

# WHAT'S IN OUR DRINKING

# WATER

**Friday, March 25**

**9 a.m.–3:30 p.m.**

**IN-PERSON AND VIRTUAL OPTIONS**



*A place where  
questions of science  
and society intersect*

**AGNES W.H. TAN  
SCIENCE SYMPOSIUM**



## PARTICIPANT PACKET

### WELCOME

We welcome you to the first annual Agnes W.H. Tan Science Symposium hosted by Viterbo University. We are excited to see people both in person and virtually to learn more about the science behind clean water. We are looking forward to students, staff, community members, and experts from around the country coming together to discuss this important issue.

On behalf of Viterbo University and the symposium committee, we're grateful you're taking the time to learn with us.

Sincerely,

Michael Alfieri - Interim Associate Dean  
*School of Natural Sciences, Mathematics, and Engineering*

Jamie O'Neill - STEM Event Planner and Outreach Coordinator  
*School of Natural Sciences, Mathematics, and Engineering*

### CONTENTS

Schedule - p. 2

Speakers - p. 5

Map - p. 6

Abstracts- p. 7

Gratitude - p. 8



**VITERBO  
UNIVERSITY**

# AGNES W.H. TAN

THE ONE WHO MADE  
THIS SYMPOSIUM  
POSSIBLE

THE AGNES W. H. TAN  
SCIENCE SYMPOSIUM IS  
MADE POSSIBLE BY A  
GENEROUS DONATION  
FROM THE AGNES W. H.  
TAN ESTATE, WHICH  
ALLOWS VITERBO  
UNIVERSITY TO  
PRESENT AN ANNUAL  
SYMPOSIUM FOCUSED  
IN THE FIELD OF  
BIOCHEMISTRY.



Agnes Tan (left) graduated from Viterbo University in 1963, with a Bachelor of Arts in Chemistry and a minor in Biology. An international student from Hong Kong, Agnes had become acquainted with the university through the Franciscan Sisters of Perpetual Adoration's mission in Central China. In addition to Agnes, two of her sisters also came to Viterbo to study.

Agnes went on to earn a PhD in biochemistry at the University of Minnesota and enjoyed a long career in academic and applied research as an assistant professor of biochemistry at the University of Minnesota and as a research chemist at Veterans Administration Hospital, Minneapolis.



In addition to her successful career, she became a life-long learner who took courses and learned new skills throughout her life. Agnes deeply appreciated the liberal arts education she received at Viterbo and chose to support the institution so that others may be inspired and share in her love of learning.

# MORNING SCHEDULE

For direct links to virtual options, please see our Agnes W. H. Tan Science Symposium website and hit the Schedule or Breakout Session tab on the top right side of the screen. On a Smartphone, hit the menu tab in the top left and go to Schedule or Breakout Sessions.

Time	Activity	Speakers	Location	Virtual
8:30–9 a.m.	Check-in and visit booths	Booths	Viterbo Fine Arts Center	Check out booths' websites
9:05–10 a.m.	Welcome and Keynote <b>Keynote:</b> Why should we care about drinking water and the science behind it?	Jeannie Purchase  Moderated by Hope Kirwan	Fine Arts Center Main Theatre	Live stream: <a href="#">Viterbo University's YouTube</a>
10:10–11:05 a.m.	<b>Panel:</b> Where does tap water come from? What we're seeing in our groundwater.	Kevin Masarik, Sarah Yang  Moderated by Hope Kirwan	Fine Arts Center Main Theatre	Live stream: <a href="#">Viterbo University's YouTube</a>
11:15 a.m.–12:10 p.m.	Lunch and Visit Booths	Booths are listed here.	Fine Arts Center - FSPA Lobby	


## BREAKOUT SESSION #1 - 12:20-1:15PM

Reference Number	Topic	Title	Presenter(s)	Location	Virtual Information
1A 	PFAS	Health Hazards of PFAS in Drinking Water	Sarah Yang	FAC 221	<a href="#">Zoom link</a> Meeting ID: 968 5353 9323 Passcode: 456328
1B 	E coli*	Driftless Karst Hydrogeology and Water Susceptibility	Forest Jahnke	FAC 204	<a href="#">Zoom Link</a> Meeting ID: 961 0886 5809 Passcode: 804382
1C 	Contaminant Mixtures	Contaminant Mixtures in Drinking Water	Kelly Smalling and Paul Bradley	RCE 134	<a href="#">Zoom link</a> Meeting ID: 929 8990 4198 Passcode: 711623

