

CURRICULUM VITAE

MICHAEL A. BUTKUS

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EDUCATION

Ph.D. The University of Connecticut, *Environmental Engineering*, 1997
M.S. The University of Connecticut, *Environmental Engineering*, 1995
B.S. *cum laude* The United States Merchant Marine Academy, *Marine Engineering*, 1989
 Naval Nuclear Power School, *Nuclear Engineering*, 1990

PROFESSIONAL EXPERIENCE

2003 - present	<i>ASSOCIATE PROFESSOR</i>	<i>THE UNITED STATES MILITARY ACADEMY</i>
1997 - 2003	<i>ASSISTANT PROFESSOR</i>	<i>THE UNITED STATES MILITARY ACADEMY</i>
1995 - 1997	<i>RESEARCH ASSOCIATE TEACHING FELLOW</i>	<i>THE UNIVERSITY OF CONNECTICUT</i>
1993 - 1995	<i>GRADUATE STUDENT</i>	<i>THE UNIVERSITY OF CONNECTICUT</i>
1990 - 1993	<i>NUCLEAR PLANT ENGINEER</i>	<i>KNOLLS ATOMIC POWER LABORATORY</i>

MILITARY EXPERIENCE

1989 - 1999	<i>MARINE ENGINEER</i> <i>Provided Environmental Engineering support during active duty assignments.</i>	<i>UNITED STATES NAVAL RESERVE</i>
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RESEARCH INTERESTS

Water and wastewater treatment system design, treatment and reuse of industrial and hazardous wastes, environmental chemistry, and colloid and surface chemistry

HONORS AND AWARDS

Admiral Emory Scotland Award, The Navy League of The United States (USMMA)
Chi Epsilon (Civil Engineering) (UCONN)
Garrison Commander Certificate of Appreciation (USMA)
Phi Kappa Phi (UCONN)
Superior Civilian Service Award (USMA)
University Fellowship (UCONN)

PROFESSIONAL LICENSES AND CERTIFICATIONS (partial list)

Professional Engineer, *State of Connecticut* (1997 - present)
Engineering Officer of the Watch, *Naval Reactors* (1991 - 1993)
Nuclear Plant Engineer, *Knolls Atomic Power Laboratory* (1991 - 1993)
Third Assistant Engineer of Steam and Motor Vessels of Any Horsepower, *USCG* (1989 - 1999)

PROFESSIONAL AFFILIATIONS

American Chemical Society
American Water Works Association
Connecticut Section Residuals Committee (1995 - 1997)
American Society for Engineering Education
Environmental Engineering Division Program Chair (2005 – present)
Environmental Engineering Division Secretary (2004-2005)
Environmental Engineering Division Treasurer (2003 – 2004)
Association of Environmental Engineering and Science Professors
Chair, Education Committee (2002 – present)
Publications Committee (2001 - 2003)
Education Committee (2001 – present)

REVIEWER/REFEREE

JOURNALS

Environmental Engineering Science
Environmental Science and Technology
Journal of Environmental Engineering
Journal of Environmental Quality
Journal of Professional Issues in Engineering Education and Practice
Langmuir
Soil and Sediment Contamination: an International Journal
Water Environment Research
Water Research

TEXTS

Introduction to Environmental Engineering (2)
Encyclopedia of Surface and Colloid Science

PROPOSALS

National Science Foundation proposal panel review member (April, 2004)
National Science Foundation proposals
Connecticut Department of Transportation

MODERATOR

ASEE Annual Meeting, Portland, OR, June, 2005
AEESP Research and Education Conference, Potsdam, NY, July, 2005

SERVICE

Chair, Environmental Engineering Program Faculty Colloquium (2001 – 2005)
Chair, Department ABET Committee (1999 – present)
Company Representative, Respect Program Education Team (1998 - 1999)
Department Safety Officer (2000 - 2005)
Officer in Charge, USMA Cadet Astronomy Club (1999 - 2000)
Officer in Charge (co-founder), USMA Environmental Trekkers Club (2003 – present)
Officer Representative, USMA Track and Cross-Country Teams (1998 - 2003)
Senior Faculty Observer, USMA Master Teacher Program (2003 – 2004)
Superintendents Honor Review Committee (2000 - present)
Volunteer Fireman (1982 – 1997; 2005 - present)

COURSES

EV301	Environmental Science
EV385	Introduction to Environmental Engineering
EV396	Environmental Biological Processes
EV401	Physicochemical Treatment Processes
EV402	Biochemical Treatment Processes
EV450	Water Resources
XS391	Aquatic and Environmental Organic Chemistry

PATENTS

“Method For Improving Ultraviolet Radiation Disinfection of Water Using Aqueous Silver,” U.S. Patent Number 6,982,039 B1, January 3, 2006, (with M.P. Labare, J.A. Starke, and M.B. Kelley).

