

## CHARLOTTE D. SMITH, PH.D.

UC Berkeley, School of Public Health  
Environmental Health Sciences  
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### EDUCATION:

#### **Ph.D. Environmental Health Sciences (2012)**

**University of California, Berkeley - School of Public Health**

Berkeley, California

**Doctoral Dissertation:** An Evaluation of Diarrheogenic *Escherichia coli* Survival after Ingestion by *Tetrahymena* sp. and *Helicobacter pylori*'s fate after Ingestion by *Tetrahymena* sp. and *Acanthamoeba polyphaga*

#### **M.A. Community Health (1987)**

**The City University of New York**

Brooklyn, New York

**Masters Thesis:** *Turbidity and Disinfection Efficiency at New York City's Water Supply Entry Points*

#### **B.S. Microbiology and Immunology (1979)**

**The University of Michigan**

Ann Arbor, Michigan

### EXPERIENCE:

**2019 – 2023**                      **Associate Editor**  
CDC Preventing Chronic Disease

**2012 - Present**                **Faculty Lecturer – The University of California, Berkeley**  
**School of Public Health – Division of Environmental Health Sciences**

### Courses:

***Applied GIS for Public Health (PHW272B)***. Developed course materials for this On campus-Online Master of Public Health class. Teach in an online environment.

***Drinking Water and Health (PH170/271C)***. Developed undergraduate/graduate course on water quality and treatment in developed and developing countries. The course explores microbial, chemical and radiological contaminants in water. Special emphasis is placed on water quality evaluation, policy and regulatory frameworks. Course format highlighted in campus-wide “Waves of Innovation-2016”.

***Introduction to Environmental Health Science (PH150B)***. This course covers the interaction of the environment and human health. Topics include exposure assessment, risk assessment, toxicology, epidemiology, environmental justice and case studies of chemical, foodborne and waterborne contaminants.

**2019- Present**                    **Visiting Professor**  
**Universidad Jesuita de Guadalajara (Instituto Tecnológico y de Estudios Superiores de Occidente)**

Co-Principal Investigator on the project: The violation of human rights in the context of socio-economic crises: Analysis of the cases of Mezcala de Asuncion and San Pedro Itzican.

**Courses: Information and Data Collection with Survey123<sup>®</sup> and Collector<sup>®</sup>, Cloud-based GIS using ArcGIS Online.**

**1994 - Present:**                **President**  
**Charlotte Smith & Associates, Inc.**

Charlotte Smith & Associates, Inc. assists drinking water utilities worldwide to improve water quality. The firm conducts pilot studies, and performs treatment plant and distribution system evaluations using a wide variety of methodologies. Specialties are exposure assessment for microbial and chemical contaminants, risk analysis/communication, and Geographic Information Systems.

**1991 - 1993**                    **Director of Water Quality**  
**General Waterworks Corporation**

Acted as advisor to 35 drinking water utilities owned and operated by General Waterworks Corp. Responsibilities included the evaluation of treatment regimes and identification and resolution of water quality problems. Developed the applied research program. Worked with federal and state regulatory agencies on draft regulations, and compliance programs. Acted as liaison to the parent company, Suez Environment (formerly Lyonnaise des Eaux) for water quality projects.

**1985 - 1991**                    **Water Quality Scientist – Demonstration Plant**  
**New York City Department of Environmental Protection**  
**Bureau of Water Supply**

Performed research in public health related water quality issues. Evaluated public health and environmental implications of changes to the City's treatment regimes, including the potential use of alum and chloramine. Supervised water quality investigations at a 3 MGD demonstration filtration plant. Reviewed and commented on water quality regulations. Met with USEPA and Congressional representatives on behalf of the City regarding the Surface Water Treatment Rule, Coliform Rule, and Lead and Copper Rule. Wrote technical support documents for the City's comments on water quality regulations. Coordinated water quality programs with consultants to the City, prepared materials and attended Community Board meetings.