# BREAKOUT SESSION #2 - 1:25-2:20PM

Reference Number	Topic	Title	Presenter(s)	Location	Virtual Information
2A 	Nitrates	Nitrate in Wisconsin's Groundwater	Kevin Masarik	FAC 221	<a href="#">Zoom link</a> Meeting ID: 974 8277 7047 Passcode: 334896
2B 	Salt*	Freshwater Salinization and Chemical Cocktails	Allison Madison	FAC 204	<a href="#">Zoom link</a> Meeting ID: 987 2538 7150 Passcode: 187757
2C 	Endocrine Disruptors	Here fishy fishy! Fish Experiments and Endocrine Disruptors	Tisha King-Heiden	RCE 134	<a href="#">Zoom link</a> Meeting ID: 917 0312 1862 Passcode: 887409

# BREAKOUT SESSION #3 - 2:30-3:25PM

Reference Number	Topic	Title	Presenter(s)	Location	Virtual Information
3A 	Africa	Challenges of water supply in Sub-Saharan Africa	Daniel Sambu	FAC 221	<a href="#">Zoom link</a> Meeting ID: 941 6142 7244 Passcode: 359228
3B 	Water Monitoring*	Community-Based Water Quality Monitoring in the Milwaukee River Basin	Cheryl Nenn	FAC 204	<a href="#">Zoom link</a> Meeting ID: 967 8828 5050 Passcode: 064278
3C 	Tap Water vs. Bottled Water	Tap Water vs. Bottled Water	Kelly Smalling and Paul Bradley	RCE 134	<a href="#">Zoom link</a> Meeting ID: 926 7602 2419 Passcode: 497280

\* Indicates High School Breakout Track



# SPEAKERS



## Symposium Keynote Jeannie Purchase

*Engineer, Citizen Scientist,  
Advocate*

Purchase got her doctorate in engineering to combine care, science, and infrastructure needs. She is exactly what our country needs to get closer to cleaner water for all.

For a full list of speaker bios and photos, please see the *Schedule and Speaker* tab on our website.

VITERBO.EDU/AGNES-WH-TAN-SCIENCE-SYMPOSIUM



## Kevin Masarik

*UW-Stevens Point Center for Watershed Science and Education*

Masarik's teaching and research focuses on groundwater and drinking water quality. He focuses especially on populations served by rural residential well water systems.



## Sarah Yang

*Toxicologist, Bureau of Environmental and Occupational Health*

Yang's duties include developing groundwater standards for the protection of public health and conducting human health risk assessments.



## Daniel Sambu

*UW-La Crosse Geography and Earth Science Department*

Sambu specializes in issues related to water resources, sustainable development, environmental conservation, and community livelihood.



## Tisha King-Heiden

*UW-La Crosse Biology Department*

King-Heiden uses small fish models to study how exposure to environmental cotaminants during early life stages impact health later in life.

## Additional Breakout Session Presenters:

**Cheryl Nenn** – Milwaukee Riverkeeper

**Forest Jahnke** – Crawford Stewardship Project

**Kelly Smalling** – U.S. Geological Survey

**Paul M. Bradley** – U.S. Geological Survey, Environmental Health Program

**Allison Madison** – Wisconsin Salt Wise

## Moderator for Morning Sessions:

**Hope Kirwan** – Wisconsin Public Radio

Erin Brockovich will be speaking Thursday, March 24th as part of the art of the **D.B.**

**Reinhart Institute for Ethics in Leadership** Lecture Series. No registration required.

# BOOTHS

These booths will be in the **FSPA Lobby of the Fine Arts Center** from 8:30 a.m. -12:30 p.m.