“Ultraviolet Radiation Water Disinfection Device,” pending, (with J.A. Starke and M.B. Kelley).

PUBLICATIONS

JOURNALS

Grasso, D., M.A. Butkus, D. O'Sullivan and N.P. Nikolaidis, "Soil Washing Algorithm For A Lead-Contaminated Sandy-Soil," *Water Research*, **31**, 12, 1997.

Butkus, M.A. and D. Grasso, "Impact of Aqueous Electrolytes on Interfacial Energy," *Journal of Colloid and Interface Science*, **200**, 1998.

Butkus, M.A., D. Grasso, C.P. Schulthess, and H. Wijnja, "Surface Complexation Modeling of Phosphate Adsorption by Water Treatment Residual," *Journal of Environmental Quality*, **27**, 5, 1998.

Butkus, M.A. and D. Grasso, "The Impact of Phosphate Sorption on Water Treatment Residual Surface characteristics: Prelude to Reuse," *Environmental Engineering Science*, **16**, 2, 1999.

Butkus, M.A. and D. Grasso, "The Nature of Surface Complexation: A Continuum Approach," *Environmental Geology*, **40**, 4/5, 2001.

Achenie, L., M.A. Butkus, D. Grasso, C.P. Schulthess, T. Morris, and J. Hyde, "A Comparative Study of Neural Network and Mechanistic Models for Surface Complexation," *Advances in Environmental Research*, **5**, 2, 2001.

Grasso, D., K. Subramaniam, M.A. Butkus, K. Strevett, and J. Bergendahl, "A Review of Non-DLVO Interactions in Environmental Colloidal Systems," *Re/Views in Environmental Science and Bio/Technology*, **1**, 1, 2002.

Butkus, M.A., M.P. Labare, and J.T. Bays, "Influence of Surface Characteristics on the Stability of *Cryptosporidium parvum* Oocysts," *Applied and Environmental Microbiology*, **69**, 7, 2003.

Butkus, M.A., L. Edling, and M.P. Labare, "The Efficacy of Silver as a Bactericidal Agent: Advantages, Limitations, and Considerations for Future Use," *Journal of Water Supply: Research & Technology – AQUA*, **52**, 6, 2003.

Butkus, M.A., M.P. Labare, J. A. Starke, K. Moon, and M. Talbot, "Use of Aqueous Silver to Enhance the Inactivation of Coliphage MS-2 with UV Disinfection," *Applied and Environmental Microbiology*, **70**, 5, 2004.

Butkus, M.A. and M.B. Kelley, "Approach for Integrating Professional Practice Issues into Undergraduate Environmental Engineering Design Projects," *Journal of Professional Issues in Engineering Education and Practice*, **130**, 3, 2004.

Labare, M.P., M.A. Butkus, D. Riegner, N. Schommer, and J. Atkinson. "Evaluation of Lead Movement from the Abiotic to Biotic at a Small Arms Firing Range," *Environmental Geology*, **46**, 6-7, 750-754, 2004.

Starke, J.A., D.D. Bowman, M.P. Labare, E.A. Fogarty, A. Lucio-Forster, J. Barbi, M. B. Jenkins, M. Pavlo, and M.A. Butkus, "Do Iodine Water Purification Tablets Provide an Effective Barrier Against *Cryptosporidium parvum*?" *Journal of Military Medicine*, **170**, 9, 2005.

Butkus, M.A., Talbot, M., and M.P. Labare, "Feasibility of the Silver-UV Process for Drinking Water Disinfection," *Water Research*, **39**, 4925-4932, 2005.

Tang, Z., M.A. Butkus, and Y.F. Xie, "Crumb Rubber Filtration: A Potential Technology for Ballast Water Treatment," *Marine Environmental Research*, in press.

