sci. Tech. 26(1) (1992): 96-101.
- Di Toro, D. M., C S Zarba, D J. Hansen, W J Berry, R C. Swartz, C E. Cowan, S P. Pavlou, H E. Allen, N A Thomas, and P R Paquin. "Technical Basis for the Equilibrium Partitioning Method for Establishing Sediment Quality Criteria." Environ. Toxicol. Chem. 10(12) (1991): 1541-1583.
- Di Toro, D. M., J D. Mahony, D J. Hansen, K J. Scott, M B. Hicks, S M. Mayr, and M S. Redmond. "Toxicity of Cadmium in Sediments: The Role of Acid Volatile Sulfide." Environ. Toxicol. Chem. 9(12) (1990): 1487-1502.
- Di Toro, D. M., A Review of the Data Supporting the Equilibrium Partitioning Approach to Establishing Sediment Quality Criteria. In *Contaminated Marine Sediments - Assessments and Remediation*. Marine Board. National Research Council (pp. 100-114). Wash. DC: National Academy Press. (1989).

Computational Chemistry Models

- Murillo-Gelvez, Jimmy, Kevin P. Hickey, Dominic M. Di Toro, Herbert E. Allen, Richard F. Carbonaro, and Pei C. Chiu. "Experimental Validation of Hydrogen Atom Transfer Gibbs Free Energy as a Predictor of Nitroaromatic Reduction Rate Constants." *Environmental Science & Technology* 53, no. 10 (May 21, 2019): 5816–27.
- Liang, Y., Torralba-Sanchez, T.L. and Di Toro D.M. 2018. "Estimating System Parameters for Solvent-Water and Plant Cuticle-Water Using Quantum Chemically Estimated Abraham Solute Parameters." *Environ. Science-Processes & Impacts* 20 (5): 813–21.
- Liang, Yuzhen, Ruichang Xiong, Stanley I. Sandler, and Dominic M. Di Toro. "Quantum Chemically Estimated Abraham Solute Parameters Using Multiple Solvent-Water Partition Coefficients and Molecular Polarizability." *Environmental Science & Technology* 51, no. 17 (September 5, 2017): 9887–98.
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- Di Toro, D. M. (2013). The interplay of environmental toxicology and chemistry in the development of sediment quality criteria. *Environmental Toxicology and Chemistry*, 32(1), 7-9.
- Kuo, D. T. F., & Di Toro, D. M. (2013). Biotransformation model of neutral and weakly polar organic compounds in fish incorporating internal partitioning. *Environmental Toxicology and Chemistry*, 32 (8), 1873-1881.
- Kuo, D. T. F., & Di Toro, D. M. (2013). A reductionist mechanistic model for bioconcentration of neutral and weakly polar organic compounds in fish. *Environmental Toxicology and Chemistry*, 32(9), 2089-2099.
- Atalay, Y. B., Di Toro, D. M., & Carbonaro, R. F. (2013). Estimation of stability constants for metal-ligand complexes containing neutral nitrogen donor atoms with applications to natural organic matter. *Geochimica Et Cosmochimica Acta*, 122, 464-477.
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- Kipka, U., and D. M. Di Toro. "A Linear Solvation Energy Relationship Model of Organic Chemical Partitioning to Dissolved Organic Carbon." *Environmental Toxicology and Chemistry* 30, no. 9 (2011): 2023-29.
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- Phillips K. L., Di Toro D. M., Sandler S.I., (2011) Prediction of Soil Sorption Coefficients using Model Molecular Structures for Organic Matter and the Quantum Mechanical COSMO-SAC Model. *Environ. Sci. Technol.*, 45(3), 1021-1027.
- Atalay YB, Carbonaro RF, Di Toro DM. (2009) Distribution of proton dissociation constants for model humic and fulvic acid molecules. *Environ. Sci. Technol.*, 43(10):3626-3631.
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Carbonaro R. and Di Toro D.M. (2007) Linear free energy relationships for metal–ligand complexation: Monodentate binding to negatively-charged oxygen donor atoms. Geochimi. Cosmochim. Acta **71**, 3958–3968.

Sorption Models

Davis, C. W.; Di Toro, D. M., (2015) Modeling Nonlinear Adsorption to Carbon with a Single Chemical Parameter: A Lognormal Langmuir Isotherm. Environ. Sci. & Technol., 49, (13), 7810-7817.

Davis, C. W.; Di Toro, D. M., (2015) Modeling Nonlinear Adsorption with a Single Chemical Parameter: Predicting Chemical Median Langmuir Binding Constants. Environ. Sci. & Technol 49, (13), 7818-7824.

Greene, R. W., Di Toro, D. M., Farley, K. J., Phillips, K. L., & Tomey, C. (2013). Modeling Water Column Partitioning of Polychlorinated Biphenyls to Natural Organic Matter and Black Carbon. Environmental Science & Technology, 47(12), 6408-6414.

Shi, Z. Q., Allen, H. E., Di Toro, D. M., Lee, S. Z., & Harsh, J. B. (2013). Predicting Pb-II adsorption on soils: the roles of soil organic matter, cation competition and iron (hydr)oxides. Environmental Chemistry, 10(6), 465-474.

Shi, Z. Q., Di Toro, D. M., Allen, H. E., & Sparks, D. L. (2013). A General Model for Kinetics of Heavy Metal Adsorption and Desorption on Soils. Environmental Science & Technology, 47(8), 3761-3767.

Ponizovsky A. A., Thakali S., Allen H. E., Di Toro D. M., Ackerman A. J., and Metzler D. M. (2008) Nickel partitioning in acid soils at low moisture content. Geoderma **145**(1-2), 69-76.

Shi Z. Q., Di Toro D. M., Allen H. E., and Sparks D. L. (2008) A WHAM-based kinetics model for Zn adsorption and desorption to soils. Environ. Sci. Technol. **42**(15), 5630-5636.

Ponizovsky, A. A., Thakali, S., Allen, H. E., Di Toro, D. M., and Ackerman, A. J. “Effect of soil properties on copper release in soil solutions at low moisture content.” Environ. Tox. Chem., 25(3) (2006): 671-682.

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Allen, H. E., Z. Shi, S. Thakali, A.A. Ponizovsky, Metzler, D. M., and Di Toro, D.M. (2003). “Partitioning of metal between soil and soil solution: a key process controlling the risk of metals to soil organisms.” In G.E. Lagos, A. E. M. Warner, and M. Sanchez (Eds.), Proceedings of the Copper 2003 - Cobre 2003 International Conference Santiago, Chile: Canadian Institute of Mining, Metallurgy and Petroleum.

Mahony, J.D., D.M. Di Toro, A Gonzalez, M. Curto, M. Dilg, L.D. De Rosa, and L.A. Sparrow. “Partitioning of metals to sediment organic carbon.” Environ. Toxicol. Chem. 15(12) (1996): 2187-2197.

Hassan, S.M., A.W. Garrison, H.E. Allen, D.M. Di Toro, and G.T. Ankley. “Estimation of partition coefficients for five trace metals in sandy sediments and application to sediment quality criteria.” Environ. Tox. Chem. 15(12) (1996): 2198-2208.

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McCarthy, J. F., Jimenez, B. D., Southworth, G. R., Di Toro, D. M., and M. C. Black. “Anomalous binding of organic contaminants may be artifactual due to radiochemical impurities.” Wat. Res. 20(10) (1986): 1251-1254.