**1987**                                **City University of New York – Brooklyn College**  
Adjunct Lecturer

**1982 – 1984**                    **Columbia University – Department of Microbiology**  
Laboratory Technician / Research Scientist

**1979– 1982**                    **The University of Michigan – Department of Microbiology & Immunology**  
Laboratory Technician / Research Scientist

## **SERVICE - (COMMITTEES & ADVISORY PANELS):**

### **University of California, Berkeley – School of Public Health**

2013 – 2019 Undergraduate Management Committee  
2013 - 2017 Education Policy and Curriculum Committee (EPCC)  
2013 - 2016 Teaching and Research Advisory Council (TRAC)

### **Organization of American States**

2019 – present Pan American Institute of Geography and History

### **United Nations Global Geospatial Information Management**

2018-present Academic Network of the Americas

### **American Water Works Association**

1985-present Microbial Contaminants Technical Advisory Workgroup

### **National Academy of Sciences – National Research Council Panel**

2003-2006 Drinking Water Distribution Systems: Assessing and Reducing Risks

## **GRANTS:**

*Instituto Tecnológico y de Estudios Superiores de Occidente* T  
2019-2021 Violation of Human Rights in the Context of a Socio-economic Crises:  
Analysis of the Cases of Mezcala de Asuncion and San Pedro Itzicán.

*UCOP Health Initiative of the Americas*  
2017 Environmental Assessment Of Cerro Prieto Geothermal Field

*UC Berkeley – Institute for International Studies*  
2016 The Human Right to Water

*UC Berkeley Faculty Lecturer Fellowship*  
2015-2016 Faculty Lecturer Fellow

*UC Berkeley – MATRIX Seminars*  
2014 “The Human Right to Water Graduate Seminar”

*UC Berkeley Professional Development Fund*  
2014 “Using GIS for Water System Development and Assessments in Panama”

*USAID - Blum Center for Developing Economies Development Impact Lab*  
2013 “Collaborative Agreement between UC Berkeley & Global Brigades” Travel  
Grant

*United States Environmental Protection Agency*  
2009-2011 STAR Graduate Fellowship

*Water Research Foundation*  
*A Rapid Method for the Enumeration of Ammonia Oxidizing Bacteria as an Early  
Warning for Nitrification. co-PI*

*Water Research Foundation*  
*Water Quality Modeling of Treated Water Storage Facilities. co-PI*

## **AWARDS:**

### *University of Guadalajara*

2019 Jorge Matute Remus Award

### *UC Berkeley School of Public Health*

2016 Zak Sabry Distinguished Mentorship Award

### *American Water Works Association:*

2004 Journal AWWA – Best Paper

2003 California/Nevada Section: Chair's Award

2001 Water Quality Division: Golden Spigot

## **JOURNAL PEER REVIEWS:**

Canadian Journal of Civil Engineering

Clean Technologies and Environmental Policy

Environmental Science and Technology

International Journal of Environmental Research and Public Health – (special edition editor)

Journal of the American Water Works Association

Journal of Marine Science & Research Development

Journal of Water and Health

Sky Journal of Microbiology Research

Water Research

Water Science and Technology

## **PUBLICATIONS:**

Li, H, Smith CD, Cohen, A, et al., Implementation of Water Safety Plans in China: 2004-2018, Journal of Hygiene and Environmental Health, (2019).

Li H, Smith C, et al. Combining Spatial Analysis and a Drinking Water Quality Index to Evaluate Monitoring Data. International Journal of Environmental Research and Public Health, 2019.

Baek A, Smith C: Potential Contaminant Runoff from California Dairy CAFOs: A Geospatial Analysis, International Journal of Water Resources and Environmental Engineering, 2019.

Rubino F, Corona Y, Jiménez Pérez J, Smith C: Bacterial Contamination of Drinking Water in Guadalajara, Mexico, International Journal of Environmental Research and Public Health, 2019.

Avery D, Smith C: Geographic Differences in Access to Public Drinking Water Fountains in Berkeley, California. Biomed Central – Public Health, 2018

Erickson E, Smith C, Goodrich A, Nelson K: Water quality effects of intermittent water supply in Arraiján, Panama. Water Research, 2017.

Erickson E, Roberson A, Friedman M, Smith C: Low Pressure Events: Variations in State Regulations and Utility Practices, JAWWA, 2015.