Coulee Region Sierra Club

U.S. Geological Survey (USGS)

Davy Laboratories

River Alliance of Wisconsin

River Studies Center and Freshwater Collaborative

Sustainability Institute

Mississippi Valley Conservancy

Todd Wehr Memorial Library at Viterbo University

Milwaukee Riverkeeper

City of La Crosse Utilities

# GETTING HERE OR TUNING IN

## IN PERSON

- When you arrive, check-in at the Fine Arts Center - FSPA Lobby - 929 Jackson St, La Crosse.
- Everything for the conference, except for one breakout session will be in the Fine Arts Center.
- Bike Parking - Bike racks are located at the east and west sides of the Fine Arts Building.
- Vehicle Parking - Drivers can park in any Viterbo Commuter Lots on Friday. There also is parking on streets near Viterbo. Please follow the street signs to know if it is 2-hour or all day parking.
- Accessible doors are marked with blue diamonds on the map.
- Print this packet if you need specific pages. During the event, we will have schedules on display on posters and screens. We also will have QR codes for personal viewing.
- For more hospitality tips like family bathrooms, mother's rooms. and more, please see our Hospitality page on the symposium website.



## VIRTUAL

We are using two platforms throughout the symposium for a virtual experience.

Morning sessions will be streamed over our Viterbo YouTube page. If you have settings on your computer restricting live streaming, you may want to change that setting the day of the symposium or disconnect from WiFi and retry.

Afternoon sessions will be on Zoom. This will allow for participants to ask questions at the end of each session through the chat function. Please keep your microphone on mute during the presentations.

All links, meeting IDs, and passwords can be seen on our website.

Having troubles? Email [helpdesk@viterbo.edu](mailto:helpdesk@viterbo.edu).

# ABSTRACTS BREAKOUT SESSION #1

## **Health hazards of PFAS in drinking water**

Presented by Sarah Yang, Bureau of Environmental and Occupational Health

### *Session Description:*

This session will cover a general introduction to PFAS including exposure routes and health risks. The session will then discuss what the state is doing to address PFAS in drinking water and how people can take action to reduce their exposure.

### *Learning Objectives:*

1. Learn why PFAS are an emerging health hazard.
2. Learn what Wisconsin is doing to address PFAS in drinking water.
3. Learn what steps you can do to reduce your PFAS exposure.

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## **Driftless karst hydrogeology and water susceptibility**

Presented by Forest Jahnke, Crawford Stewardship Project

### *Session Description*

Join us to learn where our geology came from, how it developed to its current form, and what this means for water and land use in this special and ancient landscape. Crawford Stewardship Project takes us through what regional data is available, how they are filling the gaps with citizen science, and how we can use this information to make wise decisions (or ignore it at our own risk).

### *Learning Objectives:*

1. A general grasp on 1 billion years of local geological history
2. A basic understanding of how water flows over and through this landscape
3. An idea of what data we have and are what we lack in understanding groundwater susceptibility.

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## **Contaminant mixtures in drinking water**

USGS One-Health Contaminant Mixtures Research

Presented by Kelly Smalling and Paul Bradley, U.S. Geological Survey

### *Session Description*

Human and environmental health are inextricably linked in the Anthropocene for many reasons, including mounting reliance on intentional and de facto wastewater reuse to meet increasing human and ecological water demands under changing climatic conditions. Little to no “real” distinction exists between drinking-water and wastewater “hemi circles” of the Anthropocene water cycle, as wastewater reuse is increasingly relied upon to meet population-driven water demands, including drinking-water supply. Regulated wastewater and largely unregulated urban stormwater run-off are increasingly essential for ecological flows but threaten downstream aquatic-ecosystem health and downgradient surface-water and groundwater drinking-water sources. This session will discuss the evolution of USGS contaminant mixtures research from the environment to the tap.

# ABSTRACTS BREAKOUT SESSION #2

## **Nitrate in Wisconsin's groundwater**

Presented by Kevin Masarik, UW-Stevens Point, Center for Watershed Science and Education

### *Session Description:*

Nitrate is a widespread groundwater contaminant in Wisconsin: 10% of rural residential wells exceed a suitable level of nitrate in drinking water and many municipalities have taken steps to address nitrate contamination in public water systems. This presentation will discuss how nitrate ends up in groundwater and our drinking water, provide information on health & environmental concerns, investigate if groundwater is getting better or worse with respect to nitrate, and show why some areas are more prone to groundwater contamination. Lastly, he will examine short- and long-term strategies for addressing nitrate concerns.

