THE UNIVERSITY OF ARIZONA

WEST CENTER

WATER & ENERGY SUSTAINABLE TECHNOLOGY

Microbiology Group

-7 PhD, 1 MS, 4 BS, 7 students

-Largest data base in the world on virus removal by wastewater treatment

- -routine monitoring for 7 years of 3 advanced wastewater treatment plants
- -Data at multiple full-scale operations for Bardenopho, UF, RO, AOP, BAC, managed aquifer treatment, , disinfection (chlorine, UV light)

-All samples are archived for future studies

THE UNIVERSITY OF ARIZONA®
WEST CENTER
WATER & ENERGY SUSTAINABLE TECHNOLOGY

Microbiology Group

-63 journal articles, book chapters, books since start of WEST (4 years)

-capable of detecting any pathogen in water/biosolids

Current projects

- CONSERVE water reuse for agriculture – USDA
- Modeling of pathogen transport by sediments – USDA, CPS, ADA
- Novel disinfectants– various industries
- New low-cost methods detection for indicators and pathogens – ADA
- Soil aquifer treatment technologies – WRF, Tucson Water
- Pathogen removal by advanced treatment processes – WRF, BARD, industry
- Microbial source tracking – ADA
- Quantitative microbial risk assessment – ADA, various industries

Incidence and Potential Transport of Microplastics at Managed Aquifer Recharge – Soil Aquifer Treatment

Background:

- Sewage contains large amounts of microplastics (≤5 µm)
- Soil aquifer treatment (SAT) sites provide advanced treatment of effluent from wastewater treatment plants, to produce high quality water for reuse applications
- Examination of soil and vadose zone at SAT sites provides unique opportunity to evaluate fate and transport of microplastics accumulated over several years of recharge

Approach:

- Analysis of microplastics will be via Fourier Transformed Infrared Analysis (FTIA) with an Agilent 8700 LDIR Chemical Imaging Systems

Approach - *continued*:

- Transport of microplastics will be evaluated by analysis of surface and subsurface samples of soil and vadose zone, initially to depths of 5 feet
- Three SAT sites in close proximity to WEST will be utilized

Deliverables:

- Evaluation of the incidence of microplastics in effluent and at SAT sites
- Evaluation of the mobility of microplastics through soil and vadose zone
- Determine log removal of microplastics – model removal?