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Statistical Models

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RESEARCH PROJECTS

University of Delaware

- Enhanced Evaporative Flux to Remediate Brine-Contaminated Soil Paul T. Imhoff, Herbert E. Allen, Richard Carbonaro, and Dominic M. DiToro (ExxonMobil)
- Measuring and Predicting the Natural and Enhanced Rate and Capacity of Abiotic Reduction of Munition Constituents Strategic Environmental Res & Dev Prog (SERDP)
- Applying Quantitative Structure Activity Relationships (QSARs) to Guide Selection of Candidate Propellant Formulations Aerojet Rocketdyne
- Developing Quantum Chemical and Polyparameter Models for Predicting Environmentally Significant Parameters for New Munition Compounds SERDP
- Can TDML Models Reproduce the Nutrient Loading-Hypoxia Relationship? Water Environmental Research Federation (WERF)
- Developing a Partitioning Model using the Abraham Polyparameter Model HydroQual, Inc.
- NASA EPSCoR Research Project: Building and Enhancing a Competitive and Sustainable Remote Sensing Infrastructure for Critical Zone Studies and Cutting Edge Research NASA via UD-CMES
- CZO: Spatial and Temporal Integration of Carbon and Mineral Fluxes: A Whole Watershed Approach to Quantifying Anthropogenic Modification of Critical Zone Carbon Sequestration National Science Foundation.
- Collaborative Research: Process-Based Statistical Interpolation Methods for Improved Analysis of WATERS Test-bed Observations and Models National Science Foundation (Johns Hopkins University)
- Improving Understanding of the Fate and Transport of Munitions Constituents to Enhance Sustainability of Operational Ranges SERDP via Department of Defense
- Effect of Natural Organic Matter on Bioavailability and Mobilization of Metals National Institute of Environmental Health and Safety (New York University)
- Concept Development Toward a Collaborative Large-Scale Engineering National Science Foundation
- Modeling Hypoxia and Ecological Responses to Climate and Nutrients National Oceanic and Atmospheric Administration (CRC-University of Maryland)
- Delaware Research Infrastructure Improvement Program State of Delaware, EPSCoR Seed Grant Program

Integrated Water Quality Monitoring, Habitat Mapping, and Fish Tracking with an Automated Underwater Vehicle
National Oceanic and Atmospheric Administration

A Prototype System for Multi-disciplinary Shared Infrastructure? Chesapeake Bay Environmental Observatory (CBEO): Concept Development Toward a Collaborative Large Scale Engineering Analysis Network for Environmental Research (CLEANER) with Focus on the Chesapeake Bay
National Science Foundation

CHRP: Linking Water Quality Models with Individual-based Models to Investigate Impacts of Diel-cycling Hypoxia on Nursery Habitat Quality for Estuarine Dependent Fishes
National Oceanic and Atmospheric Administration

Toxicity and Mobilization of Metals and Metal Mixtures in Sediments
National Institute of Environmental Health and Safety

Developing a Unit World Model for Metals in Streams and Rivers
Center for the Study of Metals in the Environment. EPA Center

Collaborative Research: Concept Development Toward a Collaborative Large Scale Engineering Analysis Network for Environmental Research (CLEANER) with Focus on the Chesapeake Bay
National Science Foundation

Mechanisms of Genetic and Epigenetic Susceptibility to Superfund Chemicals
NIEHS Superfund Hazardous Substances Research Program (New York University)

Developing a Unit World Model for Metals in Aquatic Environments
Center for the Study of Metals in the Environment. EPA Center

Developing a Model to Predict the Persistence of Metals in Aquatic Environments
Center for the Study of Metals in the Environment. EPA Center

Quantitative Structure Activity Relationships for Toxicity and Fate Parameters of Metal and Metal Compounds
Center for the Study of Metals in the Environment. EPA Center

Manhattan College

Water-Sediment Model and Criteria for Arsenic and Chrome
NIEHS Superfund Hazardous Substances Research Program (New York University, Manhattan College, Rutgers University)

Development of fate and transport models for exposure assessment
Center for the Study of Metals in the Environment. EPA Center

Oxidation of Sediment Bound Silver Sulfide and Application of Sediment Flux Model to Silver
Silver Coalition – Photographic Imaging Manufacturing Association

A Modeling and Experimental Investigation of Metal Release from Contaminated Sediments: The Effects of Metal Sulfide Oxidation and Resuspension.
EPA STAR Grant

Bioavailability, Trophic Transfer and Fate of Pollutants in the Aquatic Environment
EPA Cooperative Agreement

Experimental Determination and Modeling of Flux of Copper from Sediments
International Copper Association

Investigating the Toxicity of Silver in Sediments
Silver Coalition

Application of a Modern Eutrophication Model to the MERL Mesocosm Experiments
National Science Foundation

Predicting Toxic Heavy Metal Adsorption and Desorption from Contaminated Soils and Suspensions
NIEHS Superfund Hazardous Substances Research Program

HydroQual: 1995 - Present

Development of a Contaminant Fate, Transport, and Toxicity Model for New York Harbor
Hudson River Foundation

Investigation of the Toxicity of Weathered and Non-weathered Oil
ExxonMobil Corporation, USA

Analysis of the Persistence of Metals in Aquatic Systems
Kennecott Copper Company

Review of Nutrient Criteria
Association of Municipal Sewerage Agencies

Development of a Biotic Ligand Model for Silver
Water Environment Research Foundation

Development of Biotic Ligand Model
EPA Office of Water

Technical Support Document of Sediment Quality Criteria
U.S. EPA, Criteria and Standards Division

Development of Sediment Quality Criteria for PAH Mixtures
U.S. EPA, Criteria and Standards Division

Sediment Quality Criteria for PAHs using Narcosis Theory
U.S. EPA, Criteria and Standards Division

Impact of Chromium Contaminated Sediments in Tannery Bay
Cypress AMAX

Long-Range Transport And Deposition: The Role Of Henry's Law Constant
Dow Corning Chemical Company

Review of a Model of the Lagoon of Venice
Delft Hydraulics Laboratory

Silver Risk Assessment
Eastman Kodak Company

Analysis of Cadmium in the Sediments of the Neponset Reservoir
Foxboro Co.

Biotic Ligand Model Review for EPA Science Advisory Board
EPA Office of Water

Development of a New York Harbor Eutrophication Model
New York Department of Environmental Protection

Development of a Biotic Ligand Model for Copper Toxicity
International Copper Association

Sediment Criteria for Zinc: Application to Risk Assessment
International Lead Zinc Research Association

Upper Mississippi River Eutrophication Study - Development of Coupled Eutrophication - Sediment
Transport Model
Metropolitan Council Wastewater Services

Development of a Eutrophication Model for the Croton Reservoir Filtration Study.
Metcalf and Eddy - Hazen and Sawyer

Investigation of the Impact of the Boston Harbor Outfall. Development of a Eutrophication Model
Massachusetts Water Resources Agency

Fate and Transport of Mine Tailings and Copper from a Copper Mine
Freeport – McMoRan

Model of Calcium Carbonate Precipitation in Onondaga Lake
AlliedSignal Corp.

Evaluation of a PCB Model for Green Bay
State of Wisconsin Department of Environmental Quality

Development of a Wetlands Water Quality Model of the Everglades
South Florida Water Management District
Development of a Sediment Flux Model for Iron and Manganese
U.S. Army Corps of Engineers-Waterways Experiment Station
Development of a Model of Bivalves in Chesapeake Bay
U.S. Army Corps of Engineers-Waterways Experiment Station

Selected Projects – pre 1995

Chesapeake Bay Water Quality Model - Development of Sediment Flux Model
U.S. Army Corps of Engineers-Waterways Experiment Station U.S. EPA Chesapeake Bay Program
Upper Mississippi River Eutrophication Study - Development of Coupled Eutrophication –
Sediment Transport Model
Metropolitan Council Wastewater Services
Development of a Wetlands Water Quality Model of the Everglades
South Florida Water Management District
Development of a Dissolved Oxygen Eutrophication Model of New York New Jersey Harbor (HEM)
New York City Department of Environmental Protection, Bureau of Environmental Engineering
NYNJ Toxic Metal Wasteload Allocation Model
U.S. EPA, Region II
Long Island Sound Eutrophication Study - Development of a Three Dimensional Eutrophication –
Dissolved Oxygen Model
U.S. EPA Regions I and II
Urban Stormwater Manual - Statistical Models for Stormwater Treatment Systems
U.S. EPA, Office of Water
PCB Fate and Transport in Watts Bar Reservoir
McKenna & Cuneo, Washington, D.C. (representing Union Carbide)
Toxicity Modeling Feasibility Study, Naugatuck River
U.S. EPA, Monitoring and Data Support Division
Evaluate Suitability of Toxic Criteria Procedure for Complex Wastewater Discharges in the Naugatuck
River
U.S. EPA, Office of Water, Office of Water Regulations and Standards
Development of Sediment Quality Criteria for Metals
U.S. EPA, Office of Water, Health and Ecological Criteria Division, Office of Science and
Technology
Determination of Water-Sediment Partition Coefficients for Priority Heavy Metals
U.S. EPA, Environmental Research Laboratory
Metals Sediment Quality Criteria Methodology Development
U.S. EPA, Criteria and Standards Division
Development of Interim Sediment Quality Criteria
U.S. EPA, Criteria and Standards Division
Technical Guidelines Supporting Establishment of Sediment Quality Criteria
U.S. EPA, Office of Water, Health and Ecological Criteria Division,
Office of Science and Technology
Sediment Quality Criteria For Five Nonionic Organic Chemicals
U.S. EPA, Office of Water, Health and Ecological Criteria Division, Office of Science and
Technology
SQC Science Advisory Board Briefing Document