### *Learning Objectives:*

1. Learners will have a better understanding of health and environmental concerns of nitrate.
2. Learners will be able to identify major land-use and geologic factors that contribute to nitrate susceptibility.
3. Learners will gain knowledge of short and long-term strategies to address nitrate contamination of drinking water.

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## **Freshwater salinization and chemical cocktails**

Presented by Allison Madison, Wisconsin Salt Wise

### *Session Description:*

Salt inputs from winter road maintenance, water softening, and potassium fertilizers are increasing the concentrations of sodium and chloride in drinking water across Wisconsin. Beyond their direct impacts, these changes to soil and groundwater chemistry also release a cocktail of other contaminants into our drinking water. Learn about this issue, what's being done, and how you can be an advocate for keeping our freshwater fresh.

### *Learning Objectives:*

1. Identify trends in chloride concentrations in Wisconsin groundwater.
2. Understand the core concept of ion exchange chemistry.
3. Describe several action steps that individuals and organizations can take to be Salt Wise.

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## **Here fishy fishy! How experiments in fish help us understand the risks of endocrine disruptors in our water.**

Presented by Tisha King-Heiden, Professor of Biology at UW-La Crosse

Many chemicals, both natural or human-made, can interfere with or mimic our body's hormones. These "endocrine disruptors" are known to cause developmental and reproductive problems in animals, but limited scientific information exists on their direct impacts on human health. Products that disrupt our endocrine systems are found in many everyday products from plastic bottles to detergents to pesticides, and there is growing concern about their presence in our drinking water.



## CONTINUED - ABSTRACTS BREAKOUT SESSION #2

Dr. King-Heiden will share some of her research in fish related to the toxicity of pesticides and personal care products and will summarize our current understanding of some PFAS chemicals. We will end discussions with considering the need for continued basic and applied research to help us to better understand that risks that endocrine disruptors pose to human health.

Learning Objectives:

- Convey an understanding of the kinds of chemicals present in our water that can disrupt our hormones, and their impacts on environmental and human health.
- Explain the difficulty in predicting the risks that endocrine disruptors pose to human health, particularly with respect to “real life” mixtures.
- Articulate the need for science-based regulatory responses for improved risk assessment and management.

## ABSTRACTS BREAKOUT SESSION #3

**Challenges of water supply in Sub-Saharan Africa: emerging institutional arrangements and policies to improve access and achieve sustainable development goals.**

Presented by Daniel Sambu, UW-La Crosse

*Session Description:*

To ensure a sustainable supply of drinking water, most countries in Sub-Saharan Africa (SSA) have adopted water supply models that adhere to the constantly evolving global water initiatives (GWI's). By pegging their water reforms on global initiatives and targets, these countries have been forced to regularly change their water policies invertedly undermining the goal of universal access to drinking water. The session will briefly trace the influence of GWI on urban water-policy reforms in the region and examine emerging institutional arrangements meant to deliver Sustainable Development Goals (SDGs). In particular, Goal 6.1, which aims to achieve universal access to safe and affordable drinking water for all by 2030.

*Learning Objectives*

1. Understand the role of Global Initiatives on water reforms in Africa.
2. Examine emerging institutional arrangements meant to deliver universal access to drinking water by 2030 through Sustainable Development Goals initiatives.

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**Community-Based water quality monitoring in the Milwaukee River basin**

Presented by Cheryl Nenn, Milwaukee Riverkeeper

*Session Description:*

Most watersheds throughout the U.S. continue to be plagued by the same persistent organic pollutants and toxic contaminants that spurred the passage of the Clean Water Act, which is celebrating its 50th Anniversary this year. Milwaukee Riverkeeper has been monitoring baseline indicators of water quality with community volunteers since 2006, and has 80+ volunteers testing over 100 locations throughout the Milwaukee River Basin.

# CONTINUED - ABSTRACTS BREAKOUT SESSION #3

In recent years, Milwaukee Riverkeeper has broadened its volunteer-based monitoring to include a broader suite of contaminants impacting local rivers and Lake Michigan including chloride/road salt (starting in 2010) and emerging contaminants (since 2016), which includes over 65 different pharmaceuticals, personal care products, and human metabolites. Monitoring results, implications for watershed managers, and possible policy solutions will be discussed.

