

NWRI Expert Panel for the California Department of Public Health

CV for Proposed Expert Panel Member:

- Timothy J. Wade, Ph.D.

Timothy J. Wade

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EDUCATION

Ph.D., Epidemiology **2002**
University of California, Berkeley
Specific research activities focused on waterborne disease. Received Warren Winklestein Award for outstanding Epidemiology doctoral student

Master's of Public Health **1998**
University of California, Berkeley
Concentration: Epidemiology/Biostatistics

Bachelor of Arts **1989**
Claremont McKenna College
Major: Psychobiology. Elected by faculty to Sigma Xi

California Polytechnic, Pomona **1990-1991**
Graduate coursework in biological science

PROFESSIONAL EXPERIENCE

Branch Chief **August 2010-present**
Epidemiology Branch
United States Environmental Protection Agency

- Determined research priorities and directed staff of 12-15 scientists, post-doctoral students and support staff
- Managed annual budget of over \$1 million dollars annually

Adjunct Assistant Professor of Epidemiology **February 2006-present**
University of North Carolina, Chapel Hill
School of Public Health

- Train and mentor pre-doctoral epidemiology students, assist in course instruction

- Epidemiologist** **May 2005-August 2010**
United States Environmental Protection Agency
- Principal investigator on a multi-year recreational water study (NEEAR study) conducted by the EPA.
 - Principal investigator on a series of epidemiologic studies to evaluate the health effects of arsenic exposure in well water in Inner Mongolia (ongoing).
- Epidemiologist/Post doctoral position** **April 2003-May 2005**
United States Environmental Protection Agency
Mentor: Rebecca Calderon, Ph.D
- Project Director** **Oct. 1999-April 2003**
Water Evaluation Trial (WET)
University of California Berkeley and the California Emerging Infections Program
- Project director of a \$3.2 million dollar, federally (Centers for Disease Control, Environmental Protection Agency) funded randomized controlled trial of in home drinking water treatment.
- Post-doctoral researcher** **May 2002-April 2003**
School of Public Health, University of California, Berkeley
Mentor: John M. Colford, Jr., M.D. Ph.D
- Recreational water quality and health
- Assistant Project Manager** **May 1998-May 1999**
University of California, Berkeley
- Assistant project manager for a randomized controlled trial and cross-sectional survey of drinking water in HIV infected persons.
- Assistant Project Director, Data Manager, Data Analyst** **Jan. 1998-May. 2000**
University of California Berkeley and the California Emerging Infections Program
- Data manager for the pilot randomized controlled trial of in home drinking water treatment. Managed day to day activities of the trial, designed and maintained databases, and conducted data analysis.
- Data Manager/Statistician** **June 1997-Jan. 1998**
California Environmental Protection Agency, Berkeley
- Research Assistant** **June 1997-Sept. 1997**
University of California, Berkeley
- Graduate Student Instructor (Biology)** **Aug. 1996-June 1997**
University of California, Berkeley
- Biology Instructor** **1995-1996**
Montwood High School, El Paso Texas

US Peace Corps Volunteer, US Peace Corps, Lesotho**1991-1994**

- Taught biology, chemistry, general science and mathematics at a rural high school in Lesotho, Africa.

Environmental Analyst**Sept. 1989-Sept. 1991****Lilburn Corporation and URS Corporation, San Bernardino, California**

- Conducted biological surveys; prepared Environmental Impact Reports, Environmental Impact Statements and Habitat Conservation Plans in compliance with state and federal environmental policies.

Biology Research Assistant**May 1988-Sept. 1989****Rocky Mountain Biological Laboratory, Gothic, Colorado****Biology Laboratory Instructor****1988-1989****Joint Science Department, Claremont, California****PUBLICATIONS***Peer Reviewed Journals*

Timothy J. Wade, Elizabeth A. Sams, Michael J. Beach, Sarah A. Collier, Alfred P. Dufour (2013). The incidence and health burden of earaches attributable to recreational swimming in natural waters. *Environmental Health* 12:67 (**Highly Accessed**)

Gargano, J. W., V. Roberts, E. D. Hilborn, **T. J. Wade**, L. Hicks, L. Garrison, J. Carpenter, E. Adam, B. Mull and J. Yoder (2013). "Surveillance for Waterborne Disease Outbreaks Associated with Drinking Water and Other Nonrecreational Water — United States, 2009–2010." *Morbidity and Mortality Weekly Report (MMWR)* 62(35): 714-720.

Timothy J. Wade, Yajuan Xia, Barbara Jane George, Chris X. Le, Dong Runhe, He Lingling, Wayne Cascio, Gene Sanders, Judy Mumford. Well-water and body burden arsenic are associated with glycated hemoglobin (HbA1c) marker of diabetes risk. Submitted to *American Journal of Epidemiology*.

Benjamin F. Arnold, Kenneth C. Schiff, John F. Griffith, Joshua S. Gruber, Vincent Yau, Catherine C. Wright, **Timothy J. Wade**, Susan Burns, Jacqueline M. Hayes, Charles McGee, Mark Gold, Yiping Cao, Stephen B. Weisberg John M. Colford, Jr. Evaluation of widely used exposure and length of follow-up assumptions in recreational water studies: A prospective cohort at Malibu beach. *Epidemiology. Accepted for Publication*

Wymer, Larry J, **Wade, Timothy J** and Dufour, Alfred P (2013). Equivalency of risk for a modified health endpoint: a case from recreational water epidemiology studies. *BMC Public Health*. 13:459

Jane E Gallagher, Elaine Cohen Hubal, Laura Jackson, Jefferson Inmon, Edward Hudgens, ¹Ann H. Williams, Danelle Lobdell, John Rogers, and **Timothy Wade** (2013). Sustainability, Health and Environmental Metrics: Impact on Ranking and Associations with Socioeconomic Measures for 50 U.S. Cities. *Journal of Sustainability. Sustainability*. 5(2), 789-804

Reagan R Converse, Julie L Kinzelman, Elizabeth A Sams, Edward Hudgens, Alfred P Dufour, Hodon Ryu, Jorge W Santo-Domingo, Catherine A Kelty, Orin C Shanks, Shawn D Siefring, Richard A Haugland, **Timothy J Wade** (2012). Dramatic Improvements in Beach Water Quality Following Gull Removal. *Environmental Science and Technology* 46(18): 10206-13.