U.S. EPA, Criteria and Standards Division
Sediment Criteria Workshops
U.S. EPA, Criteria and Standards Division
Waukegan Harbor PCB Project
U.S. EPA, Region V

PROFESSIONAL ACTIVITIES

Academic Year 2017 - 2018

Presentations

Society of Environmental Toxicology and Chemistry (SETAC) North America 38th Annual Meeting
12–16 November 2017 | Minneapolis, Minnesota

Predicting the Rate of Abiotic Reduction of Munitions Constituents Using the Reaction Energy of Hydrogen Atom Addition D.M. Di Toro, H.E. Allen, P.C. Chiu, University of Delaware Civil and Environmental Engineering; R.F. Carbonaro, Mutch Associates, LLC Civil and Environmental Engineering

Invited Presentation

A 50-Year Retrospective of Scientific Contributions of the Duluth USEPA Water Lab to Environmental Toxicology and Chemistry

Predicting Toxicity from Chemical Structure: The Narcosis Story D.M. Di Toro, University of Delaware Civil and Environmental Engineering

SETAC Platform Co-Author

Predicting Non-linear Adsorption of Ionogenic Species to Organic Carbon Using Quantum-chemically Estimated Abraham pp-LFER Solute Parameters C.W. Davis, University of Minnesota Civil, Environmental, & GeoEngineering; D.M. Di Toro, University of Delaware Civil and Environmental Engineering

SETAC Posters

Predicting Solvent-water Partitioning of Ionogenic Compounds: A Combined pp-LFER Quantum Chemical Modeling Approach for Environmental Application C.W. Davis, University of Minnesota Civil, Environmental, & Geo-Engineering; D.M. Di Toro, University of Delaware Civil and Environmental Engineering

Academic Year 2016-2017

Presentations

Society of Environmental Toxicology and Chemistry (SETAC) 7th SETAC World Congress
North America 37th Annual Meeting Orlando, Florida 6–10 November 2016

SETAC Platform

D.M. Di Toro Deriving Water Quality Criteria Using Mode of Action Models: ppLFER Target Lipid Model of PAH and Narcotic Toxicity as an Example

D.M. Di Toro, S. Marzooghi, Phototoxic Target Lipid Model (PTLM) of Single PAHs and Mixtures

SETAC Posters

Refinement and Validation of Target Lipid Model-Derived HC5 to Conform to REACH Guidelines J. McGrath, C. Fanelli, D.M. Di Toro, T. Parkerton

American Chemical Society (ACS) Philadelphia, PA August 21-25-2016
Presentations (2)

D.M. Di Toro, H.E. Allen Reversible resistant model of adsorption desorption as a data analysis tool.

D.M. Di Toro, Y. Liang, T. Torralba-Sanchez Predicting environmental partitioning via quantum chemistry, Abraham parameters and pp-LFERs.

Invited Participant

Fourth Aquatic Toxicology Symposium Program Bar Harbor, Maine June 7-9 2016

Academic Year 2015-2016

Presentations

Society of Environmental Toxicology and Chemistry North America 36th Annual Meeting Salt Lake City, Utah | 1-5 November 2015

Photo-enhanced Toxicity of Fresh and Weathered Macondo Crude Oils to Marine Organisms Exposed to Natural and Artificial Sunlight B. Finch, Oregon State Univ / Environmental and Molecular Toxicology; S. Marzooghi, D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering; B.A. Stubblefield, Oregon State Univ Environmental and Molecular Toxicology

Development of linear free energy relationships for estimating metal binding to sulfur functional groups present in natural organic matter R.F. Carbonaro, Mutch Associates, LLC Civil and Environmental Engineering; K.J. Rader, Mutch Associates, LLC; D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Evolution of Bioavailability-Based Risk Assessment: How Was It Done and Why Was It Successful? D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Predicting Abraham Parameters From Molecular Structure Using a Quantum Chemical Method D.M. Di Toro, Y.E. Liang, T.L. Torralba-Sanchez, Univ of Delaware Dept of Civil Environmental Engineering

Academic Year 2014-2015

Seminar

Modern Models for Predicting Partitioning, Bioconcentration, and Toxicity of Organic Chemicals The End of the Age of Octanol Seminar Civil & Environmental Engineering Department Rensselaer Polytechnic Institute December 10th 2014

Society of Environmental Toxicology and Chemistry (SETAC) 35th SETAC Annual Meeting Vancouver, British Columbia 9-13 November 2014

Predicting the Partitioning of Contaminants and Munitions Components to Soil, Organisms and Plants from Molecular Structure D.M. Di Toro, A. Miglino, Univ of Delaware Civil and Environmental Engineering;

Prediction of Adsorption and Hysteretic Desorption Isotherms for Munition Constituents on Soils A. Miglino, R. Gonzalez, H.E. Allen, D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Fate of Munitions Constituents in the Environment by the Influence of the Cesium Charge Sites in Soils R. Gonzalez, H.E. Allen, D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Fate and Transport of RDX and TNT in Soils – Initial Validation of Predictive Model M. Simini, R. Checkai, US Army Edgewood Chemical Biological Ctr Environmental Toxicology; R. Gonzalez, Univ of Delaware Civil Environmental Engineering; D.T. Kuo, City Univ of Hong Kong Civil and Architectural Engineering; H.E. Allen, D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Bioconcentration of energetic compounds in earthworms using aqueous exposure media R.G. Kuperman, Edgewood Chemical Biological Center; M. Simini, R. Checkai, US Army Edgewood Chemical Biological Ctr Environmental Toxicology; S. Dodard, M. Sarrazin, National Research Council of Canada; J. Hawari, Biotechnology Research Inst; L. Paquet, National Research Council Canada; G.I. Sunahara, McGill Univ NRCBiotechnology Research Inst; D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Importance of internal partitioning in predicting biotransformation behavior of organic chemicals D.T. Kuo, City Univ of Hong Kong Civil and Architectural Engineering; D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Academic Year 2013 – 2014

Invited lecture

Predicting the Partitioning of Contaminants and Munitions Components to Soil, Organisms and Plants from Molecular Structure for use in Risk Assessment Joint Army-Navy-NASA-Air Force (JANNAF) Meeting Charleston Convention Center Charleston, South Carolina May 19-23, 2014

Academic Year 2012 - 2013

Presentations

Society of Environmental Toxicology and Chemistry (SETAC) North America 34th Annual Meeting Nashville, Tennessee 17–21 November 2013

SETAC Platform

Predicting the Partitioning of Contaminants and Munitions Components to Soil, Organisms and Plants from Molecular Structure D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering; A. Miglino, Dept of Civil Environmental Engineering; T.L. Torralba- Sanchez, Univ of Delaware

SETAC Posters

Prediction of Adsorption and Hysteretic Desorption Isotherms for Munition Constituents on Soils A. Miglino, R. Gonzalez, H.E. Allen, D.M. Di Toro,

Fate of Munitions Constituents in the Environment by the Influence of the Cesium Charge Sites in Soils R. Gonzalez, H.E. Allen, D.M. Di Toro,

Fate and Transport of RDX and TNT in Soils – Initial Validation of Predictive Model M. Simini, R. Checkai, US Army Edgewood Chemical Biological Ctr Environmental Toxicology; R. Gonzalez, Univ of Delaware Civil Environmental Engineering; D.T. Kuo, City Univ of Hong Kong Civil and Architectural Engineering; H.E. Allen, D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Bioconcentration of energetic compounds in earthworms using aqueous exposure media R.G. Kuperman, Edgewood Chemical Biological Center; M. Simini, R. Checkai, US Army Edgewood

Chemical Biological Ctr Environmental Toxicology; S. Dodard, M. Sarrazin, National Research Council of Canada; J. Hawari, Biotechnology Research Inst; L. Paquet, National Research Council Canada; G.I. Sunahara, McGill Univ NRCBiotechnology Research Inst; D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Importance of internal partitioning in predicting biotransformation behavior of organic chemicals D.T. Kuo, City Univ of Hong Kong Civil and Architectural Engineering; D.M. Di Toro, Univ of Delaware Civil and Environmental Engineering

Academic Year 2011 - 2012

Invited lecture

Do mechanistic and/or empirical criteria predict toxicity in field collected sediments? An analysis of existing data sets Dominic M. Di Toro 2012 Aquatic Toxicology Symposium (ATS) Holden Village, Washington June 4 through June 8.

