

WaterMicro, Costa Rica 2027

Introduction

Water Micro is an event organized by the **Health-Related Water Microbiology Specialist Group (HRWM)** of the International Water Association (IWA) and is the leading global event in this field.

Water Micro is held biennially and brings together between **250 and 350 attendees from different countries around the world**, representing both the public and private sectors.

In 2027, the event will take place in **Costa Rica**, where the local hosts are the University of Costa Rica (UCR), the National University of Costa Rica (UNA), the Costa Rica Institute of Technology (TEC), and the Costa Rican Institute of Aqueducts and Sewers (AyA), the autonomous public institution responsible for managing the country's water resources.

Who Attends

1. Researchers and Academics

They represent the core of the symposium (approximately 50–60% of attendees). Their objective is to present cutting-edge basic and applied science.

• **Who they are:** Professors, scientists from research institutes, environmental microbiologists, and PhD students.

Areas of interest:

1. Development of rapid detection methods (digital PCR, next-generation sequencing/NGS).
2. Dynamics of antimicrobial resistance (AMR) in the water cycle.
3. Effectiveness of new disinfection technologies (ozone, UV-LED, membranes) for pathogen removal.
4. Modeling of virus and bacteria transport in aquifers and distribution systems.

2. Environmental Virologists and Parasitologists

This is a crucial scientific subgroup due to the impact of waterborne viruses and emerging protozoa.

• **Who they are:** Medical and environmental virologists, public health experts, and directors of pathogen reference laboratories.

Areas of interest:

1. Wastewater-Based Epidemiology (WBE): Community monitoring of viruses such as SARS-CoV-2, influenza, polio, and norovirus through sewage systems.



2. Detection and viability of human enteric viruses and bacteriophages (used as indicators of fecal contamination).
3. Control of chlorine-resistant parasites such as *Cryptosporidium* and *Giardia*.

3. Regulators and Public Health Managers

They serve as the bridge between science and policy (approximately 20–30% of attendees). They attend to translate scientific findings into applicable regulations.

• **Who they are:** Officials from ministries of health and environment, representatives of the World Health Organization (WHO), advisors from environmental protection agencies (such as the EPA or EEA), and quality managers from major water utilities.

• **Areas of interest:**

1. Quantitative Microbial Risk Assessment (QMRA): The use of scientific data to calculate the probability of illness resulting from drinking or recreational water exposure.
2. Development of Water Safety Plans (WSPs) promoted by the WHO.
3. Establishment of legal limits for the safe reuse of water (for agricultural irrigation or aquifer recharge).

History of Previous WaterMicro Events

The following are the host locations of recent **WaterMicro** conferences:

- ✓ The Netherlands (Amersfoort) — 2025
- ✓ Australia (Darwin) — 2023
- ✓ Austria (Vienna) — 2019
- ✓ United States (Chapel Hill, North Carolina) — 2017
- ✓ Portugal (Lisbon) — 2015
- ✓ New Zealand (Rotorua) — 2011
- ✓ Greece (Naxos Island) — 2009
- ✓ Japan (Tokyo) — 2007

WaterMicro 2027 Slogan and Thematic Tracks

Slogan:

Safe Water for humans and ecosystems in the Anthropocene



Thematic Areas:

Water safety and Security in the Anthropocene

- Safe water for human uses: drinking, recreation, tourism, reuse, agriculture, and industry
- Safe water for biodiversity
- Climate change, extreme weather events, floods and droughts, wildfires' impact on source water, and associated health risks
- Emerging pathogens in water and the risk of pandemics

Microbial hazards in the Anthropocene

- Pathogens in aquatic environments: water, sediments, aerosols, biota.
- Antimicrobial resistance in aquatic environments: water, sediments, aerosols, biota, and biofilms.
- Waterborne microorganisms and water-based diseases
- Survival, persistence, transport, fate
- Harmful algal blooms and toxic cyanobacteria

Water as information source / Water as Source of Insights

- Surveillance of infectious diseases and antimicrobial resistance
- QMRA, decision analysis, water safety plans
- Microbial source tracking
- Modelling and prediction
- Big data and artificial intelligence application
- Cost-effective tools for surveillance: novel methods, Omics approaches

Water management and protection options in the Anthropocene

- Catchment protection
- Treatment and disinfection
- Water and sanitation safety plans
- Community initiatives for water source protection
- Citizen Science in water bodies
- (Bio)Remediation
- Criteria, standards, and monitoring harmonization (regionally and globally)
- Circular economy: microbial controls, use and reuse

