

Reactive Filtration: A Case Study in Translational Research for Sustainable Water

Reactive filtration (RF) is a nature-mimicry technology developed at the University of Idaho to remove nutrients, trace contaminants and pathogens from water. RF uses a novel hydrous ferric oxide adsorption and physical filtration to advance state-of-the-art tertiary wastewater treatment as well as water reuse and recycling. This award-winning, patented technology has been licensed to industry and has been installed at wastewater treatment plants across the US and in six countries across the globe. The high-flow low concentration reactive filtration technology is scalable and can process tens of millions of gallons per day, removing discharged phosphorus to below oligotrophic levels. Trace organic compounds, such as hormones and pharmaceutical agents, and pathogens can be destroyed and sterilized in the catalytic oxidation variant of the process. In this approach iron is used as a sacrificial, inexpensive green catalyst. The RF process has been demonstrated in third party work to remove mercury to below the 1.3 parts per trillion level of the Great Lakes Initiative. RF maintains excellent engineering economics and a favorable life cycle assessment. This presentation will explore reactive filtration as a case study in translational research for sustainable water resources.

Speaker Bio

Greg Möller is Professor of Environmental Chemistry and Toxicology in the UI-WSU Joint School of Food Science and the UI Environmental Science Program. He has led graduate students to advance the goals of sustainability by developing new knowledge and innovations in the area of sustainable solutions for water resources, with impacts on individuals, communities and the environment, nationally and internationally. He has had five US patents issued in the past five years for new approaches to sustainable municipal and industrial water treatment, and these new technologies have met with commercial success across the US and abroad. The Water Environment Federation with 36,000 individual members and 75 affiliated Member Associations across the globe awarded the *Harrison Prescott Eddy Research Medal* to his team. The Association of University Technology Managers cited his team's water treatment technology as one of "25 Innovations that Changed the World," alongside inventions such as the Google search engine and the artificial knee. Over a million people across the globe now have softer impact on water resources because of these innovations.

Speaker Intro Notes: Greg Moller

- is Professor of Environmental Toxicology and Chemistry in the UI-WSU School of Food Science.
- He has been with the University of Idaho for 24 years.
- His research is in the field of environmental and food contamination and the development of sustainable water resources.
- He teaches 3 online courses: Food Toxicology; Principles of Environmental Toxicology; and Principles of Sustainability
- All three of these open courses are the number one search result in Google
- In addition to his enrolled students, about 2000 informal learners in 80 countries use his online courses each week.
- The title of today's talk is: **Reactive Filtration: A Case Study in Translational Research for Sustainable Water**