Reagan R Converse, Larry J Wymer, Alfred P Dufour, **Timothy J Wade** (2012). Comparison of the Means of Multiple Samples with Composite Sample Results for Fecal Indicator Bacteria Using QPCR and Culture. *Applied and Environmental Microbiology* 78(19): 7166-7169.

Colford J.M., Schiff K., Griffith J., Yau V., Arnold B., Wright C.C., Gruber J., Wade T.J., Burns S. and Hayes J. (2012). "Using rapid indicators for Enterococcus to assess the risk of illness after exposure to urban runoff contaminated marine water." *Water Research* 46(7): 2176-2186.

Heaney C. D., Sams E., Dufour A. P., Brenner K. P., Haugland R. A., Chern E., Wing S., Marshall S., Love D. C., Serre M., Noble R. E. and **Wade T. J.** (2012). "Fecal Indicators in Sand, Sand Contact, and Risk of Enteric Illness Among Beachgoers." *Epidemiology* 23(1): 95.

Hlavsa M. C., Roberts V. A., Anderson A. R., Hill P.V., Kahler A. M., Orr M., Garrison L. E., Hicks L. A., Newton A., Hilborn E. D., **Wade T. J.**, Beach M. J. and Yoder J. S. (2011). "Surveillance for Waterborne Disease Outbreaks and Other Health Events Associated with Recreational Water --- United States, 2007--2008." *Morbidity and Mortality Weekly Report (MMWR)* 60(ss12): 1-32.

Brunkard J. M., Ailes E., Roberts V. A., Hill V., Hilborn E. D., Craun G. F., Rajasingham A., Kahler A., Garrison L., Hicks L., Carpenter J., **Wade T. J.**, Beach M. J. and Yoder J. S. (2011). "Surveillance for waterborne disease outbreaks associated with drinking water---United States, 2007--2008." *Morbidity and Mortality Weekly* 60: 38-68.

Mo, J., Xia Y., **Wade T. J.**, DeMarini D. M., Davidson M. and Mumford J. (2011). "Altered Gene Expression by Low-Dose Arsenic Exposure in Humans and Cultured Cardiomyocytes: Assessment by Real-Time PCR Arrays." *Int J Environ Res Public Health* 8(6): 2090-2108.

Gibb H., Haver C., Gaylor D., Ramasamy S., Lee J.S., Lobdell D., **Wade T.J.**, Chen C., White P., and Sams R.. Utility of Recent Studies to Assess the National Research Council 2001 Estimates of Cancer Risk from Ingested Arsenic. *Environmental Health Perspectives*. 2011: 119(3): 284–290.

Griffin S.M., Chen I.M., Fout G.S., **Wade T.J.** and Egorov A.I.(2011). Development of a multiplex microsphere immunoassay for the quantitation of salivary antibody responses to selected waterborne pathogens. *Journal of Immunological Methods*. Volume 364, Issues 1-2. Pages 83-93

Wade T.J., Sams E., Brenner K.P., Haugland R., Chern E., Beach M.J., Wymer L., Rankin C. C., Love D., Li Q., Noble R. and Dufour A.P.. Rapidly measured indicators of recreational water quality and swimming-associated illness at marine beaches: a prospective cohort study, *Environmental Health* 2010: 9:66. (**Highly Accessed**)

Soller, J.A., T. Bartrand, N.J. Ashbolt, J. Ravenscroft, **T.J. Wade**. Estimating the primary etiologic agents in recreational freshwaters impacted by human sources of faecal contamination. *Water Research* 44 (2010): 4736-4747

Craun, G.F., Brunkard J.M., Yoder J.S., Roberts V.A., Carpenter J., **Wade T.J.**, Calderon R.L., Roberts J.M., Beach M.J., and Roy S.L.. *Clinical Microbiology Reviews*. Causes of Outbreaks Associated with Drinking Water in the United States from 1971 to 2006. 2010, p. 507-528, Vol. 23, No. 3

Yau V., **Wade T.J.**, deWilde C.K., Colford J.M., Jr. Skin-related symptoms following exposure to recreational water: a systematic review and meta-analysis. *Water Quality Exposure and Health*: 2009 1(2): 79-103.

Mo J, Xia Y, Ning Z, **Wade T.J**, Mumford JL. Elevated ERCC1 gene expression in blood cells associated with exposure to arsenic from drinking water in Inner Mongolia.

Anticancer Res. 2009 Aug;29(8):3253-9.

Colford, J. M.; Hilton, J. F.; Wright, C. C.; Arnold, B. F.; Saha, S.; **Wade, T. J.**; Scott, J. & Eisenberg, J. N. S. The Sonoma water evaluation trial: a randomized drinking water intervention trial to reduce gastrointestinal illness in older adults. *Am J Public Health*, 2009, 99, 1988-1995

Telech, J. W., K. P. Brenner, R. Haugland, E. Sams, A. P. Dufour, L. Wymer and **T. J. Wade** (2009). "Modeling Enterococcus densities measured by quantitative polymerase chain reaction and membrane filtration using environmental conditions at four Great Lakes beaches." *Water Research* 43(19): 4947-4955.

Wade, T.J., Y. Xia, K. Wu, Y. Li, Z. Ning, X.C. Le X. Lu, Y. Feng, X. He, and J.L. Mumford. 2009 Increased mortality associated with well-water arsenic exposure in Inner Mongolia, China. *International Journal of Environmental Public Health Research*: 6(3): 1107-1123.

Xia, Y., **T. J. Wade**, K.Wu, Y.Li, Z.Ning, X.C. Le, X. He, B. Chen, Y. Feng and J.L. Mumford. 2009. Well Water Arsenic Exposure, Arsenic Induced Skin-Lesions and Self-Reported Morbidity in Inner Mongolia. *International Journal of Environmental Public Health Research*: 6(3): 1010-1025.