Seminars

Predicting Chemical Partitioning and Toxicity Using Molecular Interaction Models: The End of the Age of Octanol Engineering & Environmental Science Graduate Students' Distinguished Speaker Series University of Iowa March 29, 2012

Predicting Chemical Partitioning and Toxicity Using Molecular Interaction Models: The End of the Age of Octanol University of Houston Department of Civil and Environmental Engineering's Beyer Distinguished Lecture Series April 18, 2012

ACS Paper

Predicting chemical partitioning to natural organic matter using organic matter molecular structure GEOC: Division of Geochemistry, Session: Computational Chemistry for Geochemistry. 243rd ACS National Meeting & Exposition - March 25 - March 29, 2012, San Diego, California

SETAC Papers

Modeling Adsorption and Desorption Partitioning of Munitions Constituents to Soil D. Di Toro

Do mechanistic and/or empirical criteria predict toxicity in field collected sediments? An analysis of existing data sets D. Di Toro

Assessment of the chemistry and acute toxicity of fresh and weathered MC252 oils: The toxic unit approach J. McGrath, HDR Inc; L. Faksness, B. Hansen, D. Altin, T. Nordtug, SINTEF; O. Pelz, British Petroleum; D. Di Toro

Sorption of Munitions Constituents by Soil R. Gonzalez, University of Delaware Department of Civil and Environmental Engineering; D.M. Di Toro, University of Delaware Dept. of Civil & Environmental Engineering; H.E Allen, University of Delaware Dept. Civil & Environmental Engineering.

SETAC Poster

Extension of the Target Lipid Model to soils and sediments using Equilibrium Partitioning A. Redman, Hydroqual, Exxon Mobil Biomedical Sciences; M. Paumen, ExxonMobil Petroleum and Chemicals; T. Parkerton, ExxonMobil Biomedical Sciences, Inc; J. McGrath, HDR; **D. Di Toro**, University of Delaware Dept. Civil & Environmental Engineering.

Academic Year 2010 – 2011

Invited Lectures and Seminars, Meetings and Workshops

Modern Water Quality and Sediment Criteria: Toxicological and Chemical Interactions 2011 Maine Water Conference, Augusta, Maine, March 2011 (Invited)

Predicting Chemical Partitioning to Natural Organic Matter Using Organic Matter Molecular Structure Colby College Chemistry Department Seminar, Waterville ME, March 2011 (Invited)

Presented Papers

Effect of Kinetics on the Resistance to Desorption of Munitions Constituents (MC) from Soil R. Gonzalez, K. Michelson, D.M. Di Toro, H.E. Allen, SETAC November 2011

A Site Transformation Model of Adsorption-Desorption Hysteresis D.M. Di Toro, SETAC November 2011

Comparison of Models for Metal Partitioning to Natural Organic Matter: Chemically-based Model and WHAM VI Y.B. Atalay, R.F. Carbonaro, D.M. Di Toro, SETAC November 2011

Linear Free Energy Relationships for Describing Metal Binding to Nitrogen Functional Groups R.F. Carbonaro, Y.B. Atalay, D.M. Di Toro SETAC November 2011

Estimating Abraham's Hydrogen Bonding Acidity Parameter Using Quantum Chemistry O. Rahaman, D.J. Doren, D.M. Di Toro

Modeling Bioconcentration Factor (BCF) of Many Organic Compounds in Fishes D.T. Kuo, D.M. Di Toro SETAC November 2011

Determining Diffusion Kinetics of Lithium Bromide Tracer into Nitrocellulose as a Distinguishing-Model for Nitroglycerin and 2,4-Dinitrotoluene M. Simini, R. Checkai, M. Minyard, R.G. Kuperman, H.E. Allen, D.M. Di Toro SETAC November 2011

A Kinetic Model for Munition Constituent Adsorption and Desorption A. Miglino, R. Gonzalez, K. Michelson, H. Allen, D.M. Di Toro, SETAC November 2011

Academic Year 2009 - 2010

Sabbatical

EAWAG, Swiss Federal Institute of Aquatic Science and Technology

Invited Lectures and Seminars, Meetings and Workshops

Predicting Chemical Partitioning to Natural Organic Matter Using Organic Matter Molecular Structure EAWAG Seminar
October 1, 2010

Modeling Sediment-Water Column Dissolved and Particulate Chemical Exchange:
A Simple Model with an Analytical Solution and Surprising Explanatory Power
EAWAG Seminar

Perspectives on Environmental Chemistry and Toxicology: The Past and the Future
EAWAG UChem-UTox
9 November 2010

On the Chemical Properties of Natural Organic Matter: Insights from Linear Solvation Free Energy Models
ETH Institute of Biogeochemistry and Pollutant Dynamics
Seminar
November 10, 2010

Modeling Sediment-Water Column Fluxes of Nutrients, Oxygen, and Methane
EAWAG Kastanienbaum Seminar
November 8 2010

NRC Committee
Evaluation of Chesapeake Bay Program Implementation for Nutrient Reduction to Improve Water Quality
National Research Council, National Academies, Baltimore, MD
March 24-26, 2010 (Invited)

PROFESSIONAL ACTIVITIES

Academic Year 2008 - 2009

Invited Lectures and Seminars, Meetings and Workshops

Metals in the Human Environment Strategic Network (MITHE-SN)
2009 Annual Research Symposium
Gatineau (Québec)
January 22-23, 2009
Member Science Advisory Panel (Invited)

Sediment Biotic Ligand Model Predicts No Toxicity Variation due to Hardness: Why? Availability and
Mobility of Metals in Sediments Session
American Chemical Society
Washington DC
August 16-20, 2009.
(Invited)

EPA Science Advisory Board
Testimony
Review of Empirical Approaches for Nutrient Criteria Derivation
Science Advisory Board
Ecological Processes and Effects Committee
Public Meeting – Washington DC
September 9-11, 2009

ECETOC (European Centre for Ecotoxicology and Toxicology of Chemicals)
Workshop: Significance of Bound Residues in Environmental Risk Assessment
Brussels (Belgium)
October 14-15 2009
(Invited)

SETAC North America 30th Annual National Meeting
Society of Environmental Toxicology and Chemistry
New Orleans, LA
19-23 Nov. 2009

Strategic Environmental Research and Development Program (SERDP) Department of Defense's (DoD)
environmental science and technology program

Partners in Environmental Technology Technical Symposium and Workshop
Washington, DC
December 1-3, 2009

NRC Committee

Evaluation of Chesapeake Bay Program Implementation for Nutrient Reduction to Improve Water Quality
National Research Council
National Academies
Washington D.C.
December 16-17, 2009
(Invited)

University, Department, College Committees

Member: Middle States Self-Study Committee
Member: CIEG Environmental Group Search Committee
Member: P&T Subcommittee
Member: Sea Level Rise Committee (DENIN)
Member: Computer Research Advisory Committee
Member: Named Professors
Associate Director: Center for the Study of Metals in the Environment
Member: DENIN Council of Fellows

Presented Papers Posters Co-authored

Combining Polyparameter and Quantum Chemical Models to Estimate Partition Coefficients.
D. M. Di Toro; U. Kipka
Modern Perspectives on the Equilibrium Partitioning Model (EqP) of Sediment Toxicity and Bioavailability
D. M. Di Toro
Equilibrium Partitioning: What's it Good For and How Do You Know if it Works?
D. M. Di Toro
A Chemically Based Model for Metal Partitioning to Organic Matter
Y. B. Atalay; K. J. Rader; R. F. Carbonaro; D. M. Di Toro
Performance Assessment of Chemical Speciation Models
K. J. Rader; R. F. Carbonaro; K. J. Farley; D. M. Di Toro

PROFESSIONAL ACTIVITIES

Academic Year 2007 - 2008

Invited Lectures and Seminars, Meetings and Workshops

Metals in the Human Environment Strategic Network (MITHE-SN) 2008 Annual Research Symposium
Gatineau (Québec)
January 22-23, 2008
Member Science Advisory Panel (Invited)
National Institute for Environmental Sciences (NIEHS) Workshop
Superfund Basic Research Program (SRBP)
Assessing Bioavailability as a Determinant of Pollutant Exposure: Building a Multidisciplinary Paradigm for the 21st Century and Beyond
Tampa, Florida February 19-21, 2008
Keynote Paper (Invited) - Uncertainties in Environmental Control of Bioavailability:
Environmental Control of Metal Bioavailability
WATERS Network Community Workshop
EPA Sponsored Workshop

