

Research Projects at UA WEST Center

Summer 2019

<u>Project</u>	<u>Main Contact(s) at WEST Center*</u>	<u>Email(s)</u>
Anammox for Side Stream Treatment of Effluent Purpose: Investigate the efficiency and cost-savings of removing NH ₄ from effluent using the anammox process.	Jeff Prevatt / Jim Field	jeff.prevatt@pima.gov jimfield@email.arizona.edu
Fluidized Bed Crystallization Reactor (FBCR) / ZLD Purpose: Implement FBCR system to remove inorganic contaminants and investigate organic contaminant removal.	Jim Farrell	farrellj@email.arizona.edu
PFAS Attenuation by Activated Carbons and Anion-Exchange Resins Purpose: Evaluate various treatment technologies for PFAS attenuation.	Minkyu Park	minkyupark@email.arizona.edu
Hybrid Optical Technology for Inland Desaliantion Purpose: Off-grid demonstration-scale solar desalination system for inland brine management.	Kerri Hickenbottom / Andrea Achilli	klh15@email.arizona.edu achilli@email.arizona.edu
Water-reuse concentrate management with biologically activated filtration Purpose: Investigate removal mechanisms of BAF system for water reuse concentrate.	Kerri Hickenbottom	klh15@email.arizona.edu
Modeling reverse osmosis and forward osmosis systems for combing wastewater treatment and seawater desalination applications Purpose: Develop multiscale models for spiral-wound membrane modules and their applications in membrane systems.	Andrea Achilli	achilli@email.arizona.edu
RAPID integrated course: emerging membrane processes for wastewater treatment Purpose: Develop a hands-on course for process intensification using membranes for potable water reuse.	Andrea Achilli	achilli@email.arizona.edu

Near zero-liquid discharge water reuse with a closed-circuit ozone-membrane distillation process

Purpose: Enhance water recovery in inland water reuse systems through a closed-circuit ozone-membrane distillation process.

Andrea Achilli

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A low-energy wastewater treatment and potable reuse system utilizing waste heat at fixed installations

Purpose: Demonstrate an osmotic membrane bioreactor - membrane distillation system for potable water reuse.

Andrea Achilli

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Increase water recovery of ultrafiltration - reverse osmosis for water reuse

Purpose: Evaluate pre-treatment options and cleaning strategies to improve overall water recovery of the UF/RO treatment train.

Andrea Achilli / Bianca Chaves

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Electro Magnetic Effects on Enhancing Efficacy of Chlorine Disinfection

Purpose: Evaluate the influence of electromagnetic wavelengths on chlorine use efficiency.

Ian Pepper

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Turf Grass Study

Purpose: Evaluate new technologies to improve consumptive water use efficiency of turf.

Ian Pepper

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Soil ATP/AMP Analyses

Purpose: Evaluate microbial community stress in soil to optimize timing of irrigation.

Ian Pepper

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Corrosion of Pipe Metal in water

Purpose: Correlate corrosion of pipe metal to water conditions and track in time with high temporal resolution for predicting pipe lifetime.

Don Gervasio / Dan Quintinar

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Indicator Viruses to Confirm Performance of Advanced Physical Treatment

Purpose: Identify and evaluate potential viral indicator(s) for assessing the performance of physical treatment processes during advanced water treatment for potable reuse.

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Kelly Bright

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CONSERVE (COordinating Nontraditional Sustainable watER Use in Variable climatEs)

Charles Gerba / Kelly Bright

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Purpose: Investigate alternative water sources for future use in the irrigation of food crops.

bright@email.arizona.edu

Simple rapid method for detecting *E. coli* in irrigation water

Purpose: Evaluate a rapid test for detecting *E. coli* in irrigation waters.

Kelly Bright / Charles Gerba

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Specific, rapid quantification of fecal contamination

Purpose: Investigate microbial fecal markers to determine the source and levels of irrigation water contamination.

Walter Betancourt / Kelly Bright

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Evaluation of Tracers of Fecal Pollution in Drinking Water Distribution Systems

Purpose: Develop and compare microbial and chemical methods for rapid evaluation of drinking water safety in distribution systems.

Walter Betancourt / Minkyu Park

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Electrostatic spray for produce sanitization

Purpose: Evaluate an electrostatic spray system for produce sanitization in comparison to conventional treatments.

Charles Gerba / Kelly Bright

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Application of bovine viruses/fecal sterols to determine contamination source

Purpose: Evaluate the use of bovine viruses and fecal sterols to determine the source and levels of contamination of irrigation waters.

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Assessment of bacterial and viral pathogen die-off on specialty crops

Purpose: Determine the survival of microbial pathogens on various produce – controlled environment chamber.

Charles Gerba / Kelly Bright

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Development of a model to predict the impact of sediments on microbial irrigation water quality

Purpose: Understand pathogen movement in irrigation waterways to assist with the prevention of food-borne illness.

Charles Gerba / Kelly Bright

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Routes of environmental exposure and incidence in selected populations of *Cyclospora cayetanensis* in Arizona and Sinaloa, Mexico

Purpose: Assess the occurrence of *Cyclospora cayetanensis* in Mexico and Arizona.

Charles Gerba / Kelly
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Compiling Evidence of Pathogen Reduction through Managed Aquifer Recharge and Recovery

Purpose: Conduct pathogen-focused workshop.

Charles Gerba

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Computational Simulation of Pathogen Microorganisms in Irrigation Canals

Purpose: Develop a model to predict the resuspension of pathogens from various sediment types.

Charles Gerba

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Detection of waterborne adenoviruses by inductively coupled plasma mass spectrometry based magnetic immunoassay with gold nanoparticles labeling

Purpose: Use of ICPMS to detect viruses.

Walter Betancourt

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Determining wastewater treatment efficacy through biosolids evaluation

Purpose: Determine treatment efficacy through detection of virus and microbial species in biosolids.

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** Up to two names are listed here, though additional investigators may be working on a project. Contact the listed person(s) for more information.*