**EMANUELE SOZZI**

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Legal permanent resident – authorized to work immediately

Director of the UNC Environmental Microbiology Lab. Public health researcher at the world-renowned Water Institute, which is part of the top-ranked UNC Gillings School of Global Public Health – ranked as #1 *public* school of public health in the U.S. and #2 overall. Consultant at the top U.S. mgmt. consulting company Accenture. PI (primary investigator) on NSF and other international grants. Consultant for top international governmental, non-governmental and private organizations, such as World Health Organization, MSF (Doctors without Borders) and Oxfam. I am able to think quickly, deliver under pressure and I have business and financial skills unique among my peers in the public health sector.

**SUMMARY OF SKILLS**

Project coordination and management \* physico-chemical treatment of water and wastewater \* control of domestic and global WaSH-related diseases \* disinfection of high-risk human waste \* project design \* effective scientific presentation

**MAIN INTERESTS**

Water and wastewater disinfection and treatment \* Infectious disease control \* Ebola \* cholera \* antimicrobial resistance \* WSP and SSP (water- and sanitation-safety-planning) \* investigation and control of water- and wastewater-related outbreaks

**EDUCATION**

**PhD**, Global Public Health and Microbiology

*School of Environment and Technology – University of Brighton – United Kingdom*

* *Dissertation:* Low-cost physico-chemical disinfection of human excreta in emergency settings
* *Committee:* Julie Scholes, PhD (Chair), Barbara Evans, Professor, Andy Cundy, PhD

**MSc**, Environmental and Infrastructure Engineering

*School of Environmental Engineering – Polytechnic University of Milan – Italy*

* *Master's Thesis:* Treatment of Dairy Wastewater in a Granular Sludge Sequencing Batch Reactor: Lab Scale Experiments and Computer Simulation

**BEng**, Environmental and Infrastructure Engineering (MSc – BEng program)

Final grade: 92/100 - *School of Environmental Engineering – Polytechnic University of Milan – Italy*

**High School Diploma**, classical literature (Italian, Latin, ancient Greek)

* 1. Final Grade: 57/60 – *Classical High School Omero – Milan – Italy*

**RESEARCH EXPERIENCE**

**Research Associate** Jan 2018 – Present

*UNC Gillings School of Global Public Health, Chapel Hill, NC* **and**

**Postdoctoral Fellow** Feb 2016 – Jan 2018

*UNC Gillings School of Global Public Health, Chapel Hill, NC*

* Principal investigator – In collaboration with one of the top EU water and wastewater utilities, managing the first Italian implementation of Sanitation Safety Planning to water reuse for irrigation and assessing the practice of irrigation use of treated wastewater in an experimental site at which all environmental and health exposure routes for microbiological and chemical contaminants are monitored
* Principal investigator – Assessing the impact of hurricane Florence and Matthew on drinking water safety in North Carolina: rapid assessment and recommendations for recovery and resilience. Assessment of how extreme weather events impact water quality in public piped networks and private wells, and how proximity to hog farms and other CAFOs, septic systems and sewage lines or sewage treatments systems contributes to these impacts. The relative contributions of different classes of pathogens and chemicals to this impairment and their persistence is also assessed

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* Reformulating proprietary disinfectant to enhance inactivation of protozoan cysts and other chlorine-resistant pathogens: evaluation of several candidate chemical disinfectant combinations with respect to the inactivation of *C. perfringens* spores and *Cryptosporidium parvum* oocysts.
* Integrated Cell Culture q-PCR (ICC q-PCR) analysis of reclaimed water and sewage samples from major water utility: improving current wastewater reuse processes and providing risk-management related recommendations
* Optimizing on-site disinfection and assessing survival of Ebola and other viruses in High Risk Human Wastes (HRHW) and sewage: implementation of effective onsite management systems in health care and other critical settings to reduce the risks of the spread of emerging pathogens
* Testing and enhancing the efficacy of peracetic acid for disinfection of hospital waste and surfaces in emergency situations
* Estimating the proportion of Carbapenem-Resistant Enterobacteriaceae (CRE) cases that are community-associated and detecting transmission of carbapenem resistance within the community. This work is part of the effort to address the public health threat represented by CRE
* Developing and piloting the first integrated and scalable regional One Health monitoring, analysis, and decision support tool designed for local actors and policy makers who need to assess antimicrobial resistance (AMR) hazards and prioritize interventions to control risks
* Writing WaSH related grants - background, research design, analysis and budget development - corresponding to several million $ requested funds. Funding agencies: CDC, NSF, B&M Gates Foundation, USAID etc. 6 submissions recently funded, 2 pending review and 2 in development
* Contributing to the development and implementation of the World Health Organization global surveillance program of the *Tricycle Project* to detect, quantify and characterize ESBL *E. coli* in clinical, animal and environmental samples as a One Health Approach for global AMR surveillance
* Evaluating candidate diagnostic culture media for ESBL *E. Coli* in environmental samples as a One Health indicator system for World Health Organization global antimicrobial resistance surveillance program. Pro-Bono work for the World Health Organization Tricycle Project