Arlington, VA
 March 24th-25th, 2008
 Discussion Leader: Environmental Engineering (Invited)
 Chesapeake Modeling Symposium (Invited)
 May 12-14 2008
 Annapolis, MD
 NIEHS – EPA Sponsored SBRP Webinar
 28 May 2008
 Series name: Bioavailability – Metals, Organics, and Use at Hazardous Waste Sites
 Environmental Control of Metal Bioavailability
 Gordon Research Conferences
 Environmental Sciences: Water
 June 22-27, 2008
 Discussion Leader (Invited)
 Metal speciation modeling and bioinorganic chemistry
 Strategic Environmental Research and Development Program (SERDP) Department of Defense's (DoD)
 environmental science and technology program - Workshop on Research and Development Needs for
 Understanding and Assessing the Bioavailability of Contaminants in Soils and Sediments
 August 20-21, 2008
 Annapolis, Maryland
 Invited Keynote Paper -Bioavailability Issues in Sediments
 Society of Environmental Toxicology and Chemistry
 SETAC 29th Annual National Meeting
 Tampa FL.
 16-20 Nov. 2008

University, Department, College Committees

Member: Dean's Search Committee
 Member: CIEG Coastal Group Search Committee
 Member: COE Strategic Planning Committee
 Member: Cluster Computer Committee
 Member: Computer Research Advisory Committee
 Associate Director: Center for the Study of Metals in the Environment
 Leadership Team: Center for Critical Zone Research
 Leadership Team: UD Institute for the Environment

Presented Papers/Posters Co-authored

A Framework for Establishing Soil Ecotoxicity Guidelines for Complex Petroleum Substances Using
 Target Lipid and Equilibrium Partitioning Models. .
 A. Redman; J. McGrath; T. Parkerton; D. Di Toro
 A Probabilistic Unit World Model for Metal Fate and Toxicity in Rivers.
 K. J. Rader; R. F. Carbonaro; K. J. Farley; D. M. Di Toro
 Validation of the "Unit World" Model for Metals in Lakes.
 K. J. Farley; A. N. Miglino; K. J. Rader; R. F. Carbonaro; D. M. Di Toro
 Kinetics and Modeling of Nickel Sulfide Oxidation.
 B. P. McGuire; K. J. Farley; D. M. Di Toro; R. F. Carbonaro
 Predicting Ecotoxicity of Nickel in Soil.
 L. Yanqing; H. E. Allen; D. M. Di Toro

Academic Year 2006 - 2007

Invited Lectures, Seminars, Meetings and Workshops

- Snoeyink Distinguished Lecture Series
University of Illinois
April 24-27, 2007
- US EPA Metals Fate and Transport Modeling Workshop Engineering
Region 8 Office, Denver, CO
February 13-14, 2007
- Ecological Impacts of Hypoxia on Living Resources Meeting
Sponsored by NCCOSCSCOR, GLERL, NESDIS, and the Northern Gulf Cooperative Institute
Bay St. Louis, Mississippi
March 26-29, 2007
- Modern Water, Sediment and Soil Quality Criteria for Metals: Toxicological and Chemical Interactions
University of Maryland
Department of Chemistry
March 30, 2007
- Establishing a Research Agenda for Assessing the Bioavailability of Wastewater-Derived Organic Nitrogen
in Treatment Systems and Receiving Waters
Water Environment Research Federation
Ramada Inn-BWI, Baltimore, Maryland
September 27 and 28, 2007
- Hudson/Delaware Chapter of SETAC: 2007 Fall Workshop
Environmental Risk Assessment of Metals and Metalloids
October 26, 2007
- Society of Environmental Toxicology and Chemistry National Meeting
11-15 November 2007
- NOAA CSCOR CHRP Project Workshop
Modeling Hypoxia and Ecological Responses to Climate and Nutrients
UMCES Horn Point Lab, Cambridge, MD USA
3-4 December 2007

Presented Papers/Posters Co-authored

- Henry's law constants for PCBs - Experimental and theoretical model disagreements: A quantum chemical analysis.
Di Toro, D.M., Phillips, K., Sandler, S.I.
- A WHAM based kinetics model for Zn adsorption and desorption reactions with soils.
Di Toro, D.M., Shi, Z., Allen, H.E., Sparks, D.L.
- Quantifying the concentration of crude oil microdroplets in oil-water preparations.
Redman, A., McGrath, J., Stubblefield, W.; Maki, A., Di Toro, D.
- Development of linear free energy relationships for estimating monodentate and bidentate metal binding to functional groups present in natural organic matter.
Carbonaro, R.F., Di Toro, D.M.
- Investigating solid-solution metal partitioning in surface waters using chemical speciation software.
Rader, K.J., Di Toro, D.M.
- Tier 1 'unit world' model for metals in lakes.
Farley, K.J., Carbonaro, R.F., Rader, K.J., Di Toro, D.M.
- Transport and Fate of Metals in Surface Waters and Sediments: The Role of Partitioning and Precipitation
Dominic M. Di Toro, Kevin J. Rader

Academic Year 2005-2006

Invited Lectures, Workshops, and Seminars

“Environmental Toxicology and Chemistry in 25 Years: Predictions and Computational Toxicology and Chemistry”

Invited Lecture, SETAC – Vision of Future Session, Baltimore, MA, November 14, 2005

“Metals in the Environment: Speciation, Geochemistry and Bioavailability A Retrospective and Prospective View”

Invited Keynote Lecture: MIT(H)E-RN Symposium, SETAC, Montreal, Canada, November 2006

“Modern Water and Sediment Quality Criteria: Toxicological and Chemical Interactions”

Superfund Basic Research Program, National Institute of Environmental Health Science

Bioavailability Workshop, Newark NJ, November 9-10, 2005

“Overview and Application of Modern Toxicological Models: Past, Present and Future”

Federal Contaminated Sites National Workshop

Crowne Plaza Hotel, Ottawa, Ontario, Canada, March 7-10, 2006

“Hydrological, Biogeochemical and Water Quality Modeling - Are We Data Limited?”

NSF Environmental Observatories NEON, OOI, WATERS Network Modelling Workshop

16-17 May, 2006, Tucson, Arizona

“Perspective on CCZR Research Areas”

Center for Critical Zone Research Workshop

Delaware Biotechnical Institute, Newark DE. October 10, 2006

“Sediment Flux Modeling”

Institute of Ecosystem Studies, Millbrook, New York

Presented by Damian C. Brady for Dominic Di Toro, November 28-30, 2006

Expert Panels and Review Committees

Committee on Sediment Dredging at Superfund Megasites

National Research Council, March 2006, Washington, D. C.

Committee on Sediment Dredging at Superfund Megasites

National Research Council, July 2006, Woods Hole, M. A.

Committee on Sediment Dredging at Superfund Megasites

National Research Council, September 2006, Washington, D. C.

Committee on Sediment Dredging at Superfund Megasites

National Research Council, October 2006, Washington, D. C.

Metals in the Human Environment (MITHE-RN) Symposium

Expert Advisory Panel, January 2006

Short Courses

“Introduction to Toxic Contaminants”

Sediment Quality Criteria -Narcosis and PAH Mixtures

Sediment Quality Criteria - Metals

Sediment Quality Criteria - Equilibrium Partitioning

Manhattan College 51th Annual Summer Institute, June 2006

Papers Presented

“Bioavailability of Metals and Organics in the Water Column and Sediment Ecotoxicology: A Hudson River Case Study”

Department of Environmental Medicine, New York University, October 6, 2005

“Predicting and Comparing the Narcotic Potential of Neat and Weathered Crude Oil: Is A New Paradigm Needed?”