Heaney, C.D.*, E. Sams, S. Wing, S. Marshall, K.P. Brenner, A.P. Dufour, **T.J. Wade**. Contact with beach sand among beach-goers and risk of illness. 2009. *American Journal of Epidemiology*: 170(2): 164-172

Mo, J., Y. Xia, Z. Ning, **T. J. Wade** and J. L. Mumford (2009). "Elevated human telomerase reverse transcriptase gene expression in blood cells associated with chronic arsenic exposure in Inner Mongolia, China." *Environmental health perspectives* 117(3): 354.

Craun, G.F. & **Wade T.J.** (2008). Outbreaks associated with recreational water in the United States, 1995-2004. *Hygiene* 3(53): 76-83

Wade T.J., Calderon R.L., Brenner K.P., Sams E., Beach M., Haugland R., Wymer L., and Dufour A.P. High sensitivity of children to swimming-associated gastrointestinal illness: results using a rapid assay of recreational water quality. *Epidemiology* 2008: 19(3): 375-383.

Yuan C., Lu X, Oro N., Wang Z., Xia Y., **Wade T.J.**, Mumford J., Le XC.(2008). "Arsenic speciation analysis in human saliva." *Clin Chem* 4(1): 163-71.

Otto D, Xia Y, Li Y, Wu K, He L, Telech J, Mumford J and **Wade T.J.** 2007. Neurosensory effects of chronic human exposure to arsenic associated with body burden and environmental measures. *Human & Experimental Toxicology*. 26: 169-177

JM Colford, **Wade TJ**, Schiff K, Wright C et al. 2007. Water quality indicators and the risk of illness at non-point source beaches in Mission Bay, California. *Epidemiology*. 18(1): 27-35.

Craun GF, Calderon RL, **Wade TJ**. 2006. Assessing waterborne risks: an introduction. *Journal of Water and Health*. 4(S2): 3-18

Colford JM, Roy S, Beach MJ, Hightower A, Shaw S, **Wade TJ**. 2006. A review of household drinking water intervention trials and an approach to the estimation of endemic waterborne gastroenteritis in the United States. *Journal of Water and Health*. 4(S2): 71-88

Mo J, Xia Y, **Wade TJ**, Schmitt M, Le XC, Dang R, and Mumford JL. 2006. Chronic Arsenic Exposure and Oxidative Stress: *OGGI* Expression and Arsenic Exposure, Nail Selenium, and Skin Hyperkeratosis in Inner Mongolia. *Environmental Health Perspectives*. 114(6): 835-841

Colford JM, **Wade TJ**, Schiff K, Wright C et al. The Mission Bay Study: Recreational Water Contact and Illness in Mission Bay, California. Technical Report 449, March 2005. Southern California Coastal Water Research Project

Eisenberg J.N.S., Hubbard A., **Wade T.J.**, Sylvester M.D., LeChevallier M.W., Levy D.A., Colford J.M., Jr. 2006. Inferences drawn from a risk assessment compared directly to a randomized trial of a home drinking water intervention. *Environmental Health Perspectives*. 114(8): 1199-1204

Wade T.J., Calderon R.L., Sams E., Beach M.J., Brenner K.P., Williams A.H., Dufour A.P.. 2006. Rapidly measured indicators of recreational water quality are predictive of swimming-associated gastrointestinal illness. *Environmental Health Perspectives*. 114(1): 24-28.

Li Y., Xia Y., He L., Ning Z., Wu K., Zhao B., Le X.C., Kwok R., Schmitt M., **Wade T.J.**, Mumford J., Otto D.. 2006. Neurosensory Effects of Chronic Exposure to Arsenic via Drinking Water in Inner Mongolia: I. Symptoms and Pinprick Testing. *Journal of Water and Health*. 4:29-37.

David Otto, Yanhong Li, Yajuan Xia, Linlin He, Zhixiong Ning, Kegong Wu, Baixiao Zhao, H. Kenneth Hudnell, Richard Kwok, Judy Mumford, Andrew Geller, **Timothy Wade**. 2006. Health Effects of Chronic Exposure to Arsenic via Drinking Water in Inner Mongolia: II. Vibrotactile and Visual Function. *Journal of Water and Health*. 4:39-48.

Wymer LJ, Dufour AP, Calderon RL, **Wade T.J.**, Beach M.J. 2005. Comment on "Derivation of numerical values for the World Health Organization guidelines for recreational waters". *Water Res* 39(12):2774-2777.

Rees J.R., **Wade T.J.**, Levy D.A., Colford J.M., Hilton J.F. 2005. Changes in beliefs identify unblinding in randomized controlled trials: A method to meet CONSORT guidelines. *Contemporary Clinical Trials*. 26(1): 25-37

Colford J.M., **Wade T.J.**, Sandhu S.K., Wright C.C., Lee S., Shaw S., Fox K., Burns S., Benker A. 2005. A randomized, controlled trial of in-home drinking water intervention for the reduction of gastrointestinal illness. *American Journal of Epidemiology*. 161: 472-482

Colford J.M., Saha S.R., **Wade T.J.**, Wright C.C., Vu M., Charles S., Jensen P., Hubbard A., Levy D.A., Eisenberg J.N.S. 2005. A pilot randomized, controlled trial of an in-home drinking water intervention among HIV+ persons. *Journal of Water and Health*. 3(2): 173-184

Wade T.J., Sandhu S.K., Levy D.A., Lee S., LeChevallier M.W., Katz .L, Colford J.M.. 2004. Did a severe flood in the Midwest cause an increase in the incidence of gastrointestinal symptoms?. *American Journal of Epidemiology*. 159(4): 398-405

Wade T.J., Pai N., Eisenberg J.N.S., Colford J.M.. 2003. "Do US EPA water quality guidelines prevent gastrointestinal symptoms? A systematic review and meta analysis". *Environmental Health Perspectives* 111(8): 1102-1109.

Colford J.M.. Jr; Rees J.R.; **Wade T.J.**; Khalakdina A., Hilton J.F., Ergas I.J., Burns S., Benker A.; Ma C.; Bowen C.; Mills D.M.; Vugia D.J.; Juranek D.D.; and Levy D.A. 2002. Participant Blinding and Gastrointestinal Illness in a Randomized, Controlled Trial of an In-Home Drinking Water Intervention. *Emerging Infectious Diseases*. Jan, 8(1): 29-36.