Tang, Z., M.A. Butkus, and Y.F. Xie, "The Effects of Various Factors on Ballast Water Treatment Using Crumb Rubber Filtration: Pilot Study and Statistical Analysis," *Environmental Engineering Science*, in press.

BOOKS, DISCUSSIONS, MONOGRAPHS, and PROCEEDINGS

Odueyungbo, O.A., M.A. Butkus, and D. Grasso, "Ultrafiltration of a Multicomponent Oil-Water Emulsion," *Advances in Filtration and Separation Technology, American Filtration and Separations Society*, **10**, 1996.

Bergendahl, J., M.A. Butkus, and D. Grasso, "Role of Short-Range Forces in Particle Detachment During Filter Backwashing," Discussion, *Journal of Environmental Engineering*, ASCE, **118**, 7, 1997.

Butkus, M.A., "Impact of Phosphate on the Surficial Properties of a Ferric Hydroxide Matrix: Linkage Between Surface Complexation and Colloid Stability," Doctoral Dissertation, University of Connecticut, Storrs, CT, 1997.

Butkus, M.A. and D. Grasso, "Quantifying the Impact of Surface Complexation on Acid-Base Interactions," In Acid-Base Reactions: Relevance to Adhesion Science and Technology, **2**, K.L. Mittal (Ed.), VSP, The Netherlands.

Butkus, M.A. and M.P. Labare, "Study on the Surface Chemistry and Aggregation of *Cryptosporidium parvum* Oocysts: Impact on Army Operations," Annual ARL/USMA Technical Symposium, US Army Research Laboratory Aberdeen Proving Ground, MD, 2000.

Butkus, M.A. and M.B. Kelley, "Incorporating *Real-World Experiences* into Undergraduate Environmental Engineering Design Projects," Proceedings of the American Society for Engineering Education Zone I Conference, United States Military Academy, West Point, New York, 2002.

Starke, J.A., M.A. Butkus, M.B. Kelley, and M. Talbot, "Incorporating "Real-world Experiences" into Undergraduate Environmental Engineering Design Projects: Design of Small-Scale Water Purification Units," Proceedings of the 2003 American Society for Engineering Education Annual Conference, American Society for Engineering Education, Nashville, TN, 2003.

Butkus, J.A., M.A. Butkus, and M.C. Malinowski, "Nuclear Industry," In The Encyclopedia of Life Support Systems, A. Gobaisi Darwish (Ed.), United Nations Educational, Scientific, and Cultural Organization, EOLSS Publishers Co. Ltd., United Kingdom, 2003.

Butkus, M.A., M.C. Johnson, and J.C. Lynch, "Linking Courses and Essential Experiences in an Undergraduate Environmental Engineering Curriculum," Proceedings of the 2004 American Society for Engineering Education Annual Conference, American Society for Engineering Education, Salt Lake City, UT, 2004.

Talbot, M., Labare, M.P., and M.A. Butkus, "Practical Considerations for Inactivation of Viruses With Silver and UV Radiation," extended abstract, Division of Environmental Chemistry, American Chemical Society, 44, 2, 2004.

Butkus, M.A. and J.D. Manous, "Biochemical Oxygen Demand," In The Encyclopedia of Water, J.H Lehr (Ed.), John Wiley & Sons, New York, in press.

Butkus, M.A. "Introduction to Water Treatment," In An Introduction to Manure Pathogens, Manure Management, and Regulations, D.D. Bowman (Ed.), Water Environment Federation, Alexandria, VA, in press.

Lucio-Forster, A., Bowman, DD., Liotta, JL., Starke, JA., Labare, M.P. Jenkins, M., and Butkus MA. "Inactivation Of *Ascaris Suum* Eggs By Exposure To Ultraviolet (UV) Irradiation," Proceedings of the Water Environment Federation, Specialty Conference in Disinfection, Mesa, Arizona, Feb 2005.

Lynch, J.C., Butkus, M.A., and Johnson, M.C. "Teaching Non-Engineers the Engineering Thought Process with Environmental Engineering as the Instrument," Proceedings of the 2005 American Society for Engineering Education Annual Conference, American Society for Engineering Education, Portland, OR, 2005.