SETAC, Baltimore, MD, November 16, 2005

“Modern Sediment Quality Criteria for Metals and Applications to Superfund Sites”

Annual Meeting of the NIEHS Superfund Basic Research Program

New York Academy of Medicine, January 12-13, 2006

“Developing a Unit World Model for Metals in Streams and Rivers”

Presented Papers/Posters Co-authored

- “Unit World Model Tier 1 Model for Metals in Lakes: Users Guide No”
Farley, K. J., Carbonaro, R. F., and Di Toro, D. M. (2005)
Manhattan College, Riverdale NY.
- “Investigation of Metal-ligand Interactions of Model Ligands for Modeling Metal-organic Carbon Binding”
Carbonaro, R., and Di Toro, D.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Evaluation of critical metal loads using the unit world model for lakes”
Farley, K.J., Carbonaro, R.P., Di Toro, D.M.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “A Time-Variable Model of PAH Bioaccumulation and Metabolism”
Mathew, R., McGrath, J. and Di Toro, D.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Development of a physiologically-based pharmacokinetic (PBPK) model for metal bioaccumulation by bivalves”
Paquin, P.R., Mathew, R., Salazar, M., Salazar, S., Damiani, D., Dwyer, R., Farley, K., Santore, R., and Di Toro, D.M.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Mechanistic fate and effects model to predict the aquatic toxicity of complex petroleum products in laboratory tests”
Redman, A., McGrath, J., Parkerton, T., and Di Toro, D.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Development of terrestrial biotic ligand models for copper and nickel toxicity in soils: Application for plant, invertebrate, and microbial tests”
Thakali, S., Allen, H.E., Di Toro, D.M., Ponizovsky, A.A., Rooney, C.P., Zhao, F.J., McGrath, S.P., Criel, P., Janssen, C., Oorts, K., and Smolders, E.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Application of the narcosis target lipid model to wastewater treatment plant microorganisms”
Redman, A., McGrath, J., Parkerton, T., and Di Toro, D.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “An experimental and modeling investigation of ron(II)-catalyzed arsenic(III) oxidation”
Rader, K.J., Bisceglia, K.J., Farley, K.J., Mahony, J.D., Carbonaro, R.F., and Di Toro, D.M.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005
- “Predicting the acute and chronic effects of PAHs using the target lipid model of narcotic toxicity”
McGrath, J. and Di Toro, D.
SETAC 26th Annual Meeting in North America Baltimore, Maryland Nov. 2005

Academic Year 2004-2005

Invited Lectures and Seminars

Gordon Conference, Environmental Sciences: Water
Sorption Phenomena, Chair and Discussion Leader (Invited), June 27 - July 2, 2004

Workshops

Multi-Investigator Discussion of National Observing System Opportunities for the Chesapeake Bay Basin & Neighbors, CLEARER Meeting
University of Maryland Baltimore County, September 23, 2004

Mercury Fate and Transport Models: State of the Art, Development Needs, and Application to TMDL

Development
E.I. Du Pont Corp., Clayton Hall Conference Center, University of Delaware, January 4-5, 2005

Water Quality Modeling for National-Scale Economic Benefit Assessment
Office of Water, U.S. Environmental Protection Agency, EPA Water Quality Modeling
Workshop, Wyndham Washington, DC Hotel, Washington DC, 9-10 February 2005

The scientific reliability of the Acid Volatile Sulfide Simultaneously Extracted Metal (AVSSEM) to assess
metals bioavailability and sediment toxicity.
Sediment Management Work Group, University of Maryland University Conference Center
Adelphi, Maryland, April 11, 2005

Third NSF Sponsored CyberInfrastructure Conference
Drexel University, Philadelphia, PA, 22-23 April, 2005

Potential Value of a Network for Environmental Research: “Cyberinfrastructure and all that...”
Workshop for the Conceptual Design of a Network for Environmental
Research (CLEANER) on the Chesapeake Bay, Annapolis, MD, June 13-14, 2005

CSME External Advisory Committee Meeting: Status of Research Program
Department of Civil and Environmental Engineering, University of Delaware, May 17, 2005

Workshop for the Conceptual Design of a Network for Environmental Research (CLEANER) on the
Chesapeake Bay
Chesapeake Bay Foundation Philip Merrill Environmental Center, Annapolis, MD 21403, 9-10
August 2005

Expert Panels and Review Committees

National Institutes of Environmental Health Sciences
Proposal Review Panel, RTP Raleigh Durham NC, 4-7 Oct. 2004

Short Courses

“Introduction to Toxic Contaminants”
Sediment Quality Criteria - Narcosis and PAH Mixtures
Sediment Quality Criteria - Metals
Sediment Quality Criteria - Equilibrium Partitioning
Manhattan College 50th Annual Summer Institute, June 15-17, 2005

Papers Presented

“Toxicology, Chemistry and Theory: The Past and the Future”
Invited Kenote Address - Perspectives Session, SETAC 2004
November 17, 2004

“Predicting Sediment Metal Toxicity Using a Sediment Biotic Ligand Model”
Platform Presentation, SETAC 2004

“Modern Water and Sediment Quality Criteria for Toxic Metals: The Biotic Ligand Model and its
Applications”
Department of Environmental Medicine, New York University School of Medicine and
Nelson Institute of Environmental Medicine, January 14, 2005

“Modern Eutrophication and Sediment Flux Models: Site Specific Regressions or Generally Applicable
Theories?”
Department of Civil Engineering, The City College of New York, March 31, 2005

“Development of Water and Sediment Quality Criteria”
Manhattan College Summer Institute 50th Anniversary Symposium, Manhattan College
June 17, 2005

“Modern Water Quality and Sediment Criteria: Toxicological and Chemical Interactions”
Simon W. Freese Environmental Engineering Award and Lecture, Watershed Management
Conference, Williamsburg VA, July 19, 2005

Presented Papers/Posters Co-authored

- “Predictive ability of sediment quality guidelines derived using equilibrium partitioning”
Di Toro, D. M., Berry, W. J., Burgess, R. M., Mount, D. R., O'Connor, T. P., and Swartz, R. C.
Environmental Toxicology and Chemistry. (2004).
- “Modeling effects of pH and dissolved organic matter on kinetics of Cu and Zn desorption from soils”
Shi ZQ, Di Toro DM, Ponizovsky AA, and Allen HE, Abstracts of Papers of the American
Chemical Society 2004
- “Predicting sediment metal toxicity using a sediment biotic ligand model”
Di Toro, D.M., McGrath, J.A., Hansen, D.J., Berry, W.J., Paquin, P.R., Mathew, R., Wu, K.B.
Santore, R.C.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Sulfide, or everything I need to know I could have learned in kindergarten”
Paquin, P.R., Brix, K.V., Gorsuch, J.W., Mathew, R., Santore, R.C., Wu, K.B. Di Toro, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Bioaccumulation of PCB homologs in New York-New Jersey Harbor worms”
Farley, K.J.1, Miller, R.L. Saha, S. Douglas, W.S. Di Toro, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Development of a physiologically-based pharmacokinetic (PBPK) model of metal bioaccumulation by
bivalves”
Paquin, P.R., Mathew, R., Damiani, D.R., Dwyer, R.L., Farley, K.J., Santore, R.C., Di Toro, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Development of a unit world model for metals in aquatic environments”
Farley, K.J., Costanzo, R., Carbonaro, R., Di Toro, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Copper and nickel release to soil solutions at field moisture capacity”
Ponizovsky, A.A., Thakali, S., Allen, H.E., Di Toro, D.M., Metzler, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Fe(II)-catalyzed oxidation of As(III) in sediment columns”
Rader, K.J.1, Bisceglia, K.J., Farley, K.J., Carbonaro, R., Mahony, J.D., Di Toro, D.M.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004
- “Terrestrial biotic ligand model (TBLM) to predict copper toxicity in soil systems”
Thakali, S., Ponizovsky, A., Metzler, D., Allen, H.E., Di Toro, D.M., Rooney, C., Zhao, F-J.,
McGrath, S.
4th SETAC World Congress/25th Annual Meeting in North America Portland, Oregon Nov. 2004

Academic Year 2003-2004

Invited Lectures and Seminars

- “Bioavailability of Metals and Organics in the Water Column and Sediment”
Ecotoxicology: A Hudson River Case Study
Department of Environmental Medicine, New York University, October 2003
- “Understanding Bioavailability and Mechanisms of Toxicity: Impacting Risk Assessment and Criteria
Development”
Invited Keynote Address, Workshop: Internal Exposure- Linking Bioavailability to Effects
International Conference Center Stefano Franscini, Monte Vérita, Ascona, Switzerland
August 22 - 27, 2004

Workshops

- “Overview of Environmental Ecological Modeling and its Relationship to Criteria Development”
Hudson-Delaware Chapter of SETAC Fall Workshop, Environmental Ecological Modeling and its
Relationship to Criteria Development, September 26, 2003
- “Exposure Assessment: The Unit World Approach”

EPA Stakeholders Meeting, Papers Addressing Scientific Issues in the Risk Assessment on Metals
Washington DC, October 29, 2003
“A (Very) Short History of the *BLM*”
Water Environment Research Foundation Multi-Metal Meeting, Miami, FL, October 22–24, 2003
NSF Sponsored CLEANER Workshop
Rensselaer Polytechnic Institute, June 14-15 2004