Eisenberg J.N.S., **Wade T.J.**, Charles S., Vu M., Hubbard A., Wright C.C., Colford J.M. Jr. 2002. Risk factors in HIV-associated diarrheal disease: The role of drinking water, medication, and immune status. *Epidemiology and Infection*, 128: 73-81.

Eisenberg J.N.S., **Wade T.J.**, Hubbard A., Abrams D., Leiser R., Charles S., Vu M., Saha S., Wright C.C., Levy D.L., Jensen P., Colford J.M. Jr. 2002. Associations between water treatment methods and diarrhea in HIV positive individuals. Epidemiology and Infection, 129: 315-323.

Hooper K.; Petreas M.X.; Chuvakova T.; Kazbekova G.; Druz N.; Seminova G.; Sharmanov T.; Hayward D.; She J.; Visita P.; **Wade T.J.**, et al. 1998 Analysis of breast milk to assess exposure to chlorinated contaminants in Kazakstan: high levels of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in agricultural villages of southern Kazakstan. Environmental Health Perspectives. Dec, 106(12):797-806.

Potts M; Walsh J; McAninch J; Mizoguchi N; and **Wade T.J.** 1999. Paying for reproductive health care: What is needed, and what is available? International Family Planning Perspectives. Jan, V25 Supps: S10-S16.

Hooper K.; Chuvakova T.; Kazbekova G.; Hayward D.; Tulenova A.; Petreas M.X., **Wade T.J.** et al. 1999. Analysis of Breast Milk to Assess Exposure to Chlorinated Contaminants in Kazakhstan: Sources of 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) Exposures in an Agricultural Region of Southern Kazakhstan. Environmental Health Perspectives, June, 107(6):447-457.

Book Chapters

Dufour, A.P., **Wade, T.J.**, and Kay D. 2012. Chapter 11: Epidemiological studies on swimmer health effects associated with potential exposure to zoonotic pathogens in bathing beach water – a review. In *Animal Waste, Water Quality and Human Health*. Alfred Dufour, Jamie Bartram and Robert Bos, Editors. World Health Organization and IWA Publishing, London.

T. Wade, A. P. Dufour, J.A. Soller and L. Wymer (2012). “Microbial Regulations” in Encyclopedia of Environmetrics, Second Edition, A.-H. El-Shaarawi and W. Piegorisch (eds). John Wiley & Sons Ltd, Chichester, UK, pp. 1605-1613. DOI: 10.1002/9780470057339.vnn005

Heaney C. D., **Wade T.J.** and Dufour A.P. (2012). Health Effects Associated with Beach Recreation. The Praeger Handbook of Environmental Health. R. H. Friis. Santa Barbara, California, Praeger. 3: 119-142.

Wymer L.J. and **Wade T.J.** 2007. "The Lognormal Distribution and Use of the Geometric Mean and the Arithmetic Mean in Recreational Water Quality Measurement" in Statistical Framework for Recreational Water Quality Criteria and Monitoring , John Wiley & Sons Ltd., Chichester

Stewart J., Santo Domingo J.W., and **Wade T.J.**. 2007. Introduction to Microbial Source Tracking. In *Microbial Source Tracking*, M. J. Sadowsky and J. W. Santo Domingo (ed.). ASM Press, Washington. DC

Reports

Wade, T. J., E. A. Sams, R. Haugland, K. P. Brenner, Q. Li, L. Wymer, M. Molina, K. Oshima and A. P. Dufour (2011). Report on 2009 National Epidemiologic and Environmental Assessment of Recreational Water Epidemiology Studies, US EPA. EPA Report Number: EPA/600/R-10/168.

INVITED SEMINARS AND APPOINTMENTS

Editorial Board: Frontiers in Epidemiology (2013-present)

Invited Participant and Presenter, Ocean Studies Board, National Academies of Science.

“Linking novel and rapid indicators of recreational water quality to human health effects”. Woods Hole, MA. July 25, 2012.

Session Chair, International Society for Environmental Epidemiology. Health effects associated with drinking water infrastructure. Columbia, SC. August 2012.

Planning Committee, International Conference on Emerging Infectious Disease. Conference planning committee member. Chaired session on waterborne disease. Atlanta, GA. March, 2012.

Invited Participant, Inter American University of Puerto Rico, Center for Environmental Education, Conservation and Research. “US EPA epidemiological studies at Boquerón Beach: data for development of National Regulations.” February, 2012.

Invited Participant, University of Stirling and National Environment Research Council, Delivering Health Water. Molecular technology for bathing water regulation, London, United Kingdom. March, 2012.

Invited Participant, US EPA Office of Research and Development. Experts Scientific Workshop on Potential Human Health Risks from Exposure to Fecal Contamination from Avian and Other Wildlife Sources in Recreational Waters, November 2011.

US EPA Office of Water. Invited Speaker. Stakeholder meeting on the development of new or revised recreational water quality criteria. “Epidemiology studies”. New Orleans, LA. May, 2011.

Invited Contributor, Encyclopedia of Environmetrics. “Microbial regulations”, 2011-2012.

Advisory Panel, Water ReUse Foundation. Advisory panel for epidemiological studies. 2011

Session Chair, International Statistical Institute Conference, Dublin Ireland. “Approaches to estimate the burden of waterborne disease”. August, 2011

Invited Speaker, AIDIS (Inter-American society for Environmental and Sanitary Engineering). “Water quality and illness symptoms at Boquerón Beach, Puerto Rico”. Punta Cana, Dominican Republic, November 7-10, 2010

Grant Review Panel, Centers for Disease Control and Prevention. Provided scientific merit review for CDC Program Announcement Number CD09-001, Translating Research to Protect Health through Health Promotion, Prevention and Preparedness. August, 2009.