REPORTS

Grasso, D., M.A. Butkus, and O.A. Oduyungbo, "Separation of Oil-Water Emulsion By Ultrafiltration," Final Report # DACABB-93-N-8782, U.S. Army, June 1995.

Grasso, D. and M.A. Butkus, "Water Treatment Plant Residual Management Study," South Central Connecticut Regional Water Authority, August 1995.

Morris, T., M.A. Butkus, D. Grasso, L. Achenie, C.P. Schulthess, and J. Hyde, "Study on Agricultural Use of Water Treatment Residual: Final Report," South Central Connecticut Regional Water Authority, December 1999.

Xie, Y. and Butkus, M.A., "A Pilot-Scale Study on Crumb Rubber Filtration for Ballast Water Treatment," National Sea Grant College Program, NOAA, April, 2005.

FUNDING

"Reuse Of Water Treatment Plant Residuals," 1995, South Central Connecticut Regional Water Authority, \$25,000, Co-Investigator.

"Study On Agricultural Use Of Water Treatment Residual," 1996 - 1998, South Central Connecticut Regional Water Authority, \$210,000, Co-Investigator.

"Impact of Waterborne Pathogens on Training and Recreational Activities at the United States Military Academy," 1999, Faculty Development and Research Fund, United States Military Academy, \$3000, Co-Principle Investigator.

"Geographic and Environmental Studies of the Lower Hudson River Watershed," 1999, Department of Defense, \$50,000, Co-Investigator.

"Development of an Advanced Field-Level Biosensor for the Detection of Contaminants in Potable Water Sources: The Reactive Biomatrix," 1999, The Naval Research Laboratory, \$11,330, Principle Investigator.

"Stability of *Cryptosporidium parvum* Oocysts: Impact of Organic Macromolecules," 2000, Army Research Office, \$2000, Co-Principle Investigator.

"Study on the Surface Chemistry and Aggregation of *Cryptosporidium parvum* Oocysts: Impact on Army Operations," 2000, Army Research Laboratory, \$28,750, Co-Principle Investigator.

"Aggregation of *Cryptosporidium parvum* Oocysts by Common Water Treatment Flocculants," 2001, Army Research Office, \$3,000, Co-Principle Investigator.

“Inactivation of *Cryptosporidium parvum* oocysts with low pressure UV,” 2001, New York State Office of Science, Technology, and Academic Research, thru The Institute for Biotechnology and Life Science Technologies, Cornell University, Ithaca, NY, \$22,230, Co-Investigator.

“Infrared Spectra and Disinfection of *Cryptosporidium parvum* Oocysts,” 2003, Army Research Office, \$1,000, Co- Investigator.

“Army Field Drinking Water Systems for Individual Soldiers and Teams Isolated from Normal Logistical Resupply,” 2001-2004, Project Manager Soldier, Soldier Systems Center of Excellence, \$80,000, Principle Investigator.

“A Pilot Study on Crumb Rubber Filtration for Ballast Water Treatment,” 2004-2006, National Sea Grant College Program, \$156,473, Co-Principle Investigator.

“Investigation of lead oxide corrosion rate/disassociation/reaction with hydroxyapatite in laboratory bench scale tests,” 2004-2006, Army Environmental Quality Technology (EQT) Program, \$95,000, Co- Investigator.

INVITED SEMINARS, COLLOQUIA, AND PRESENTATIONS

“The Promise of Science and Technology: Salvation through Engineering or Wishful Denial?,” Institute of World Affairs (1995 IWA Associates Annual Fall Weekend Program) - *Facing the Future: Responding to the Challenge of Global Environmental Sustainability*, Salisbury, CT, October 22, 1995 (with D. Grasso, J Bergendahl and K. Sperry).

“Inhibition of Nickel Precipitation by Gluconate in Metal Finishing Wastewaters,” 4th Annual Northeast Regional Student Environmental Conference, University of Massachusetts Lowell, April 27, 1996 (with H.L. Hu, N.P. Nikolaidis and D. Grasso).

“Soil Washing Algorithm For A Lead-Contaminated Sandy-Soil,” Department of Civil and Environmental Engineering, The University of Connecticut, November 15, 1996 (with D. Grasso, D. O’Sullivan and N.P. Nikolaidis).