**PhD Research** April 2012 – Dec. 2015

*School of Environment and Technology – University of Brighton – United Kingdom*

* SANIMEDE (Sanitary Intervention in Medical Emergencies) project for the on-site disinfection of *Vibrio cholerae* and other bacteria and viruses in High Risk Human Wastes (HRHW): design of onsite management systems in emergency settings to reduce the spread of emerging pathogens
* Contributed to the development of the World Health Organization documentation related to recommended WaSH best practices during the West Africa 2014 Ebola outbreak
* Pro bono consulting work for *Médecins Sans Frontiéres* (Doctors without Borders) during the interventions for the prevention of infectious disease outbreaks in Haiti
* Pro bono consulting work for Oxfam during the interventions in the Philippines and Myanmar

**Teaching & Mentoring Experience as Graduate Research Assistant** April 2012 – Dec. 2015 *School of Environment and Technology – University of Brighton – United Kingdom*

* Taught 'Water and Environmental Mgmt' for 'Master in Environ. Science' – acad. year 2013-14
* Guest Lecturer for the Ebola interest group at the London School of Hygiene and Trop. Medicine
* Guest Lecturer for the Construction Mgmt. and Civil Engineer. 'Design Week' – acad. year 2014
* Taught Mathematics tutorial classes – acad. year 2012-13, 2013-14 and 2014-15
* Taught Construction Materials tutorial classes – acad. year 2014-15
* Several other guest lectureships incl. 'Water and Environ. Mgmt' for 'Master in Env. Science'
* Contributed significantly to the background, research design, analysis of several grant submissions including the successful submission of a GBP 120,000 USAID grant

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* Mentorship of undergrad and master students, assisted in the development of course content and assignments, evaluated students by providing written feedback and grades

**CONSULTING EXPERIENCE**

**Water and Sanitation Engineer and Researcher** Nov. 2010 – Oct. 2011

*Médecins Sans Frontiéres – Doctors without borders, Nederland, Germany, Haiti*

* Water and sanitation (WATSAN) supervisor at three cholera treatment centres (CTCs)
* Led disinfection of High Risk Human Wastes contaminated by *V. cholerae* and other pathogens
* Designed and implemented pilot plant and large scale treatment plants
* Supervised staff members working on supply of potable water for hospitals

**Management Consultant** May 2005 – Jan. 2012

*Accenture, Milan, Munich and Frankfurt*

* Test Manager during rollout of new test centre at top German Retail and Investment Bank – Munich July – Oct. 2010
* Coached project management through the creation of a new test centre at top World Chemical Company – Ludwigshafen am Rhein March – July 2010
* Test Manager during banks merge at top German Retail and Investment Bank – Frankfurt Aug. 09 – March 2010
* Implemented a new database management tool for the management of business documents at top German IT Company – Munich Jan – Aug 2009
* Upgraded new central trade enrichment system for institutional trading which replaced old applications at top German Investment Bank – Munich Jan – Dec 2008
* Consulted on conception of a new Test Centre at top Swiss Insurance – Bern Nov. – Dec. 2007
* Set up new target operating model for the overall customer care centre and the overall product and process centre at top German Insurance – Munich Jan – Oct. 2007
* Implemented new strategy for the reorganization of a business unit at top Swiss Insurance Company – Frankfurt Aug – Dec 2006
* Transformated IT-Platform for services dedicated to clients, back office operators and Personal Financial Advisors, Business Project Management (BPM) at top Italian/EU Bank – Milan Oct 2005 – Jul 2006
* Organizational performance management in collaboration with the Human resources department at top Italian/EU Bank – Milan May – Sep 2005

