



42nd Annual Indiana Water Resources Association Symposium

*“An Isotopic Event:
Use of Nuclear Science in Water Resources”*

**Purdue Stewart Center, West Lafayette, Indiana &
Tour of Purdue University Reactor Number One
PUR-1 research reactor**

June 7-9, 2023

Cosponsored by:

INDIANA 
WATER RESOURCES
RESEARCH CENTER


GEOSCIENCE & ENGINEERING SOLUTIONS

PURDUE
UNIVERSITY®

SYMPOSIUM AGENDA

Wednesday, June 7, 2023

Purdue Stewart Center 202, West Lafayette, IN

Conference open WiFi: attwifi (confirm connection in browser, see instruction sheet)

Time	Topic	Speaker
12:00	Registration	
MODERATOR: Andrew Pappas, Indiana Department of Environmental Management		
1:00	Opening and Welcome Water Energy Nexus – Topic introduction	Andrew Pappas, IDEM, 2023 IWRA President
1:20	Water and Economic Development: Indiana data and policy gaps and opportunities revealed by the Lebanon LEAP proposed water transfer	Jane Frankenberger, Keith Cherkauer, Purdue University; Discussion by all
2:10	Testing for radionuclides in water and food	Jane Smith, Indiana Department of Health Laboratories
2:40	Break	
MODERATOR: David Lampe, U.S. Geological Survey		
3:00	Delineating the origin and transport mechanisms of contaminants or compounds of interest in the subsurface using isotopes to determine source and residence time	Myles Moore, U.S. Geological Survey
3:25	Using iodine-129 (¹²⁹ I) to evaluate a conceptual model of groundwater/surface-water interactions in the Devil's Punch Bowl catchment in Shades State Park (Crawfordsville, IN)	Marty Frisbee, Purdue University
3:45	Water storage, mixing, and fluxes in tile-drained agricultural fields inferred from stable water isotopes	Mark Williams, REE-ARS
4:05	Remote sensing of water quality of Indiana waterbodies	Andrea Slotke*, Purdue University
4:25	Student Poster Session – Overview, instructions	Laura Esman, Purdue University
4:35	Poster Presentation Introductions	1 minute by each presenter
5:00	Social Hour / Poster Presentations / Cash Bar	Dauch Alumni Center
Poster Presentations:		
MODERATOR: Laura Esman, Purdue University		
1	Algal-bacterial consortia in treatment of fish wastewater and resource recovery of aquaculture water system	Yolanys Aranda Vega*, Purdue University
2	2D Modeling using diffusion wave transform methods: A pilot study using Wildcat Creek near Kokomo, Indiana	Gillian Gallagher*, Purdue University
3	Investigating the impacts of alpine glacier meltwater on mountain groundwater flow processes using environmental isotopes	Ayobami O. Oladapo*, Purdue University
4	Algal-bacterial consortia to treat high-strength shell egg processing wastewater	Karthik B. Shivaram*, Purdue University
5	A rapid one-step field-based detection method for nanoplastics in wastewater samples	Vidhatri Iyer*, University High School
6	Barium and sulfur isotope exchange between Barite and 137Ba- and 32S-enriched solutions at Barite solubility equilibrium	McKailey Sabaj, Indiana University and Indiana Geological and Water Survey
7	Lake Michigan shoreline monitoring, evaluation, and modelling using high resolution multispectral satellite images	Hazem Abdelhady*, Purdue University

8	Lake Michigan turbulence mixing: a data-driven approach	Nhu Hoang Van Pham*, Purdue University
9	Estimating water quality parameters in the midwestern reservoirs through radiative transfer theory-guided deep learning	Shuo Chen*, Purdue University
5:00	Social Hour / Poster Presentations / Cash Bar	Dauch Alumni Center
6:30 – 8:30	IWRA Banquet and Awards Program - Dauch Alumni Center (403 W Wood St, West Lafayette, IN 47907) (Provided in registration)	Mark Basch, Indiana Department of Natural Resources, Division of Water
After!	Informal social. All members and friends are welcome!	Drury Inn Hotel (Board Room)

Thursday, June 8, 2023 (Breakfast included with Drury Inn lodging)

