## BIOGRAPHICAL SKETCH

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NAME: Reynolds, Kelly A.

eRA COMMONS USER NAME (credential, e.g., agency login): KELLYREYNOLDS

POSITION TITLE: Professor of Environmental Health Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

| INSTITUTION AND LOCATION | DEGREE *(if applicable)* | Completion Date MM/YYYY | FIELD OF STUDY |
|---|---|---|---|
| University of Arizona, Tucson, AZ | BS | 05/1989 | Microbiology |
| University of South Florida, Tampa, FL | MS | 09/1992 | Public Health |
| University of Arizona, Tucson, AZ | PhD | 05/1995 | Environmental Sciences |

### A. Personal Statement

I am a Professor and Chair of the Community, Environment and Policy Department, and Director of the Environment, Exposure Science and Risk Assessment and the Western Region Public Health Training Centers (WRPHTC) at the University of Arizona's Zuckerman College of Public Health (COPH) and have 36+ and 26+ years of experience in environmental health and as a project PI, respectively, leading and participating in diverse, multidisciplinary teams. I have received international recognition for service and research contributions including the Water Quality Association's Honorary Membership Award, the William B. Fritzsche Memorial Top 50 International Award, and the 2015 COPH Research Excellence Award. I have extensive experience leading research and service activities related to hazard transmission in the built and natural environment, human health risk assessment, public health policy, and education. The development of rapid methods to detect microbial and chemical contaminants in complex matrices is a common theme in my research. Utilizing environmental monitoring and human behavioral data, I have developed quantitative risk assessment models to characterize health outcomes related to environmental exposures. Funded by the Centers for Disease Control and Prevention, the US Environmental Protection Agency, the Water Quality Research Foundation, the US Department of Agriculture, the National Science Foundation, and others, my focus is on human health risks and rapid water monitoring tools using cultural, molecular, smartphone-sensing, and spectroscopic technologies. During my career, I have formally mentored over 80 graduate students, served as a PI on numerous projects, published over 530 journal articles, book chapters, and professional reports, and worked on multidisciplinary teams to cultivate advancement in research and service methods related to environmental hazard exposures and public health protection policies. For this application, I look forward to sharing my expertise, insights, and leadership toward related environmental exposures and health assessments.

Ongoing and recently completed projects that I would like to highlight include:
98T65901
Beamer (PI), Reynolds (co-I)
03/01/2023-02/28/2028
USEPA/DOE
Western Environmental Science Technical Assistance Center for Environmental Justice

UB6HP31687
Reynolds (PI)
7/01/2021-6/30/2026

NIH Health Resources and Services Administration (HRSA) Western
Region Public Health Training Center

5126/8402600
Betancourt (PI), Reynolds (co-I)
7/01/2021-6/30/2024
USEPA
Advancing Safety and Reliability to Protect Public Health: Water Reuse Applications

75D30121C12722
Reynolds (co-PI)
09/27/2021-03/24/2023
CDC
SARS-CoV-2 Viability and Persistence in Sewage Samples Across the United States Using In Vitro Cell Culture and Molecular Methods

20IPA2014142-MO2
Reynolds (PI)
09/01/2020-08/31/2024
CDC-NIOSH Intergovernmental Personnel Agreement.
Advancing Workplace Safety Protocols for First Responders

No Grant ID
Reynolds (PI)
08/01/2015-06/30/2024
NSF-WET Center; Tucson Water
Development of Consumer Outreach and Risk Communication Tools on Emerging Contaminant Exposures

No Grant ID
Reynolds (PI)
12/14/2021-12/13/2024
Splashblocker, Inc.
Quantitative Evaluation of Air, Surface, and Hand Contamination Potentials and Impact on Microbial Exposure and Risk Assessment

No Grant ID
Reynolds (PI)
03/04/2022-03/01/2024
Reckitt
Quantitative Assessment of Pathogen Transfer and Risk in Hotel and Office Built Environments

No Grant ID
Reynolds (PI)
12/28/2020-03/01/2022
Ecolab
Evaluation of Hand Hygiene Intervention Efficacies Using In Vitro Methods and a Simulated Food Service Scenario