**Junior Research Assistant** Sep 2003 – July 2004

*Water Quality and Waste Mgmt. Department* – *Munich Technical University, Munich, Germany*

* Operation of a pilot-scale sequencing batch reactor designed for the optimisation of a dairy wastewater treatment plant
* Supervision of an internship student
* Development of a calculation model for the computer simulation of the same pilot-scale reactor
* Masters dissertation based on laboratory data and computer model results

**Junior Lab Technician** May – Aug 2002

*Water Quality and Waste Mgmt. Department* – *Vienna Technical University, Vienna, Austria*

* Assisting two engineers working at the Water Quality and Waste Mgmt. Department
* Optimization of a farm multilane wastewater (ww) treatment plant
* Optimization of post-treatment of activated excess sludge produced in a ww treatment plant

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**PUBLICATIONS AND PRESENTATIONS**

Selected Publications

* WHO – Ebola Virus Disease – Key Questions and Answers Concerning Water, Sanitation and Hygiene. Dec. 2014 <http://www.who.int/water_sanitation_health/WASH_and_Ebola.pdf>
* **Sozzi, E.**, Fabre, K., Fesselet, J.-F., Ebdon, J.E. and Taylor, H.D. (2015). Minimizing the risk of disease transmission in emergency settings: novel in situ physico-chemical disinfection of pathogen-laden hospital wastewaters. *Plos Neglected Tropical Diseases*. June 25, 2015 <https://doi.org/10.1371/journal.pntd.0003776>
* Pruden, A., Alcalde, R., Alvarez, P., Ashbolt, N., Bischel, H., Capiro, N., Crossette, E., Frigon, D., Grimes, K., Haas, C., Ikuma, K., Kappell, A., LaPara, T., Kimbell, L., Li, M., Li, X., McNamara, P., Seo, Y., Sobsey, M., **Sozzi, E.**, Navab-Daneshmand, T., Nguyen, Thanh H., Raskin, L., Riquelme, M., Vikesland, P., Wigginton, K., Zhou, Z. (2018) An Environmental Science and Engineering Framework for Combating Antimicrobial Resistance. *Environmental Engineering Science.* May 2018 <https://doi.org/10.1089/ees.2017.0520>
* **Sozzi, E.** and Baloch N., Strasser, J., Fisher, M.B., Leifels, M., Camacho, J., Mishal, N., Elmes, S.F., Allen, G., Gadai, G., Valenti, L., Sobsey, M.D. (2018) A Bioassay-based Chemical Neutralization Protocol to Determine the Disinfectant Dose to Treat Highly Infectious Human Faecal Waste: A Case Study on Benzalkonium Chloride. *Internat. Journal of Hygiene and Environmental Health.* <https://www.sciencedirect.com/science/article/pii/S1438463917307332?via%3Dihub>
* Leifels, M., Shoults, D., Wiedemeyer, A., Ashbolt, N., **Sozzi, E.**, Hagemeier, A. and Jurzik, L. (2019) Capsid Integrity qPCR—An Azo-Dye Based and Culture-Independent Approach to Estimate Adenovirus Infectivity after Disinfection and in the Aquatic Environment. *Water* – Special Issue *Water Quality Impacts of Contaminant Transport and Transformation*. <https://www.mdpi.com/2073-4441/11/6/1196/pdf>
* Anthonj, C., Fleming, L., Ambelu, A., Cronk, R., Godfrey, S., **Sozzi, E.**, Bevan, J., Bartram, J. Improving Monitoring and Water Point Functionality in Rural Ethiopia. *Water* – Special Issue *Monitoring and Governance of Water and Sanitation Services and Water Resources for*

*Sustainable Development*  – Water-369590; doi: 10.3390/w10111591 <http://www.mdpi.com/2073-4441/10/11/1591/pdf>

* Wichern M., Schwarzenbeck N., Lübken M., **Sozzi E.**, Horn H. Treatment of dairy wastewater with aerobic granular sludge - Experiences and mathematical modelling. GWF, Wasser - Abwasser (2008) 149(3)
* Taylor, H., Fesselet, J.-F., **Sozzi, E.**, Curtis, T., and Mahama, A. Cutting the cholera risk – alternative approaches for medical centre wastewater treatment. *Water21.* I. Aug 2011, pp. 47