Expert Panels and Review Committees

Nickel Environmental Risk Assessment Research Peer-Review Panel (NERAP)
Nickel Producers Environmental Research Association
Arona, Italy
December 19, 2003
Lead Risk Assessment Meeting
Environmental and Waste Risk Assessments of Lead Metal, Lead Oxides and Lead Stabilizers
Peer Review Panel Member
Rothamsted Experimental Station, Harpenden, UK., 5-6 April 2004
Metals In The Environment Research Network (MITE-RN) Annual Research Symposium
Chaudière B & C of Chateau Cartier Resort, 1170 Aylmer Road, Aylmer (Quebec)
Member: Expert Advisory Panel, May 11-13, 2004

Short Courses

“Introduction and Overview”
“EqP Sediment Quality Guidelines Criteria”
SETAC Annual Meeting, Austin, TX, Short Course: Characterization and Remediation of
Contaminated Sediments, November 9, 2003
“Introduction to Toxic Contaminants”
Sediment Quality Criteria -Narcosis and PAH Mixtures
Sediment Quality Criteria - Metals
Sediment Quality Criteria - Equilibrium Partitioning
Manhattan College 49th Annual Summer Institute, June, 2004

Papers Presented

“Computed and Observed Redox Chemistry of Methyl Arsenic Species”
SETAC Annual Meeting, Austin, TX, November 12, 2003.
“HydrodynamicChemicalBiologicalWater Quality Models”
The State of the Art in Practice – Are We Data Limited?, CLEANER Path Forward Meeting
University of Iowa -- February 9-10, 2004
“Modeling Eutrophication in Estuaries: The Modern Conceptual and Computational Approaches and
Applications”
Seminar, Department of Civil, Architectural, & Environmental Engineering, Drexel University
March 2, 2004
“Theoretical and Computational Environmental Science and Engineering: An Emerging Discipline”
Named Professor Lecture, University of Delaware, March 10, 2004

Presented PapersPosters Co-authored

“Effect of thioarsenite formation on As(III) toxicity.”
Rader KJ, Dombrowski PM, Farley KJ, Mahony JD, and Di Toro DM
American Chemical Society National Meeting
New York NY, September 7, 2003
“Computed and Observed Redox Chemistry of Methyl Arsenic Species”

- P. M. Dombrowski , D. M. Di Toro, K. J. Farley , J. D. Mahony, and L. Wei
 American Chemical Society National Meeting
 New York NY, September 7, 2003
- “Arsenic Transformation by Algae: The Role of Phosphorus Luxury Uptake”
 F. L. Hellweger, K. J. Farley, U. Lall, and D. M. Di Toro
 American Chemical Society National Meeting
 New York NY, September 7, 2003
- “Application of the Narcosis Target Lipid Model to Complex Mixtures Using Gasoline as a Case Study”
 J. A. McGrath, F. L. Hellweger, T. F. Parkerton, and D. M. Di Toro
 SETAC Annual Meeting, Austin, TX, November 12, 2003.
 November 10, 2003
- “Site-Specific Water Quality Criteria for Copper-Validation and Application of the BLM”
 R. Mathew, R. C. Santore, P. R. Paquin, K. J. Heim, D. P. Galya, and D. M. Di Toro
 SETAC Annual Meeting, Austin, TX, November 12, 2003.
 November 11, 2003
- “Metals Bioaccumulation and Effects: Consideration of Intracellular Speciation”
 P. R. Paquin, D. Damiani, K. J. Farley, R. Mathew, R. C. Santore, D. M. Di Toro
 SETAC Annual Meeting, Austin, TX, November 12, 2003.
 November 11, 2003
- Platform Paper # 436, “Computed and Observed Redox Chemistry of Methyl Arsenic Species”
 P. Dombrowski, D. M. Di Toro, K. J. Farley, W. Long, and J. D. Mahony
 SETAC Annual Meeting, Austin, TX, November 12, 2003.
 November 12, 2003

Academic Year 2002-2003

Invited Lectures and Seminars

- “Modern Eutrophication and Sediment Flux Models: Site Specific Regressions or Generally Applicable Theories?”
 Lewes Invitational Seminar Series
 College of Marine Studies, University of Delaware, March 2003

Workshops

- Metal Unit World Workshop
 Center for the Study of Metals in the Environment, University of Delaware, Newark, Delaware
 February 3–5, 2003
- “Effect QSAR and the Narcosis Lipid Model”
 CONCAWE Workshop, Simplifying the Environmental Risk Assessment of Complex Substances
 RIVM, Bilthoven, NL, April 4, 2003
- “Assessing Persistence”
 Hazard Identification Approach for Metals and Metal Substances: A SETAC-Sponsored
 Workshop, SETAC Technical Workshop on Hazard Identification for Metals, May 3–8, 2003
- “Introduction to Water Quality and TMDLs”
 “Introduction to Eutrophication and Nutrient Criteria”
 “Sediment Flux Modeling”
 “Introduction to Toxic Contaminants”
 “Probability and Probabilistic Dilution Model”
 “Water Quality Criteria”
 “Sediment Quality Criteria for Toxic Organic Contaminants and Metals”
 48th Institute in Water Pollution Control, Manhattan College, Bronx NY, June 9–13, 2003
- “High Resolution Large Scale HydrodynamicChemicalBiologicalWater Quality Models: The State of the Art in Practice”
 Frontiers in Assessment Methods for the Environment (FAME), NSF Sponsored Workshop

University of Minnesota, August 10–13, 2003

Expert Panels and Review Committees

Lead Risk Assessment Scientific Review Panel (Environmental)

Lead Development Association International

London, UK

February 13–14, 2003

Metals in the Environment – Research Network (MITE-RN)

Expert Advisory Panel

Ottawa, Canada

February 24–26, 2003

Presented Papers/Posters Co-authored

“Partitioning of metal between soil and soil solution: a key process controlling the risk of metals to soil organisms”

Allen, H.E., Z. Shi, S. Thakali, A.A. Ponizovsky, D.M. Metzler, and D.M. Di Toro (2003).

Proceedings of the Copper 2003 - Cobre 2003 International Conference. Santiago, Chile,

Canadian Institute of Mining, Metallurgy and Petroleum.

Academic Year 2001-2002

Invited Lectures and Seminars

“The Biotic Ligand Model”

International Copper Association Conference.

Woods Hole Oceanographic Institution. Woods Hole, MA. July 2001

“Numerical Water Quality Standards”

Association of Metropolitan Sewerage Agencies (AMSA) Developments in Water & Wastewater

Law. Savannah GA November 2001

“Modern Water Quality and Sediment Criteria: Toxicological Interactions”

Environmental Sciences Department. Rutgers University, October 2001

“Modern Water and Sediment Quality Criteria: Toxicological and Chemical Interactions - How Much Is Too Much”

Department of Earth and Environmental Engineering. Columbia University, November 2001

“TMDL Listings and Modern Water Quality Criteria”

Metropolitan Water Reclamation District of Greater Chicago. Cicero IL, March 2002.

Workshops

“Evaluating persistence: suspended solids and sediments”

Workshop on Metals Persistence, Bioaccumulation and Toxicity in Aquatic Systems.

University of Quebec, CA. March 2002

Short Courses

“Understanding Total Maximum Daily Loads, Tools and Techniques for Achieving Reasonable

TMDL-Based Limits” D. Katz, D. M. Di Toro, T. W. Gallagher, A. Thuman,

Government Institutes Division, ABS Group Inc. Washington, DC, October 2001

“Introduction to Toxic Contaminants”

Sediment Quality Criteria - Narcosis and PAH Mixtures

Sediment Quality Criteria - Metals

Papers Presented

“The Intrinsic Toxicity of Narcotic Chemicals and PAHs in Pure Phases and Mixtures”
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001

