

Abstract for Midwest SETAC meeting

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La Crosse, WI

Presentation Type: Platform

Behind the scene with the fathead team: Part II. In-lab flow through exposures and “omics” to complement effects based monitoring in the Duluth-Superior Harbor.

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Abstract: (300 word limit)

As part of a research team focused on aquatic toxicity testing using fathead minnows as a model species, this presentation is the second of a three-part series, giving an overview of the types of field and laboratory studies as well as sample processing our team conducts at the U.S. EPA, Mid-Continent Ecology Division. “Part II: In-lab flow through exposures and “omics” to complement effects based monitoring in the Duluth-Superior Harbor.” describes technical aspects of lab based exposures and sample collection. As an extension of a presumed concentration gradient established for an in situ exposure in the Duluth-Superior harbor, concurrent in-lab flow-through exposures to varying dilutions of final treated effluent collected from the Western Lake Superior Sanitary District were conducted. Additionally, fish were exposed to a single concentration of bisphenol A (10 µg/L), a chemical of emerging concern, previously detected in the effluent and receiving water. Tissue samples including mucus, liver, gonads and urine were collected and analyzed using open-ended or “unsupervised” tools including metabolomics, and transcriptomics. Results from these approaches compliment more specific “supervised” endpoints associated with known adverse outcome pathways, using biochemical and molecular markers of endocrine disruption (VTG transcription/translation, testosterone/estrogen production, etc), detailed in part III of this series.

Keywords: Fathead minnows, metabolomics, transcriptomics, waste water effluent.

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STICs Field	Entry
1 – Influence/profile	Not applicable
2 – Clearance tracking no.	Assigned automatically
3 – Principal Investigator / Project Officer	Dan Villeneuve
4- Product title	Copy and paste from abstract
5 - Authors	See abstract
6a- Product type	Presentations and technical summaries
6b-Product subtype	Abstract
6c – Records schedule	Not a senior official
7a – Impact statement	n/a
7b- Product description	Paste in abstract
8 – Bibliographic citation	2013 Annual Midwest SETAC Meeting, March 19-20, 2013, La Crosse, WI
9 - Access	Public
10 – Tracking and Planning Task	2.1.2 2.1.2: AOP-based effects monitoring and exposure reconstruction
10 – Tracking and Planning Product	(2) Case studies evaluating the utility of transcriptomics, metabolomics, and associated bioinformatic methods for comparing the nature and severity of biological impairment as a function of space and/or time to assess the efficacy of remediation efforts within Great Lakes Areas of Concern.
11 – Copyright permission	No
12 - QA	not applicable
13 – Policy implications	No
14 - Keywords	adverse outcome pathways, endocrine disruptors, monitoring, surface water, aquatic ecosystems