“Quantifying the Impact of Surface Complexation on Acid-Base Interactions,” Second International Symposium on Acid-Base Interactions: Relevance to Adhesion, Newark, NJ, October 21, 1998 (with D. Grasso).

“Monitoring lake water quality on a military reservation using digital aerial photography,” poster, Association of American Geographers Convention, Honolulu, Hawaii, March 23-27, 1999 (with J. Brockhaus, J. Marin, B. Klingseisen, and T. Marvich).

“Environmental Engineering Reality: Visualizing Concepts in 3-D,” Educating our Nation’s Leaders: A Conference for the Federal Service Academies, West Point, NY, April 9, 1999 (with M.B, Kelley).

“Modeling the Impact of Water Quality Parameters on Waterborne Pathogens in Recreational Waters,” poster, Association of Environmental Engineering and Science Professors Research Frontiers, Penn State, University Park, PA, August 1, 1999 (with T. Remington, M. Kelley, J. Marin and M.P. Labare).

“Monitoring Water Quality Parameters From Above: Use of Digital Aerial Photography,” poster, Association of Environmental Engineering and Science Professors Research Frontiers, Penn State, University Park, PA, August 1, 1999 (with J. Brockhaus, M.B. Kelley, J. Marin and R. Klingseisen).

“Visualizing Unit Processes and Natural Systems in Undergraduate Environmental Engineering Education,” poster, Association of Environmental Engineering and Science Professors Research Frontiers, Penn State, University Park, PA, August 1, 1999 (with M.B Kelley and R. Getz).

"Influence of purification and storage on the surface characteristics of *Cryptosporidium parvum* oocysts," poster, American Chemical Society Division of Colloid & Surface Chemistry, 220th ACS National Meeting, Washington, DC, August 20-24, 2000 (with M.P. Labare, J.T. Bays, and D.D. Bowman).

"Study on the Surface Chemistry and Aggregation of *Cryptosporidium parvum* Oocysts: Impact on Army Operations," Annual ARL/USMA Technical Symposium, US Army Research Laboratory Aberdeen Proving Ground, MD, November 1, 2000 (with M.P. Labare).

“Incorporating *Real-World Experiences* into Undergraduate Environmental Engineering Design Projects,” The American Society for Engineering Education Zone I Conference, United States Military Academy, West Point, New York, April, 2002 (with M.B. Kelley).

“Water Treatment: The State-of-the-Art and A Glimpse Into the Future,” invited seminar, Department of Microbiology & Immunology, College of Veterinary Medicine, Cornell University, Ithaca NY, May, 2, 2002.

“A Holistic Approach to Undergraduate Environmental Engineering Design Projects,” poster, Association of Environmental Engineering and Science Professors / American Academy of Environmental Engineers: Education and Research Conference, University of Toronto, August 12, 2002 (with M.B. Kelley).

“Environmental Science and Environmental Engineering at the U.S. Military Academy,” American Water Works Association New York Section, Fall Meeting, West Point, NY, September 19, 2002, (with M.B. Kelley).

“Development of Pocket Sized UV Treatment Units,” American Water Works Association New York Section, Fall Meeting, West Point, NY, September 19, 2002, (with M.B. Kelley, K. Moon, R. Nahabedian, J.A. Starke, and S. Williams).

“Can Silver Be an *Effective* Bactericidal Agent for Use in Army Small-Scale Water Treatment Devices?,” invited seminar, Environmental Engineering Program, Penn State, Harrisburg, PA, November 18, 2002, (with L. Edling and M.P. Labare).

“Metal Binding Properties of Two Marine Bacterial Isolates,” poster, American Chemical Society Division of Chemical Education, 225th ACS National Meeting, Washington, DC, March 23-27, 2003 (with P.A. Thomsen, D.E. Riegner and M.P. Labare).

“Microbial Transport and Why *C. Parvum* Oocysts Are So Elusive,” invited seminar, Department of Microbiology & Immunology, College of Veterinary Medicine, Cornell University, Ithaca NY, May, 7, 2003.

“Incorporating “Real-world Experiences” into Undergraduate Environmental Engineering Design Projects: Design of Small-Scale Water Purification Units,” American Society for Engineering Education Annual Conference, Nashville, TN, June, 2003 (with J.A. Starke, M.B. Kelley, and M. Talbot).

