

Abstract for Midwest SETAC meeting

March 19-20, 2013

La Crosse, WI

Presentation Type: Platform

Behind the scene with the fathead team: Part I. Caged fish for assessment of chemicals in the environment.

Cavallin, JE¹; Stevens, KE¹; Severson, MN²; Berninger, J²; Durhan, EJ²; Eid, E²; Jensen, KM²; Kahl, MD²; LaLone, CA²; Makynen, EA²; Villeneuve, DL²; Ankley, GT²

¹ ORISE Research Participation Program, U.S. EPA, Duluth, MN

²U.S. EPA, Duluth, MN

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 first 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 I: Caged fish for assessment of chemicals in the environment" describes the field exposures performed by this group. Within the Great Lakes there is an increased focus on contaminants of emerging concern (CECs) and the potential adverse effects these contaminants have on aquatic organisms. The use of effects-based monitoring serves as a useful complement to analytical chemistry for monitoring CECs in complex environmental samples relative to endocrine adverse outcome pathways. In order to further characterize the effectiveness of effects-based monitoring in the field, an integrated approach, including in situ caged fish exposures, in vitro bioassays, and analytical chemical quantification, was utilized at multiple Great Lakes Areas of Concern (AOCs), at both local and remote locations. Adult fathead minnows (*Pimephales promelas*) were exposed to point sources of contamination such as industrial and wastewater treatment plant discharges. These in situ studies encompassed both temporal and spatial exposure gradients. Additionally, simultaneous in vivo flow-through exposures to dilutions of treated effluent were conducted for select local studies. Concurrent with the in situ exposures, surface water grab and composite samples were collected for chemical analyte quantification as well as in vitro bioassays to characterize the contaminants at each of the selected sites within the AOCs. On-going research includes processing samples for transcriptomic analyses, gonadal ex vivo sex steroid analysis, and in vitro cell assay analyses as described in Parts II and III.

Keywords: Fathead minnows, toxicity, in situ, area of concern

Contact Information:

Jenna Cavallin

US EPA, Mid-Continent Ecology Division

6201 Congdon Blvd.

Duluth, MN 55804

cavallin.jenna@epa.gov

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	(1) Case study on use of pathway-based effects data for exposure characterization: Using pathway-based effects in fish to characterize exposures associated with waste-water treatment plant discharges and/or agricultural runoff.
11 – Copyright permission	No
12 - QA	not applicable
13 – Policy implications	No
14 - Keywords	adverse outcome pathways, endocrine disruptors, monitoring, surface water, aquatic ecosystems