Nitrification Prevention and Control Chloraminated Drinking Water. Manual of Water Supply Practices M56, 2<sup>nd</sup> edition. American Water Works Association, Denver, 2013. (Contributing Author – 2 chapters)

Smith C.D., Ashbolt N.J. The Fate of *Helicobacter pylori* Phagocytized by *Acanthamoeba polyphaga* Demonstrated by Fluorescent in situ Hybridization and quantitative-PCR, Current Microbiology, (2012).

Smith, C.D. Berk S.G., Brandl M.T., Riley L.W., Survival Characteristics of Diarrheagenic *Escherichia coli* Pathotypes and *Helicobacter pylori* During Passage through the Free-living Ciliate, *Tetrahymena* sp. FEMS Microbiology Ecology, (2012).

Drinking Water Distribution Systems: Assessing and Reducing Risks. National Academy of Sciences, Washington DC, (2006). (Contributing Author - 2 chapters)

Fundamentals and Control of Nitrification in Chloraminated Drinking Water Distribution Systems. Manual of Water Supply Practices M56. American Water Works Association, Denver, 2006. (Contributing Author - 1 chapter)

Smith, C.D. (ed): Drinking Water Distribution System Self-assessment Workbook. American Water Works Association, Denver, (2005).

Monitoring Ammonia-Oxidizing Bacteria in Chloraminated Distribution Systems. AWWARF, Denver, (2004). (Contributing Author)

Grayman, W.M., Rossman, L.A.; Deininger, Smith C.D.; Arnold C; Smith, J.F.; Mixing and Aging of Water in Distribution System Storage Facilities; JAWWA, (2004).

Hatcher, M.; Grayman, W.M, Smith C.D., Mann, M.A; Monitoring and Modeling of the Sweetwater Authority Distribution System to Assess Water Quality. Proceedings, AWWA ACE, (2004).

Cohen, Y.K, Smith C.D., Baribeau H.: Nitrification: Causes, Prevention, and Control. Opflow, (December 2001).

Smith C.D.: Chloramine Monitoring - What, Where, When. Proceedings of the 2001 Annual AWWA Conference (June 2001).

Smith C.D. & Smith J.F.: Excessive Loss of Chloramine Residual: A Case Study. Proceedings of the 1996 Annual AWWA Conference (June 1996).

Smith C.D. & Smith J.F.: Iron Bacteria in Biofouling and Biofiltration. Proceedings of the 1994 AWWA Water Quality Technology Conference (November 1994).

Smith C.D. & Smith J.F.: Comparison of Biological and Chemical/Physical Iron Removal. Proceedings of the 1994 National Conference on Environmental Engineering, ASCE, Boulder, Colorado. (July 1994).

Smith C.D. & Smith J.F.: Biological Filtration for Iron Removal. Proceedings of the 1994 Annual AWWA Conference.

Smith C.D.: Microbial Problems in Drinking Water Storage Tanks. Proceedings of the 1994 Annual AWWA Conference (June 1994).

Kirmeyer G., Richards W., Smith C.D.: Assessment of North American Distribution Systems. AWWARF (1994).

Dery C.: New York City's Corrosion Evaluation Plan. Regulating Drinking Water Quality. Lewis Publishers, Inc. (1992).

Dery C. et al: Complying with the Surface Water Treatment and Total Coliform Rules. Journal of the American Water Works Association, 82:20-78 (1990).

Conway J.P., Dery C., Shawcross J.: Planning for Large Unfiltered Systems: Boston and New York. Proceedings of the American Water Works Association Annual Conference. (1989).

Geldreich E.E., Dery C., Marrocco F.A., Merry D.J., Perkins W.D., Healey J.J.: Workshop on Coping with the Filtration Rule Exception Criteria. Proceedings of the American Water Works Association Water Quality Technology Conference. (1987).

Mowatt M., Dery C., Dunnick W.: Unique Sequences are Interspersed Among Tandemly Repeated Elements in the Murine I Switch Segment. Nucleic Acids Research, 13:225-237 (1985).

Dunnick W., Shell B.E., Dery C.: DNA Sequences Near the Site of Reciprocal Recombination Between a c-myc Oncogene and an Immunoglobulin Switch Region. Proceedings of the National Academy of Sciences USA, 80:7269-7273 (1983).