Advisory Panel, US EPA Office of Water. Advisory workgroup member for development of recreational water quality criteria. 2009-2012

Session Chair, EPA National Beaches Conference. Epidemiology Section (2009 & 2011)

Peer Reviewer, Water Environment Research Foundation (WERF). Peer reviewer for WERF-sponsored epidemiology studies of illness resulting from contact with secondary treated, but unchlorinated sewage discharge in the Chicago-area waterway system, 2006-2011.

Invited Speaker, Gordon Research Conference, Oceans and Human Health. “Water quality and health effects at Marine Beaches”. June 29 - July 4, 2008, Tilton, New Hampshire.

Expert Witness, US EPA. Provided expert deposition on behalf of US EPA recreational water studies. June 4, 2008.

Workgroup Member, US EPA Office of Research and Development. Participating member in developing the “Critical Path Science Plan for the development of new or revised recreational water quality criteria”. August 2007.

Invited Participant, US EPA Office of Water. Pellston-Style Conference on setting recreational water quality standards. Invited expert on acceptable risk panel. March, 2007.

Advisory Board, American Water Works Association Research Foundation (AwwaRF). AwwaRF project 4166 “Water Industry Contribution to Epidemiological and Health Effects Studies Involving Distribution System Water Quality”. 2007-present.

Invited Contributor, US EPA Region 5. Provided critical support to region by reviewing microbial risk assessment of the effects of sewage discharge to recreators in the Chicago Area Waterways. 2007.

Invited Referee, Cochrane Infectious Disease Group. Referee of systematic review/meta analysis on water intervention trials. 2006.

Invited Contributor, Michigan State Saginaw Bay Coastal Initiative. Invited expert on panel for the State of Michigan on evaluation of health risks associated with exposure to “muck” and algae in Saginaw Bay on Lake Huron. Dec. 2006-June 2007

Technical Advisory Committee, State of California. Advised state of California in their development of new standards for recreational water criteria, 2006.

Technical Advisory Board, Southern California Coastal Water Research Project. Technical advisory board member for a series of epidemiologic studies examining swimmers’ health. 2006-present.

Session Chair, International Society of Environmental Epidemiology. Recreational water. 16th Annual Conference of the International Society for Environmental Epidemiology, New York, August 1-4, 2004.

Invited Book Review. Cryptosporidium: from molecules to disease. Elsevier Press. Book review for Emerging Infectious Diseases. September 2004, Volume10(9). Available from: <http://www.cdc.gov/ncidod/EID/vol10no9/04-0566.htm>

Invited Participant, World Health Organization. "Guidelines for Recreational Water Quality: Guidelines for Safe Recreational Water Environments". Provided feedback on the revised safe recreational water guidelines. Fall, 2002

CONFERENCE PRESENTATIONS AND POSTERS

Elizabeth Hilborn, Cynthia Lin, Elizabeth Sams , Andrew Chapman , Alfred Dufour , **Tim Wade.** Health effects associated with cyanobacteria exposure among beach attendees in Puerto Rico. August 11-16, Johannesburg, South Africa.

Timothy J. Wade, Reagan R. Converse, Elizabeth A. Sams, Ann H. Williams, Edward Hudgens, Alfred P. Dufour. Gastrointestinal symptoms among swimmers following rain events at a beach impacted by urban runoff. Society for Epidemiological Research. June 19-21, 2013. Boston, MA

Lin CJ, Heaney CD, **Wade TJ,** Noble RT, and Wing S. A repeated-measures study of recreational water exposure, non-point source pollution, and risk of illness. Society for Epidemiological Research. June 19-21, 2013. Boston, MA

Jyotsna Jagai, Cynthia Lin, Genee Smith, and **Timothy J. Wade**. Sanitary sewer overflows and emergency room visits for gastrointestinal illness. Society for Epidemiological Research. June 19-21, 2013. Boston, MA

Kaneatra J. Simmons, Clarissa Curioso, Tarsha Eason, Shannon Griffin, G. Shay Fout, **Tim Wade**, S. Jason Augustine. A Rapid and Sensitive Saliva-based, Multiplex Immunoassay to Measure Human Exposure to Waterborne Pathogens. International Society for Exposure Science. October 28-31, 2012, Seattle WA.

Jagai JS, Smith GS, Schmid J, **Wade TJ**. Trends in Gastroenteritis-Associated Mortality in the United States, 1985 – 2005. Water and Health Conference. *Poster presentation*. October 29, 2012, Chapel Hill, NC.

Wade TJ, Sams EA, Dufour, AP. Health burden of gastrointestinal symptoms resulting from swimming in fecally-contaminated recreational waters. Water and Health Conference. *Poster presentation*. October 29, 2012, Chapel Hill, NC.

Timothy J. Wade. Swimming-associated exposures and health risks in children. Water and Health Conference. *Invited oral presentation*. October 29, 2012, Chapel Hill, NC.

Alissa Cordner, **Timothy J. Wade**, Elaine Cohen Hubal, Edward E. Hudgens, Stephen W. Edwards, Jane E Gallagher. Impact of environmental chemicals, sociodemographic variables, depression, and clinical indicators of health and nutrition on self-reported health status. *Oral presentation*. 140th American Public Health Association Annual Meeting. October 27 -31, 2012, San Francisco, CA.

Timothy J. Wade, Jyotsna S. Jagai, Quanlin Li, Elizabeth D. Hilborn. Emergency room visits for acute gastrointestinal illness following flooding: A case-crossover study. *Poster presentation*. International Society for Environmental Epidemiology. August 26-30, 2012. Columbia, SC

Jagai JS, Li Q, Messier K, **Wade TJ**, Hilborn E. Association between Gastrointestinal Illness and Precipitation in Areas Impacted by Combined Sewer Facilities: Analysis of Massachusetts Data, 2003-2007. *Oral presentation*. International Society for Environmental Epidemiology. August 26-30, 2012. Columbia, SC

Timothy J. Wade, Elizabeth Sams, Alfred P. Dufour . Incidence and burden of earaches due to recreational swimming: Results from a nationwide study of over 50,000 respondents. *Accepted poster presentation*. International Society for Environmental Epidemiology. August 26-30, 2012. Columbia, SC