## *Learning Objectives*

- Attendees will learn about basic indicators of watershed health.
- Attendees will learn about emerging contaminants that threaten watersheds including road salt, pharmaceuticals, and personal care products.
- Attendees will hear some monitoring results, and how this research is being used to inform management practices, and policies to reduce pollution.

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## **Tap Water vs. Bottled Water**

USGS Point-of-Use Drinking Water Contaminant Mixtures Research  
Presented by Kelly Smalling and Paul Bradley, U.S. Geological Survey

### *Session Description:*

Water resource quality/quantity research is driven by, and inseparable from, the health requirements of the receptor (human health in the case of drinking water). Despite this, previous USGS and USEPA research on human-use water quality has generally focused on environmental-source waters, not on tap water as a drinking water-contaminant exposure pathway. The USGS is conducting ongoing national research on the potential for human exposures from natural and man-made contaminants in drinking water resources including private wells, public supply, and bottled water. This session will discuss USGS research on contaminant mixtures in drinking water supplies and will compare mixtures in private-well and public-supply tap water to those present in bottled water.

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WE CAN EACH TAKE ACTION TO MAKE CHANGES IN  
OUR CITIES, OUR TOWNS, AND OUR VILLAGES  
BEFORE IT IS TOO LATE.

-ERIN BROCKOVICH



# ECO-FRIENDLY EFFORTS



## YOU CAN HELP

To best serve you and the environment, here are some of our efforts and suggestions:

- In order to reduce one-time-use materials, we will not have disposable water bottles. Please bring your own water bottle and consider bringing a meal utensil if you ordered a lunch.
- Consider walking or biking to the event.
- Print only the pages that you need from this packet. We will have limited handouts at the event, but have signs and displays with information. The poster boards are reused.

## THANK YOU

This event would not be possible without the help of many people. Thank you to everyone who play a role in the symposium from staff, volunteers, speakers, booth organizations, and participants.

**Symposium Committee:** Michael Alfieri, Kyle Backstrand, Scott Gabriel, Chris Mayne, and Jamie O'Neill

**Set-up Coordinator:** Roxanne Adamsen

**Virtual Staff:** Cari Mathwig-Ramseier, Gregg Hilker

**Communication Team:** Deb Kappmeyer, Courtney Steinke and Anthony Staby

Thank you to the **D.B. Reinhart Institute for Ethics in Leadership** for brining in Erin Brockovich as part of your Lecture Series and to kick-off our first symposium, especially Richard Kyte and Jill Miller.

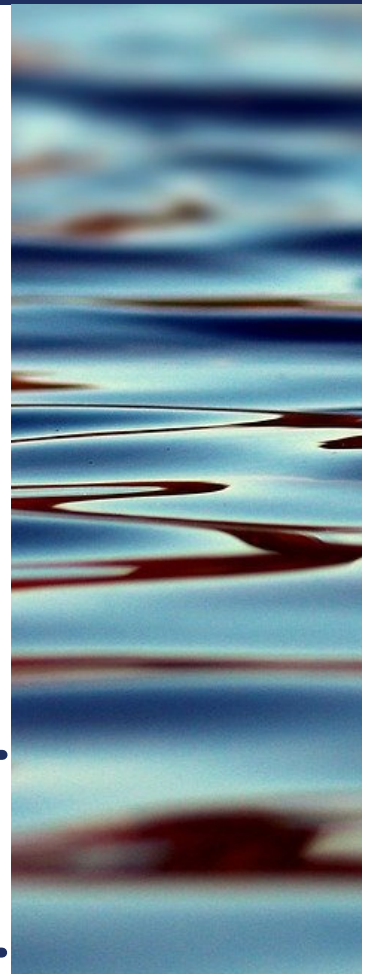
An additional shout out to the student and staff volunteers, Dr. Gabe's symposium class, the Help Desk, and catering.

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The second Agnes W.H. Tan Science Symposium will be in September of 2022. The topic will be medicine and ethics.

We hope you will join.

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## CONNECT WITH US

FB: [@ViterboSTEM](#)

W: [viterbo.edu/agnes-wh-tan-science-symposium](http://viterbo.edu/agnes-wh-tan-science-symposium)

E: [jmoneill@viterbo.edu](mailto:jmoneill@viterbo.edu)