Selected conference presentations

* Sobsey, M., Koltun, A., T. Chai, T., Casanova, L., Jacob, M., **Sozzi, E.** Evaluation of Candidate Diagnostic Culture Media for ESBL E. coli in Environmental Samples as a One Health Indicator System for Global Antimicrobial Resistance Surveillance. Poster. CDC ICEID, Atlanta, GE, 2018
* **Sozzi, E.**, Strasser, J., Baloch M., Allen, G., Camacho, J., Elmes, S.F., Gadai, G., Mishal, N., Valenti, L., Bailey E., Casanova, L. Leifels, M., Sobsey, M.D. Rapid *In Situ* Physico-Chemical Disinfection of Hospital Sewage and Human Fecal Waste Contaminated with Ebola Virus Surrogates and Other Highly Infectious Viruses. Platform presentation. UNC Water Micro. Chapel Hill, NC, 2017

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* **Sozzi, E.**, Strasser, J., Allen, G., Baloch M., Camacho, J., Elmes, S.F., Gadai, G., Mishal, N., Valenti, L., Bailey E., Casanova, M., Sobsey, M.D. Management of Hospital Sewage and Human Fecal Waste Contaminated with Ebola and other Highly Infectious Viruses through Rapid *In Situ* Physico-Chemical Disinfection. Platform pr. and poster. AEESP conference. Ann Arbor, MI, 2017
* Elmes, S.F., **Sozzi, E.**, Strasser, J., Baloch M., Allen, G., Camacho, J., Gadai, G., Mishal, N., Valenti, L., Bailey E., Casanova, M., Sobsey, M.D. Survival of Virus Surrogates in Hospital Sewage and

Human Fecal Waste Contaminated with Ebola Virus Surrogates and other Highly Infectious Viruses. Platform and poster presentation. UNC Water Micro. Chapel Hill, NC, 2017

* **Sozzi, E.**, Strasser, J., Allen, G., Baloch M., Camacho, J., Elmes, S.F., Gadai, G., Mishal, N., Valenti, L., Bailey E., Casanova, M., Sobsey, M.D. Hospital Sewage and Human Fecal Waste Contaminated by Ebola Virus: Why is Chlorine-Based Disinfection a Risk. Platform. WRRI, Raleigh, NC, 2017
* Brown, K.M., **Sozzi, E.**, Sobsey, M.D. Methods for Surveillance of Antimicrobial Resistant Bacteria in Environmental Water and Wastewater. Platform. WRRI, Raleigh, NC, 2017
* Sozzi, E. et al. UN ‘Merit360 - Action Plan 001’ for the promotion and the definition of the UN Sustainable Development Goal No. 6. United Nations World Merit workshop 2016. <https://issuu.com/worldmerit/docs/ap001_separate>
* **Sozzi, E.**, Fesselet, J.-F., Taylor, H.D. Latest updates on novel approaches to the treatment and disinfection of wastewaters from cholera treatment centres. Platform presentation. IWA Conference - Disinfection and Inactivation for Water, Wastewater and Sludge, Mexico City, 2012
* **Sozzi, E.**, Fesselet, J.-F., Taylor, H.D. Novel approaches to the treatment and disinfection of cholera treatment centre wastewaters. Platform presentation. 9th IWA Leading-Edge Conference on Water and Wastewater Technologies, Brisbane, Australia, 2012

**AWARDS**

* During the two years I directed the UNC environmental microbiology laboratory, the lab was awarded two gold medals for best laboratory practices from UNC EHS
* Brighton Santander Travel Grant 2013. Building a long-term UK-Brazil academic collaboration

**PROFESSIONAL AFFILIATIONS**

Chartered engineer at Italian Civil Engineering Council Feb 2005

**LANGUAGE SKILLS**English – advanced. German – advanced. French – intermediate. Spanish – basic. Italian – advanced

**PROFESSIONAL SERVICE**

World Health Organization Visiting Scientist and Advisor

Reviewer of high profile research grants for NERC – UK Natural Env. Research Council [www.nerc.ac.uk](http://www.nerc.ac.uk)

Future role within the editorial board of the *Int. Journal Hygiene Env. Health* currently under discussion

Reviewer for top scientific journals such as *British Medical Journal, Journal of Water and Health, Science of the Total Environment* – full list available

**COMMUNITY SERVICE AND OTHER ACTIVITIES**

PhD student rep. and student mentor at the University of Brighton 2013 – 2014

Pro bono consulting work for World Health Organization,

*Médecins Sans Frontiéres* and Oxfam 2013 – present