“Do Iodine Water Purification Tablets Provide an Effective Barrier Against *Cryptosporidium parvum*?,” Malaysian Society of Parasitology and Tropical Medicine, 1st Asean Congress of Parasitology and Tropical Medicine and 40th Annual Scientific Seminar of MSPTM, March, 2003 (with J.A. Starke, D.D. Bowman, M.P. Labare, E.A. Fogarty, A. Lucio-Forster, J. Barbi, M. B. Jenkins, and M. Pavlo).

“Metal Binding Capabilities of Marine Bacterial Exopolymer,” poster, American Chemical Society Division of Chemical Education, 226th ACS National Meeting, Anaheim, CA, March 28-31, 2004 (with D. M. Brewer and M.P. Labare).

“Microbial Transport and Why *C. Parvum* Oocysts Are So Elusive,” invited seminar, Department of Microbiology & Immunology, College of Veterinary Medicine, Cornell University, Ithaca NY, April, 27, 2004.

“Linking Courses and Essential Experiences in an Undergraduate Environmental Engineering Curriculum,” American Society for Engineering Education Annual Conference, Salt Lake City, UT, June, 2004. (with M.C. Johnson, and J.C. Lynch).

“Effects of Ultra-Violet (UV) light on the embryonation of *Ascaris suum* eggs following exposure,” IX European Multicolloquium Of Parasitology, Valencia, Spain, July 18-23 2004. (with D.D. Bowman, J.A. Starke, A. Lucio-Forster, and J. Liotta).

“Practical Considerations for Inactivation of Viruses With Silver and UV Radiation,” Division of Environmental Chemistry, American Chemical Society, 228th ACS National Meeting, Philadelphia, PA, Aug 22-26, 2004. (with M. Talbot and M.P. Labare)

“Effects of elevated carbon dioxide levels on a marine bacterium,” 229th ACS National Meeting, San Diego, CA, United States, March 13-17, 2005, CHED-962. (with E.A. Bare, R.E. Watts, J.T. Bays, and M.P. Labare)

“Teaching Non-Engineers the Engineering Thought Process with Environmental Engineering as the Instrument,” American Society for Engineering Education Annual Conference, Portland, OR, June, 2005. (with J.C. Lynch and M.C. Johnson)

“Is Silver-UV Disinfection a Practicable Disinfection Method?,” Association of Environmental Engineering and Science Professors First Biennial Research and Education Conference, Potsdam, NY, July, 2005. (with M. Talbot and M.P. Labare)

“Ballast Water Treatment by Crumb Rubber Filtration,” Association of Environmental Engineering and Science Professors First Biennial Research and Education Conference, Potsdam, NY, July, 2005. (with Z. Tang and Y. Xie)

“*Giardia* And *Cryptosporidium* In Sewage Effluent And Drinking Water - Presence, Treatment, Control, And Consequences,” 14th National Parasitology Meeting, Izmir-Turkey, 19-23 Sept. 2005. (with D.D. Bowman, J.A. Starke, A. Lucio-Forster, and J. Liotta, S.N. Boutros, J.P. Runyan, E.C. Ruff, and M.B. Jenkins)

“Assessment of the Silver-UV Process for Drinking Water Disinfection,” invited seminar, Environmental Engineering Program, Penn State, Harrisburg, PA, September 19, 2005, (with M. Talbot and M.P. Labare).

“Assessment of the Silver-UV Process for Drinking Water Disinfection,” invited seminar, Environmental Engineering Program, Worcester Polytechnic Institute, Worcester, MA, November 11, 2005, (with M. Talbot and M.P. Labare).

“Ballast Water Treatment by Crumb Rubber Filtration,” poster, 17th Annual Environmental Issues Conference, Shippensburg University, PA, March 15, 2006 (with Tang, Z. and Y.F. Xie)

“Growth inhibition of the deep-sea bacterium, 9NA by exposure to elevated levels of carbon dioxide.” Abstracts of Papers, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30. 2006, CHED-834 (with E. Michealson, N. Miller, T. Snyder-Leiby, J.T. Bays and M.P. Labare).

“Combined effects of silver ions, UV radiation and/or high pressure on *Bacillus subtilis* spores.”
Abstracts of Papers, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30. 2006,
CHED-819 (with MacNeil, A., L. Kracht, and M.P. Labare).