## B. Positions, Scientific Appointments, and Honors

### Positions and Scientific Appointments

| | |
|---|---|
| 2018 - Present | Professor (Tenured), Environmental Health Sciences (EHS); Community, Environment and Policy Department Chair, The Mel and Enid Zuckerman College of Public Health (MEZCOPH), University of Arizona |
| 2021 - 2022 | Interim, Associate Dean for Research |

| | |
|---|---|
| 2021 - Present | Director, Western Region Public Health Training Center |
| 2013 - Present | Director, Environment, Exposure Science and Risk Assessment Center (ESRAC) |
| 2012 - Present | Member, Association for Professionals in Infection Control |
| 2006 - Present | Associate Professor, Department of Soil, Water and Environmental Science, College of Agriculture, University of Arizona |
| 1995 - Present | Lifetime Member, Water Quality Association |
| 2016 - 2021 | Founding member, Healthcare Acquired Transmission Systems (HITS) Consortium |
| 2010 - 2021 | Public Health Editor, Water Conditioning and Purification International |
| 2006 - 2018 | Associate Professor, EHS, MEZCOPH, University of Arizona; Tenured (2012) |
| 1995 - 2006 | Assistant Research Scientist/Appointed Faculty, Department of Soil, Water and Environmental Science, University of Arizona |

**Honors**

| | |
|---|---|
| 2022 | 2022 NIOSH Science and Service Award. Bullard-Sherwood Research to Practice Award Finalist for Intervention. (Honorable Mention Certificate) NIOSH COVID-19 IPA Program: Expanding Occupational Health and Safety Expertise Through External Partnerships |
| 2020 | American Chemical Society (ACS) Omega, top 50 most outstanding articles to demonstrate the quality of work published over the last 5 years. |
| 2019 | Delta Omega, Alpha Nu chapter, Honorary Society, Faculty Member |
| 2015 | University of Arizona, College of Public Health Top Researcher Award |
| 2009 | William B. Fritzsche Memorial Top 50 International Award, for service and dedication to the water treatment industry |
| 2009 | Water Quality Association, Honorary Member Award. In recognition of exceptional service given to the water quality improvement industry. |
| 2009 | Water Conditioning and Purification International's Award of Appreciation for the most requested article reprints in journal history, 2008-2009 |

**C. Contributions to Science**

1. My early publications focused on the detection of pathogens from complex environments (i.e., marine water and sediment). Here I developed expertise in minimizing the effect of inhibitory compounds in the environment that reduced the detection sensitivity of our environmental assays. On each of these projects, I served as the lead investigator and primary author.
    a. **Reynolds, K.A**., K. Roll, R.S. Fujioka, C.P. Gerba, I.L. Pepper. 1998. Incidence of enteroviruses in Mamala Bay, Hawaii using cell culture and direct PCR methodologies. Canadian Journal of Microbiology. 44(6):598-604.
    b. **Reynolds, K.A**., C.P. Gerba, I.L. Pepper. Rapid PCR based monitoring of infectious enteroviruses in drinking water. 1997. Water Science and Technology. 35(11-12):423-427.
    c. **Reynolds, K.A**., C.P. Gerba, I.L. Pepper. 1995. Detection of enteroviruses in marine waters by direct RT-PCR and cell culture. Water Science and Technology. 31(5-6):323-328.
    d. **Reynolds, K.A**., J.B. Rose, A.T. Giordano. 1993. Comparison of methods for the recovery and quantitation of coliphage and indigenous bacteriophage from marine waters and sediments. Water Science and Technology. 27(3-4):115-117.

2. This early work led to the use of mixed assays to overcome deficiencies in single methods alone (i.e., lack of viability assessment with molecular methods and labor/time intensive and expensive cell culture assays). One of my most recognized contributions to the field was pioneering the integrated cell culture PCR (ICC/PCR) method for the detection of viable human viruses in 24 hours compared to a minimum of 5 days using conventional assays. This method was further developed in my lab, and used worldwide, to improve environmental virus detection results.
    a. Mahalanabis, M., **K.A. Reynolds**, I.L. Pepper, C.P. Gerba. 2010. Comparison of multiple passage integrated cell culture-PCR and cytopathogenic effects in cell culture for the assessment of poliovirus survival in water. Journal of Food and Environmental Virology. 2(4):225-230.
    b. **Reynolds, K.A**., C.P. Gerba, M. Abbaszadegan, I.L. Pepper. 2001. ICC/PCR detection of enteroviruses and hepatitis A virus in environmental samples. Canadian Journal of Microbiology. 47(3):153-157.

c. Blackmer, F., **K.A. Reynolds**, C.P. Gerba, I.L. Pepper. 2000. Use of integrated cell culture-PCR to evaluate the effectiveness of poliovirus inactivation by chlorine. Applied Environmental Microbiology. 66(5):2267-2268. PMCID: PMC101488.
d. **Reynolds, K.A**., C.P. Gerba, I.L. Pepper. 1996. Detection of infectious enteroviruses using an integrated cell culture/PCR procedure. Applied and Environmental Microbiology. 62(4):1424-1427. PMCID: PMC167909.