Purdue Stewart Center 202, West Lafayette, IN

Time	Topic	Speaker
8:00	Registration	
MODERATOR: Jane Frankenberger, Purdue University		
8:30	Near proximal and proximal LiDAR mapping for fine-resolution quantification of shoreline regression	Yi-Ting Cheng*, Purdue University
8:50	Quantification of Lake Michigan shoreline changes with historical LiDAR imagery	Tasmiah Ahsan*, Purdue University
9:10	Hydrology, geology, and history of Hudson Lake, Indiana	Garth Lindner, IDNR
9:30	Eco-intensification using recycled drainage water for fertigation	Dongseok Yang*, Purdue University
9:50	Water quality sampling provides insight into nutrient sources and pathways within the St. Mary's River Watershed	Noah Rudko*, Purdue University
10:10	Break	
MODERATOR: Martha Clark Mettler, Indiana Department of Environmental Management		
10:30	Policy: State rule and federal changes that will impact water resources	Drake Abramson, IDEM
10:55	USDA Inflation Reduction Act Funding – The benefits of targeted climate-focused efforts on water quality and quantity	Tony Bailey, USDA, Natural Resources Conservation Service
11:20	Impact of various eras of the Great Lakes Water Quality Agreement Act (GLWQA) on Rust Belt manufacturing sustainability	James Tanoos, Purdue Polytechnic Institute
11:45	Water supply planning as a framework for estimating regional water availability	Jack Wittman, INTERA
12:10	Lunch at the Purdue Union Food Gallery (Provided in registration)	Purdue Union Food Gallery (101 N Grant St, West Lafayette)
MODERATOR: Mark Basch, Indiana Department of Natural Resources		
1:30	Lessons and discoveries from the Norfolk Southern chemical spill and chemical fires disaster	Paula Coelho* and Andrew Whelton, Purdue University
2:10	Using $\delta^{15}\text{N}$ isotopes to disentangle nitrogen sources and processes in the Wabash River, Indiana	Srilani Wickramasinghe*, Purdue University
2:30	Remediating salt and heavy metal occurrence via desalination	David Warsinger, Purdue University
2:50	Break	

MODERATOR: Joe Schmees, The Nature Conservancy		
3:10	PFAS Sampling of Public Water Systems	Kevin Spindler, IDEM
3:40	Web-based GIS and source water protection management: A Marion County example	Rachel Walker, Mundell and Associates
4:00	A New Springs Online Database at the Indiana Geological and Water Survey	Tracy Branam, IGWS
4:20	Beach rebuilding period buffers Indiana beach erosion in Lake Michigan	Cary Troy, Purdue University
4:40	Student Presentation Awards	Mark Basch, IDNR
4:50	Overview of Friday field tour of PUR-1 Reactor, Invitation to Business Meeting, Social Event with Pizza	Andrew Pappas, IDEM
5:00	Session ends	
6:00	IWRA Business Meeting	Drury Inn Hotel (Board Room)
6:30	Pizza Social	Drury Inn Hotel (President's Suite)
After!	Informal social. All members and friends are welcome!	Drury Inn Hotel (Board Room)

Note: * = student presenter

Friday, June 9, 2023 (Breakfast included with Drury Inn lodging)

PUR-1 Nuclear Test Reactor Tour 9:00a-12:00p

NOTE: Everyone entering the reactor bay will need some form of photo identification (Student ID, Driver's License, Passport, etc.) with them.

Time	Activity/Location	Contact
8:30	Meet N Greet – Coffee and Mary Lou's Donuts STEWART 109ABC – located on First Floor of Stewart Center across the hall from the Alumni Office	Andrew Pappas, IDEM
9:30	We will walk together from STEWART 109ABC to the entrance of the Nuclear Engineering Radiation Laboratories	
9:45	Overview of PUR-1 reactor, uses, tour specifics	
10:00	Reactor tour (first group, 45 minutes)	
11:00	Reactor tour (second group, 45 minutes)	
Noon	Tour end – Safe trip home	

2023 Symposium Worker Bees:

Andrew Pappas, Erica Wilson (Purdue), Jane Frankenberger, Joe Schmees, Rosy Hansell, Mark Basch, Laura Esman, Sally Letsinger, and Ginger Davis.

*This is the forty-second Indiana Water Resources Association Symposium.
IWRA is a scientific and educational not-for-profit organization established to encourage interdisciplinary communication between persons working in all aspects of water resources.
IWRA is an affiliate of the **American Water Resources Association.***

<http://www.iwra.info/>