S Hatcher, C Heaney, **T Wade**, E Pevette, J Stewart. Multidrug-Resistant Staphylococcus sp. Isolated from Sand at a Tropical Beach and a Beach Impacted by Non-Point Source Pollution. 112th General Meeting of the American Society of Microbiology. *Accepted poster presentation*. June 16-19, 2012. San Francisco, CA

RR Converse, JL Kinzelman, E Hudgens, EA Sams, AP Dufour, **TJ Wade**. Reductions in Gull Populations Improve Beachwater Quality. 112th General Meeting of the American Society of Microbiology. *Poster presentation*. June 16-19, 2012. San Francisco, CA

G. N. Stelma, Jr., L. C. Wymer, **T. Wade**, A. P. Dufour. Molecular Versus Culture Methods For Monitoring Recreational Waters. 112th General Meeting of the American Society of Microbiology. *Poster presentation*. June 16-19, 2012. San Francisco, CA

Christopher Heaney, **Timothy J. Wade**. Microbial Exposure Assessment of Beach Sand and Exposure-Response Analysis with Symptoms of Enteric Illness. 21st Annual International Society for Exposure Science Conference. October 23-27, 2011. Baltimore, MD

S. Augustine, C. Curioso, T. Eason, S. Griffin, S. Fout, **T. Wade**, K. Simmons. Development of a Rapid and Sensitive Saliva-based, Multiplex Immunoassay to Measure Human Exposure to Waterborne Pathogens. 21st Annual International Society for Exposure Science Conference. October 23-27, 2011. Baltimore, MD

Timothy J. Wade, Judy Mumford, Yajuan Xia, Gene Sanders. Arsenic Exposure and Health Effects in Inner Mongolia. American Public Health Association Annual Meeting. November 1, 2011. Washington DC.

JS Jagai, Hilborn E., **Wade T.J.**, Rates of Gastrointestinal Illness Among areas Impacted by Combined Sewer Facilities: Analysis of Massachusetts Data, 2003-2007. Water and Health Conference: Where Science Meets Policy. October 3-7, 2011.

Timothy J. Wade, Alfred P. Dufour, Larry Wymer. Modeling indicators of water quality and swimming associated illness. International Statistical Institute Conference. August 21-26, 2011. Dublin, Ireland.

Timothy J. Wade, Rich A. Haugland, Larry Wymer, Elizabeth Sams, Kevin Oshima, Kristen Brenner. Alfred P. Dufour. Indicators of water quality and health effects at a tropical and a runoff impacted beach. 2011 National Beaches Conference. March 15-17, 2011. Miami, Florida

Gallagher, J.; Cohen-Hubal, E.; Inmon, J.; Jagai, J.; Lobdell, D.; Jackson, L.; **Wade, T.** Correlates of Health, Sustainability and Environmental Metrics for 50 of the Most Populous U.S. Cities. In *Proceedings of the 1st World Sustain. Forum*, 1-30 November 2011; Sciforum Electronic Conferences Series, 2011.

Timothy J. Wade, Rich A. Haugland, Larry Wymer, Alfred P. Dufour. Molecular measures of fecal indicator bacteria and swimming-associated gastrointestinal illness. Water and Health Conference: Where Science Meets Policy. October 23-26, 2010. Chapel Hill, NC.

Prevette, EB, CD Heaney, **TJ Wade**, E Sams and JR Stewart. Beach Sand Analysis for Indicators of Microbial Contamination. 2010 Water and Health Conference: Where Science Meets Policy. October 23-26, 2010. Chapel Hill, NC.

Timothy J. Wade. Gulf of Mexico Alliance. Gulf Of Mexico Alliance Coastal Pathogens Risk Assessment Workshop. Oct 13-15, 2010. Sarasota, Florida.

Timothy J. Wade. US EPA Region 4 State Beach Program Managers Meeting. Water quality and health effects at a runoff impacted beach. February 28, 2010. Jekyll Island, GA.

Timothy J. Wade, Rich A. Haugland, Larry Wymer, Elizabeth Sams, Kevin Oshima, Kristen Brenner. Alfred P. Dufour. Indicators of water quality and health effects at a tropical and a runoff impacted beach. 2011 National Beaches Conference. March 15-17, 2011. Miami, Florida

Timothy J. Wade, et al. International Society for Exposure Science. Recreational water exposure: Duration, intensity and ingestion. November 2-5, 2009. Minneapolis, MN.

Timothy J. Wade, Alfred P. Dufour, et al. National Beaches Conference. Water quality and health effects at Marine Beaches. April 20-22, 2009. Huntington Beach, CA.

Timothy J. Wade. Gulf of Mexico Alliance. Pathogen Workshops Threesome. EPA Beaches Epidemiology Studies February 10-13, 2009. St. Pete Beach, Florida.

AI Egorov, GS Fout, **TJ Wade**. Salivary antibody as a novel indicator of incident waterborne infections. Can it help to evaluate the beneficial health effect of improvements in water treatment? US EPA Human Health BOSC review, Long Term Goal Four RTP, NC, January 13-15, 2009.

Shannon Hunt, G. Shay Fout, Ing Chen, **Tim Wade**, and Andrey Egorov. (2008). Application of a multiplex immunoassay for detection of salivary antibody responses to selected potentially waterborne pathogens. International Society of Environmental Epidemiology and International Society for Exposure Analysis, Pasadena, CA, October 12-16 2008.

Timothy J. Wade. *Invited Speaker*. Water quality and health effects at Marine Beaches. Gordon Research Conference Oceans and Human Health, June 29 - July 4, 2008, Tilton, New Hampshire.

Judy Mumford, **Tim Wade**, Gene Sanders, Yajuan Xia, Jinyao Mo. Cardiovascular and other health effects associated with arsenic exposure in Inner Mongolia, China. Annual Meeting of the Society of Toxicology, Seattle Washington, March 16-17, 2008.