3. My research further evolved by utilizing empirical tracer studies for tracking variables of hazard exposures and human behaviors to estimate health risks.
    a. Jung, Y., S.E. Abney, **K.A. Reynolds**, C.P. Gerba, A.M. Wilson, 2023. Evaluating infection risks and importance of hand hygiene during the household laundry process using a Quantitative Microbial Risk Assessment approach, AJIC: American Journal of Infection Control. 51(12):1377-1383
    b. **Reynolds, K.A**., J.D. Sexton, F. Garavito, B. Anderson, J.M. Ivaska. 2021. Impact of a whole-room hypochlorous acid atomizing disinfection system on healthcare surface contamination, pathogen transfer, and labor efficiency. Critical Care Medicine. 3(2): e0340. PMCID: PMC7892299.
    c. Sexton J.D., A.M. Wilson, H.P. Sassi, **K.A. Reynolds**. Tracking and controlling soft surface contamination in health care settings. American Journal of Infection Control. 2018;46(1):39-43.
    d. Munoz-Gutierrez, K.M., R. A. Canales, **K.A. Reynolds**, M.P. Verhougstraete. 2018. Floor and environmental contamination during glove disposal. Journal of Hospital Infection. 101(3):347-353.

4. Risk models were also developed to evaluate chemical contaminants in select environments, cost-benefit of treatment interventions, and policy decisions.
    a. Griffin, S.C., M.M. Scanlon, **K.A. Reynolds**. 2023. Managing building water disruptions in a post COVID world: water quality and safety risk assessment tool for academic institutions and school settings. Advances in the Indoor Environments and Respiratory Health. 13(4): 921.
    b. Verhougstraete, M.P., J.K. Gerald, C.P. Gerba, **K.A Reynolds**. 2019. Cost benefits of point-of-use devices for lead reduction. Environmental Research. 171: 260-265.
    c. Verhougstraete, M.P., K. Pogreba-Brown, R. Canales, **K.A. Reynolds**, C. Condé Lamparelli, M. Inês Zanoli Sato, J.N.S. Eisenberg. 2020. A critical analysis of recreational water guidelines developed from temperate climate data and applied to the tropics. Water Research. 170(1): 115294. PMID: 31765827; PMCID: PMC6962556.
    d. Lothrop, N., K.R. Bright, J.D. Sexton, J. Pearce-Walker, **K.A. Reynolds**, M.P. Verhougstraete. 2018. Optimal Strategies for Monitoring Irrigation Water Quality. Agricultural Water Management. 199(2018): 86-92.

5. In addition to the contributions above, I have participated in related scholarly activities to advance public knowledge on environmental health topics and provided service in the field to advance environmental risk assessment and management practices and policies. Select activities include:
    a. Scanlon, M.M., J.L. Gordon, **K.A. Reynolds**. 2023. Building water quality commissioning in healthcare settings: reducing *Legionella* and water contaminants utilizing a construction scheduling method. Buildings. 13(10), 2533.
    b. King, M-F., A.M. Wilson, M.H. Weir, M. López-García, J. Proctor, W. Hiwar, A. Khan, L.A. Fletcher, P.A. Sleigh, I. Clifton, S.J. Dancer, M. Wilcox, **K.A. Reynolds,** C.J. Noakes. 2022. Modelling fomite mediated SARS-CoV-2 exposure through PPE doffing in a hospital environment. Indoor Air. Jan; 32(1): e12938
    c. **Reynolds, K.A.**, M.P. Verhougstraete, K.D. Mena, S.A. Sattar, E. Scott, C.P. Gerba. 2022. Quantifying pathogen infection risks from household laundry practices. Journal of Applied Microbiology. 132:1435-1448.
    d. Wilson, A.M., R.M. Jones, V.L. Lugo, S.E. Abney, M.F. King, M.H. Weir, J.D. Sexton, C.J. Noakes, **K.A. Reynolds**. 2021. Respirators, face masks, and their risk reductions via multiple transmission routes for first responders within an ambulance. Journal of Occupational and Environmental Hygiene. 18:7:345-360.

Complete List of Published Work in MyBibliography
http://www.ncbi.nlm.nih.gov/sites/myncbi/kelly.reynolds.1/bibliograpahy/50062426/public/?sort=date&direction=ascending