Dunnick W., Dery C.: IF2 Immunoglobulin Gene is Associated with Non-immunoglobulin Heavy Chain Switch. Federation of American Societies for Experimental Biology, 67th Annual Meeting. (1983).

Dery C., Cooper S., Savageau M., Scanlon S.: Identification and Characterization of the c-AMP Binding Proteins of Yeast by Photo-affinity Labeling. Biochemical Biophysical Research Communications, 90:933-939 (1979).

## **PRESENTATIONS:**

“Sustainability Goal 6.1 in Jalisco, Mexico” International Forum for Science and Engineering. Guadalajara, Mexico (2019)

“SIG para Administración de Recursos Hídricos” El Foro Abierto de Ciencias de América Latina y el Caribe. Panamá City, Panamá (2018)

“The Role of Proximity, Water Quality, and Tradition in the Selection of Drinking Water Source” United Nations GGIM - Fifth High Level Forum on Global Geospatial Information Management Mexico City, Mexico, November 29, 2017

“Teaching Collector: An Undergraduate Field Experience” ESRI Education Conference (2017)

Mapping the Human Right to Water” ESRI 2017 Users Conference – (2017)

”A mobile-GIS App for Inventorying the City of Berkeley's Drinking Water Fountains”Center for Teaching and Learning - Appy-hour series (2017)

“A mobile-GIS App for Locating UCB Backflow Assemblies: A facilities Services - Student Collaboration” (Center for Teaching and Learning - Appy-hour series 2017)

”Case based learning to increased student engagement” Center for Teaching and Learning – Waves of Innovation Conference (2016)

“Initial Distribution System Evaluation” AWWA WebCast (2005)

Cho A., Kim S., Smith C.D., Regan J.M.; Rapid Enumeration of Ammonia-Oxidizing Bacteria by Real-Time PCR and FISH-Flow Cytometry. Poster American Society of Microbiology Conference, (2004).

“Converting to Chloramines” AWWA WebCast (2004)

“Complying with the Initial Distribution System Evaluation” AWWA Seminar Series (2004)

"Chloramines" AWWA Teleconference (2001)

“Emerging Issues in Distribution System Water Quality” Cal/Nevada AWWA Section Workshop (2001).

“Operating Beyond Regulatory Requirements” Cal/Nevada AWWA Section Meeting (2001).

"Evaluating and Managing Distribution System Water Quality" AWWA Distribution System Symposium (2000).

“Profiling and Benchmarking Requirements of the IESTWR” Cal/Nevada AWWA Section Meeting (1999).

“Modeling Treated Water Storage Facilities.” Cal/Nevada AWWA Section Workshop (1998)

“Microbial Issues of the Information Collection Rule” WQTC (1998)

"Designing Water Treatment Systems to meet Drinking Water Regulations" The University of Delaware (1994).

"Control of Lead in Drinking Water" International Technical Committee Annual Meeting Bordeaux, France (1993).

"Trends in Microbial Regulations" NAWC Annual Legislative Conference, Harrisburg Pennsylvania. (1992).

"The Groundwater Disinfection Rule and Disinfection By-products Rule" Pennsylvania Section Annual Conference (1992).

"Treating Tomorrow Water" Water Resources Association Annual Conference, White Haven, Pennsylvania (1991).

"Trends in Water Treatment Technology" The University of Delaware (1991).

"New York City's Strategy for Treatment of the Croton Supply"

New York Academy of Medicine Symposium: The Drinking Water Crisis in the Greater New York Area: A question of quality not quantity. New York, New York (1990).

"New York City's Experience with the Ozone/Diatomaceous Earth Process" Ontario AWWA Section Meeting, Toronto (1990).

"New York City's Evaluation of Corrosion Control Options"

Conference of Drinking Water and Health, Amherst, Mass. (1990).

"Treating for Microorganisms and Disinfection By-Products Simultaneously - A Utility Perspective" Amherst, Mass. (1990).

"The Safe Drinking Water Act Amendments and the Trend Toward the Use of Ozone in the United States" Moscow, USSR (1989).

"Ozone and the New York City Water Supply" International Ozone Association 9th World Congress, New York, N.Y. (1989).