Shannon Hunt, **Tim Wade**, G. Shay Fout, Andrey Egorov, Salivary antibody responses as an indicator of waterborne infections: pilot community study before and after installation of UV treatment. Poster presentation at the Public Health Applications of Human Biomonitoring workshop sponsored by USEPA and International Council of Chemical Associations September 24-25, 2007, Research Triangle Park, NC

Timothy J. Wade. *Invited Speaker*. Recreational Waters. Federal-State Toxicology and Risk Analysis Committee Meeting. October 17-19, 2007.

Tim Wade. 2007. *Invited Speaker*. Swimming-Associated Illness and Rapid Measures of Water Quality at a Gulf Beach. Invited Speaker. National Environmental Health Association Annual conference. June 25-27, Atlantic City, New Jersey.

Shannon Hunt, G. Shay Fout, Mary Rothermich, **Tim Wade**, Andrey Egorov . Evaluation of salivary antibody immunoassay for detection of Cryptosporidium infections. Poster presentation at the 2007 annual meeting of the American Society of Parasitologists. June 22-24, 2007, Merida, Yucatan, Mexico.

Dingwall M, Wool M, Jasim-Hanif, **Wade T**, Egorov A, Williams AJ. 2007. Recruitment and Retention for a Hispanic Population: Results from a Community Health Study. American Association for Public Opinion Research, Annual Conference. Anaheim, California May 20, 2007.

Wade TJ, Calderon RL, Brenner KP, Sams E, Beach M, Haugland R, Wymer LJ and Dufour AP, Rapid Measurement of Water Quality – Will it Make a Difference?, at the 2007 Bacteria/Microbe EPA Region 10 Conference, sponsored by the Washington State Department of Ecology and the US Environmental Protection Agency, Tacoma, WA., May 2007.

Wade TJ et al. 2006. A Faster Method Of Measuring Recreational Water Quality For Better Protection Of Swimmers' Health. National Beaches Conference, Niagara Falls, NY, October 10-13, 2006.

Heaney C, **Wade TJ et al**. 2006. Exposure to sand during beach recreation and risk of illness: Results from the National Epidemiological and Environmental Assessment of Recreational (NEEAR) Water Study. National Beaches Conference, Niagara Falls, NY, October 10-13, 2006.

Sams E, **Wade TJ et al**. 2006. Illness severity and burden among Great Lake beach visitors. National Beaches Conference, Niagara Falls, NY, October 10-13, 2006.

Wade TJ. 2006. Mortality and morbidity due to arsenic exposure in Inner Mongolia, China International Society for Environmental Epidemiology. Paris, France, September 2-6, 2006.

Wade TJ. 2006. *Invited Speaker.* Non-human sources of recreational water contamination: What we know and don't know about human health risk. Co-Regulator Pathogens Workshop: Bacteria Criteria for Inland Waters. Dallas, TX. May 2-3, 2006

Wade TJ. 2006. *Can faster methods of measuring recreational water help prevent swimming associated illness?* International Society for Environmental Epidemiology. Paris, France, September 2-6, 2006.

Wade TJ. 2006. *Can faster methods of measuring recreational water help prevent swimming associated illness? Invited speaker.* American Society of Microbiology. Orlando, Florida, May 21-25 2006.

Wade TJ. 2005. Are new and faster ways of measuring recreational water predictive of swimming associated illness? An epidemiologic investigation at four Great Lake Beaches. *Invited speaker.* Annual Public Health Days (JASP), Quebec City, Canada, November 15, 2005

Wade TJ. 2005. Can Faster Methods of Measuring Recreational Water Prevent Swimming Associated Illness? Presented at the US EPA Science Forum, May 17, 2005, Washington DC.

Jinyao Mo, Yajuan Xia, Zhixiong Ning, **Tim Wade** and Judy Mumford. 2005 Increased *OGG1* expression in peripheral blood cells of individuals exposed to arsenic-contaminated drinking water. Annual Meeting of American Association for Cancer Research, held in Anaheim, CA, April 16-20, 2005.

Wade TJ. *Invited Speaker.* The National Environmental and Epidemiologic Assessment of Recreational Water: The relationship between novel indicators of water quality and health. WEF/AWWA/IWA/AWPCA Disinfection Specialty Conference. Phoenix Arizona, February 7, 2005.

Wade TJ, The National Environmental and Epidemiologic Assessment of Recreational Water: The relationship between novel indicators of water quality and health. Presented at the National Beaches Conference. October 14, 2004.

Wade TJ, The National Environmental and Epidemiologic Assessment of Recreational Water: The relationship between novel indicators of water quality and health. Presented at the 16th Annual Conference of the International Society for Environmental Epidemiology, New York, August 1-4, 2004.

Sams E, Calderon R, **Wade TJ,** Beach M Brenner K, Williams A, Dufour A. GIS analysis for epidemiological recreational water studies. Poster presentation, 16th Annual Conference of the International Society for Environmental Epidemiology, New York, August 1-4, 2005.

Colford J, **Wade TJ,** Schiff K, Brookhart A, Arunajadai, S, Burns S, Hayes J, Sandhu S, Wright C, Weisberg S. The correlation between indicator organisms and health in recreational water in a cohort of beachgoers at Mission Bay, California during the summer of 2003. Presentation at the 16th Annual Conference of the International Society for Environmental Epidemiology, New York, August 1-4, 2005.

Wade TJ, The National Environmental and Epidemiologic Assessment of Recreational Water: The relationship between novel indicators of water quality and health. Presented at USEPA Science Forum. June 3, 2004. Washington DC

Colford JM, **Wade TJ,** Sandhu SK, Wright C, Burns S, Benker A, Lee S, Brookhart A, van der Laan M, Levy D. A randomized, blinded, crossover trial of an in-home drinking water intervention

to reduce gastrointestinal illness. Presented at the International Society of Environmental Epidemiology. September 26, 2003. Perth, Australia

Wade TJ, Calderon RL, Colford JM. Studying endemic waterborne disease through randomized trials of in home drinking water treatment. Presented at the USEPA's Research on Microorganisms in Drinking Water conference. June 6, 2003.

Colford JM, Wade TJ, Pai N, Eisenberg JNS. 2002. Empiric Evidence for Associations between Indicator Organisms and Health Effects in Recreational Water. Invited presentation to the National Academies of Science, National Research Council, Indicators for Waterborne Pathogens Committee. September 4, 2002. Washington DC.

