

Launching the Global Water Pathogen Project to Address Wastewater Treatment Challenges

By the Water Quality & Health Council

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Spreading the gift of safely managed drinking water and sanitation to the developing world is fundamental to helping people everywhere live healthy and productive lives. But despite the rapid pace of science and technology in the fields of water and wastewater treatment, some 6,000 children around the world die every day from a water-related illness.¹ This great disconnect is being smartly addressed through the [Global Water Pathogen Project \(GWPP\)](#), an initiative of a large international team of scientists, including two of our colleagues on the Water Quality & Health Council, Drs. Joan Rose and Heather Murphy. Dr. Rose and UNESCO's² Dr. Blanca Jimenez developed the concept of the GWPP in 2014, and Dr. Murphy made substantial contributions to its body of knowledge.



Going Digital with the Global Water Pathogen Project

On September 19, 2019, during a special event of the 20th [International Water Association's](#) Health Related Water Microbiology Conference in Vienna, Dr. Rose launched a new edition of a highly regarded textbook on wastewater microbiology and treatment. The new edition of R.G. Feachem's "Sanitation and Disease: Health Aspects of Excreta and Wastewater Management," comprises information from [276 contributors](#), including approximately 160 authors and editors.

Health Risks from Wastewater

According to the GWPP [website](#), wastewater pathogens—including bacteria, viruses, protozoan parasites, and worms ("helminthes")—can cause diarrhea, heart, liver, and kidney infections, ulcers, meningitis, and neurological and respiratory problems.

What follows from the latest version of this classic textbook will revolutionize how scientists and public health experts plan and manage sanitation services. The information in "Feachem" is being translated into IT tools that will be used by practitioners around the globe to help prevent human exposure to pathogens

in wastewater. The initiative is known as the [Water Knowledge to Practice Project](#) ("Water-K2P") project, and it is funded by the Bill and Melinda Gates Foundation.

¹ UNICEF Child Survival Fact Sheet: Water and Sanitation. Online (available: https://www.unicef.org/media/media_21423.html).

² UNESCO is the United Nations Educational, Scientific and Cultural Organization.

A GWPP Case Study from South Africa

One [case study](#) featured on the GWPP website addresses the quality of effluent (treated wastewater) from three South African wastewater treatment plants. Frequent overloading of the facilities during the wet season results in inadequate treatment, posing pollution problems to receiving water bodies. Using those waters for agriculture, recreation, or drinking puts the local public health at risk. An analysis of the occurrence of bacterial pathogens in receiving waters concluded that individuals who rely on these water sources for their daily needs are at risk of contracting infections from species of *Salmonella* and *Vibrio* bacteria after a *single exposure*. To help manage this risk, the GWPP recommends (a) the three wastewater treatment facilities upgrade their treatment capacity, (b) households adopt treatment options such as chlorine tablets and/or boiling water to remove pathogens, and (c) contact recreational activities in river pools not be allowed until there is an improvement in wastewater treatment efficiency.

A Heartfelt Tribute

Access to safely managed drinking water and sanitation services is critical to the United Nations' 2030 Agenda for Sustainable Development and achieving [Sustainable Development Goal #6](#). We heartily congratulate our colleagues and their fellow scientists for launching this impressive project to help advance global health. Dr. Murphy reported that on the evening of a gala to recognize Dr. Rose in Vienna, a speaker, Dr. Gertjan Medema, stood to congratulate Joan for her contributions to the success of the GWPP. Dr. Medema explained that the editors had struggled to identify an appropriate award for Dr. Rose, the recipient of many prestigious accolades throughout her career. They finally concluded that the best way to indicate their respect and admiration and that of each of the 250 dinner guests was to provide her a rousing standing ovation. We join our "virtual applause" to theirs.

Bravo, Joan and Heather!

GWPP resources are [organized into five parts](#), including detailed information on:

1. The health hazards of excreta
2. Tracking the sources of pathogens and identifying their indicators
3. Specific pathogens in wastewater, including data on everything from viruses and bacteria to worms and algae
4. Managing risk from excreta and wastewater, including disinfecting to reduce the risk of illness
5. Case studies



A standing ovation for Dr. Rose at the September 19 gala in Vienna, Austria

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