Presented Papers Posters Co-authored

- “Alternative Approaches for Modeling the Physiological Response of Aquatic Organisms to Acute Metal Toxicity”
P. R. Paquin, V. Zoltay, K.B. Wu, V. Navab, R. Mathew, R. C. Santore, and D. M. Di Toro,
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “Predicting the Effects of Weathering on Crude Oil Using Narcosis Theory: Case Studies”
J. A. McGrath, F. L. Hellweger, W. Stubblefield, D. M. Di Toro,
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “An Application of the Biotic Ligand Model (BLM) Framework for Cadmium”
K.B. Wu, V. Navab, R. C. Santore, P. R. Paquin, D. M. Di Toro,
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “The Partitioning of Silver at Picomolar Concentrations to Humic Material”
J. Mahony, D. M. Di Toro, T. Shadi, K. Rader
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “An Alternative Approach to PBT for Assessing Hazard of Metals and Metal Compounds”
W. Adams, K. Brix, D. M. Di Toro, P. R. Paquin, H. Allen, P. Campbell, D. DeForest, A. Green
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “Arsenic Fate and Transport Modeling in Lakes: Approach and Preliminary Results”
F. L. Hellweger, K. Farley, U. Lall, D. M. Di Toro,
Arsenic in Drinking Water - An International Conference at Columbia University. November,
2001
- “Estimating the Competition of Other Metals to the Binding of Copper to NOM”
R. Mathew, R. C. Santore, P. R. Paquin, D. M. Di Toro, J. Mitchell
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “Application of the Biotic Ligand Model to Acute Metal Toxicity for Aquatic Organisms”
R. C. Santore, R. Mathew, V. Navab, V. Zoltay, P. R. Paquin, K.B. Wu, D. M. Di Toro,
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “Dissolution, Weathering and Toxicity of Exxon Valdez Crude Oil”
F. L. Hellweger, J. A. McGrath, W. Stubblefield, D. M. Di Toro
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001
- “The Chemical Immobilization of Silver in Sediments when Acid Volatile Sulfide is not Present”
J. Mahony, D. M. Di Toro, T. Shadi, K. Rader, P. Dombrowski
SETAC 22nd Annual Meeting, Baltimore MD. Nov. 2001

Academic Year 2000-2001

Invited Lectures and Seminars

“Review and Comparison of Existing and Developing Standards Criteria Screening Guidelines for MGP Sites”

- Electric Power Research Institute (EPRI) Conference
Jacksonville FL, October 2000
- “Theoretical Approaches to Sediment Quality Guidelines Development and their Applications”
A Short Course on the Collection, Analysis, and Interpretation of Sediment Quality Data
Southern California Coastal Water Research Project (SCCWRP)
Long Beach, CA. October 2000
- “Reflections on the History of SETAC. Virtues and Faults. Sins of Omission, Sins of Commission”
Plenary Lecture.
Society of Environmental Toxicology and Chemistry (SETAC)
21st Annual Meeting, Nashville, TN November 2000
- “The Chesapeake Bay Eutrophication Model”
Johns Hopkins University, Department of Geography and Environmental Engineering
February 2001
- “Modern Water Quality Criteria in the TMDL Modeling Process” Keynote Speaker, TMDL Science Issues Conference.
Water Environment Federation and ASIWPCA
St. Louis MO, March 2001
- “Rational Criteria and Remediation”
Keynote Speaker, 33rd Mid-Atlantic Industrial and Hazardous Waste Conference
Manhattan College, Riverdale NY June 2001

Workshops

- “Current Structure of the BLM Model”
The Biotic Ligand Model (BLM): Current Status and Future Directions
Colloquium sponsored by the Electric Power Research Institute (EPRI)
January 2001, Wash. DC

Short Courses

- The Safe Drinking Water Act & Clean Water Act:
1. Understanding the Basics of How Water Quality Standards Are Developed
 2. Wet Weather and Nutrients: Special Concerns for Special Problems
- The Association of Metropolitan Sewerage Agencies and the Association of Metropolitan Water Agencies (AMSA)
Phoenix, AZ. November 2000
- Advanced Study Institute on
Recent Developments in Coastal Eutrophication Research: Prediction,
Decision Support Systems, and Management
1. Modern Eutrophication Models
 2. Sediment Flux Modeling
- Supported by the Croucher Foundation
The University of Hong Kong, Hong Kong. February 2001
- Manhattan College 47th Institute in Water Pollution Control. Water Quality Modeling. A
Computer-Based Workshop with Applications to TMDLs. June 2001

Papers Presented

- “Sediment Toxicity Prediction”

Conference on Dredged Material Management: Options and Environmental Considerations
Massachusetts Institute of Technology , Cambridge, MA December 3-6, 2000
“Determining Site-Specific Water Quality Criteria for Copper”
WERF 2001 Subscriber Meeting
Washington DC, April 2001

Panel Member

Expert Advisory Panel
Canadian Network of Toxicology Centre
Metals in the Environment Research Program (MITE-RN) March, 2001

Academic Year 1999-2000

Invited Lectures and Seminars

“Modeling Contaminant Fate in Aquatic Systems in the New Millennium”
Invited Paper: Gordon Conference, Environmental Sciences: Water, June 2000
“Modeling the Environmental Impacts of Copper Mining in Indonesia”
Department of Civil and Environmental Engineering
University of Delaware, March 2000

Workshops

“Bioavailability of Organic Chemicals and Metals in the Water Column and in Sediments”
Experts Workshop on Review of the State of the Science, PBT Concepts and Metals and Metal
Compounds. US EPA and International Council of Metals in the Environment (ICME), January,
2000 Arlington VA

Short Courses

Manhattan College 46th Institute in Water Pollution Control. Water Quality Modeling. A
Computer-Based Workshop . June 2000

Papers Presented

“Narcosis and PAH Sediment Criteria”
Electric Power Research Institute (EPRI) Conference, New Orleans, September 1999
“A Mass Balance Model for Use in Evaluating Exposure Levels and Effects of Metals
Downstream of Point Source Discharges”, Society of Environmental Toxicology and Chemistry
(SETAC)
20th Annual Meeting, Phil. PA November 1999
“Long-Range Transport and Deposition: The Role of Henry’s Law Constant”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Mechanism of hydrogen sulfide oxidation I. Methodology”
American Chemical Society National Meeting,
Computational Methods in Environmental Chemistry
Division of Chemistry in Computers, Division of Geochemistry

San Francisco, CA March 2000
“A Sediment Flux Model for Manganese”
American Chemical Society National Meeting, Division of Environmental Chemistry.
Chemical Speciation and Reactivity in Water Chemistry and Water Technology: A Symposium in
Honor of James J. Morgan. Washington DC, August 2000

Presented Papers Co-authored

“MARS: Model for the Assessment and Remediation of Sediments”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999, 1999
“Extension of the Biotic Ligand Model of Acute Toxicity of Copper and Silver to Invertebrates”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Mechanism of hydrogen sulfide oxidation II. Application”
American Chemical Society National Meeting, San Francisco, CA
Computational Methods in Environmental Chemistry
Division of Chemistry in Computers, Division of Geochemistry, March 2000

Posters Co-authored

“Predicting the Toxicity of Metals in Sediments”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Defining total PAH concentrations in Field Collected sediments”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Orthogonal Distance Regression: An Alternative to Ordinary Least Squares.”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Assessing the Importance of Environmental Ligands in Determining Metal Speciation and Bioavailability”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999
“Sediment Transport Modeling in Green Bay: A precursor to Addressing PCB Fate and Transport”
Society of Environmental Toxicology and Chemistry (SETAC)
20th Annual Meeting, Phil. PA November 1999

Panel Member

Mercury Source-Receptor Relationships Expert Panel
Sponsored by EPRI. Madison WI, May 2000
Expert Review Panel: Channel Deepening Project. Modeling Review.
Port of New York and New Jersey Authority

Academic Year 1998-1999

Invited Lectures and Seminars

“PAH Sediment Quality Criteria: Narcosis Theory and EPA Guidelines”

PSE&G. Newark, NJ. Sept. 1998
Debate: "Equilibrium Partitioning vs. Empirically Based Criteria"
SETAC Conference Charlotte, NC. Nov. 1998
"The Biotic Ligand Model and its Applicability to Water Quality Criteria"
EPA Science Advisory Board: Wash. DC, April 1999

Workshops

Hudson River Foundation
CARP Workshop. NYC. Oct. 1998
EPA Sponsored Workshop: Dissolved Oxygen Criteria.
Annapolis, MD. Nov. 1998
Hudson River Foundation
CARP Workshop. NYC. Dec. 1998
Silver Water and Sediment Criteria Workshop.
Kodak. Rochester, NY. May 1999

Short Courses

Manhattan College 45th Institute in Water Pollution Control. Water Quality Modeling. A
Computer-Based Workshop. June 1999

Papers Presented

"PAH Mixture Criteria and the Narcosis Model"
SETAC Regional Meeting. Presented Paper Newark, NJ. Sept. 1998
"Biotic Ligand Model and Silver Water Quality Criteria"
SETAC Conference Charlotte, NC. Nov. 1998
"Metals Criteria and Environmental Impacts"
International Corrosion Conference Galveston TX, Feb. 1999
"Bioavailability of Metals in the Water Column and Sediment"
SETAC Europe Conference. Brussels. May 1999