Dufour A., Calderon RL, Beach MJ, **Wade TJ**, Sams E: National Epidemiological and Environmental Assessment of Recreational Water Study. Great Lakes Beach Annual Meeting. October 22, 2003. Muskegon, Michigan.

Wade TJ, Pai N, Eisenberg JNS, Colford JM. Do US EPA water quality guidelines prevent gastrointestinal symptoms?. American Public Health Association. November 2003. San Francisco, CA.

Colford, JC, Saha S, Scott H, Wright CW, **Wade TJ**, Eisenberg JNS. Sonoma Water Evaluation Trial (SWET): A randomized, controlled cross-over trial of in home drinking water intervention in persons over age 55. American Public Health Association. November 2003. San Francisco, CA.

Wade TJ, Sandhu SK, Wright CC, Lee S, Katz LM, Shaw SE, LeChevallier MW, Levy DA, Colford JM, Jr. An increase in gastrointestinal illness associated with historic flooding of the Mississippi River: Disease surveillance from a randomized trial of in-home drinking water treatment. International Conference of Emerging Infectious Disease, Atlanta GA. March 24-27, 2002.

Rees JR, **Wade TJ**, Mills DS, Levy DA, Colford JM Jr. Approaches to the analysis of the health effects of HPC bacteria: Results from a randomized, controlled trial of home drinking water treatment. International Conference on HPC bacteria in drinking water, Geneva, Switzerland, April 2002

AD HOC JOURNAL REVIEWS

American Journal of Epidemiology
American Journal of Public Health
Bulletin of the World Health Organization
Canadian Journal of Public Health
Emerging Infectious Diseases
Environmental Science and Technology
Environmental Health
Environmental Health Insights
Environmental Health Perspectives
Epidemiology and Infection
Journal of Environmental Management
Journal of Infection and Public Health
Journal of Ocean Technology
Journal of Toxicology and Environmental Health
PLoS One
Scientific World Journal
Toxicology and Applied Pharmacology

Water
Water Research
Society for Epidemiological Research-Abstract Reviews.

AWARDS

EPA Office of Water Bronze Medal, 2011: Exceptional service to Office of Water in development of recreational water quality criteria

EPA Office of Research and Development Honor Award, 2010. Exceptional/Outstanding ORD Technical Assistance to the Regions or Program Offices. Beaches Field Team.

Level III EPA STAA award recipient, 2010. For publication: “High sensitivity of children to swimming associated gastrointestinal illness”. Epidemiology, 2008

EPA Office of Research and Development Bronze Medal, 2007: For work with the Office of Water on developing the “Critical Path Science Plan for the development of new or revised recreational water quality criteria”.

Office of Research and Development Honor Award, 2006. Exceptional/Outstanding ORD Technical Assistance to the Regions or Program Offices. Individual award for superior technical support to the Office of Water and EPA Regions to improve recreational water quality and protect human health.

Level I EPA STAA (Science to Achieve Results) award recipient, 2006 : Protecting Swimmers’ health with faster ways of measuring water quality.

Warren Winklestein Award, Outstanding Epidemiology Doctoral Student, 2002: Selected by Epidemiology faculty at UC Berkeley as the outstanding doctoral student of 2002.

Outstanding Graduate Student Instructor, 1999: Selected by students and faculty as an Outstanding Graduate Student Instructor, for teaching of Public Health 250B, Advanced Epidemiological Methods.

Universitywide Aids Research Program Scholarship recipient, 1998: Competitive scholarship, selected by UARP committee. Awarded financial assistance to travel and attend the UARP yearly conference and disseminate information to colleagues at UC Berkeley.

TEACHING AND MENTORING

Lecturer-Environmental Epidemiology. Gillings School of Public Health, University of North Carolina, Chapel Hill. Yearly guest lecturer and contributor for waterborne disease material. 2003-present.

Lecturer-Advanced Epidemiological Methods. School of Public Health, University of California, Berkeley. Yearly guest lecturer for Public Health 250B, Advanced Epidemiological Methods. Subject: power calculations, statistical sampling and study design. Yearly guest lecturer for Epidemiology/Biostatistics MPH seminar. Subject: randomized controlled trials and water intervention trials. 1999-2003.

Advanced Epidemiological Methods Instructor. School of Public Health, University of California, Berkeley. Graduate Student Instructor for Public Health 250B, Advanced Epidemiological Methods. Prepared weekly two hour lectures. Voted by faculty and students as an Outstanding Graduate Student Instructor. 1999-2000.

Graduate Student Instructor (Biology). University of California, Berkeley. 1996-June 1997
Biology Instructor. Montwood High School, El Paso Texas. 1995-1996.

Dissertation Committee, University of North Carolina, Chapel Hill. Department of Epidemiology. Department of Environmental Sciences and Engineering, Yvonne Yuen. Studies on approaches to measure coliphage in the environment. 2011-Present

Dissertation Advisor and Mentor, University of North Carolina, Chapel Hill. Department of Epidemiology, Christopher Heaney. Studies of the microbial quality of sand and association with health. 2006-2010.

Thesis Advisor and Reader. University of North Carolina, Chapel Hill. Department of Environmental Sciences and Engineering, Kaida may R. Liang. “Evaluation of biosand filter in rural Cambodia”. 2007

Thesis Advisor and Mentor, North Carolina State University, Department of Statistics, Justin Telech. Advised and guided Mr. Telech in his Master’s Thesis in Statistics on modeling fecal indicator bacteria concentrations at beach sites. 2006-2007.

University of North Carolina, Chapel Hill. Department of Environmental Sciences and Engineering. Thesis advisor and reader, Emylee Privette. “Beach Sand Analysis for Indicators of Microbial Contamination”. 2008-2010.

Dissertation Reader. Monash University, Monash Australia, Shelly Rodrigo. “Health Risk Associated with Consumption of Untreated Rainwater in Metropolitan South Australia.” 2011.

PROFESSIONAL AFFILIATIONS

International Society of Environmental Epidemiology (member)

Society for Epidemiological Research (member)

REFERENCES

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