



Extended deadline: Postdoctoral Associate in freshwater biogeochemistry

The Ohio State University

OVERVIEW: Drs. [John Lenhart](#) and [Jim Hood](#) at The Ohio State University (OSU) are searching for a post-doctoral scholar to work on a project sponsored by the Harmful Algal Bloom Research Initiative (HABRI) related to the sources, patterns, and fate of colloidal phosphorus in western Lake Erie and its watershed. This project is an interdisciplinary, collaborative effort led by Dr. Hood along with [John Lenhart](#) (OSU, CEGE), [Michael Brooker](#) (OSU, FABE), [Justin Chaffin](#) (OSU, SENR), [Ben Colman](#) (University of Montana), [Laura Johnson](#) (Heidelberg University), and [Vinayak Shedekar](#) (OSU, FABE). This position is fully funded for two years and three months. The anticipated start date for this position is late 2022.

BACKGROUND & SPECIFIC FOCUS: The size of reoccurring harmful algal blooms in Lake Erie are largely driven by bioavailable phosphorus (P) loading from non-point sources in the western Lake Erie watershed. Understanding and management of these cyanobacteria blooms is premised on the assumption that soluble reactive phosphorus (SRP) is dominated by orthophosphate and 100% bioavailable to phytoplankton. Yet, earlier work suggests that colloidal P, which is P associated with 1–450 nm particles and less bioavailable than orthophosphate, could make up ~50% of SRP delivery to western Lake Erie. A lack of information about colloidal P transport and dynamics in the western Lake Erie watershed limits understanding of the delivery and cycling of bioavailable P to Lake Erie; this could negatively affect P reduction efforts to manage harmful algal blooms. This project seeks to (Obj. 1) characterize colloidal-P concentrations in agricultural ditches, rivers, wetlands, and Lake Erie; (Obj. 2) quantify colloidal-P speciation and its potential for transformations (P binding & release) between the edge-of-field and Lake Erie; and (Obj. 3) quantify the bioavailability of colloidal-P. The successful candidate would focus primarily on objective 2, but also support work done in object one and three.

The primary responsibility of the postdoctoral scholar will be to:

- Participate in collection and processing of river, wetland, and edge-of-field samples for determining colloidal-phosphorus speciation.
- Conduct field- and laboratory-based experiments evaluating the binding and release of phosphorus from natural colloids.
- Use synchrotron-based X-ray, Raman and infrared techniques to characterize phosphorus speciation in natural colloids.

Required qualifications:

- PhD in limnology, environmental engineering, environmental science, biogeochemistry, or related field
- Experience with techniques and procedures associated with environmental biogeochemistry, natural colloids/nanoparticles, or freshwater nutrient cycling



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- Strong publication record demonstrating the ability to conduct independent research projects

Preferred qualifications

- Experience with related phosphorus cycling techniques and procedures
- Experience with X-ray absorption spectroscopy

Interested applicants should email a cover letter, a personal statement describing research interests, career goals, and relevant experience; a current CV; and contact information for three professional references to Jim Hood (hood.211@osu.edu) by 28 November 2022.

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