12ᵗʰ International Conference on

ENVIRONMENTAL TOXICOLOGY AND ECOLOGICAL RISK ASSESSMENT

October 19-20, 2017 | Atlanta, USA

James M Haynes
*State University of New York
USA*

Sara Wellman
*Pellissippi State Community College
USA*

Multiple approaches for delisting two beneficial use impairments in great lakes areas of concern

Since 1987, the International Joint Commission has designated 43 Areas of Concern (AOC), where pollutants impair beneficial uses of water bodies that contribute to the Laurentian Great Lakes. Using the mink (Neovison vison) as a sentinel species, we have used multiple research approaches to help federal and state agencies determine whether two Beneficial Use Impairments (BUI), "Degradation of Fish and Wildlife Populations" and "Bird or Animal Deformities or Reproductive Problems," can be delisted for three AOCs in New York State. Mink are ideal for delisting these BUIs, because they are at top of contaminated aquatic food webs and are one of the most sensitive mammals to legacy pollutants in the Great Lakes, especially PCBs and dioxins/furans. We have used three approaches to address delisting criteria: Chemical analysis of PCB/dioxin/furan congeners and total mercury in mink tissues to compare with regulatory standards; Determining the incidence of cancerous jaw lesions, the most sensitive biomarker of effect in mink; and Bioaccumulation modeling based on concentrations in water and mink prey. Our results indicate that, delisting of the two BUIs can occur in Rochester Embayment and Buffalo River AOCs, but not in the Niagara River AOC. We recommend that management agencies consider replacing the sacrifice of mink with bioaccumulation modeling in future delisting studies.

Biography

James Haynes has been a Professor of Biology, Ecology and Environmental Science at The College at Brockport, SUNY, since earning his PhD at the University of Minnesota in 1978. Currently, he is the Interim Provost and Vice President of Academic Affairs at Brockport.

jhaynes@brockport.edu

Biography

Sara Wellman has a BS in physics from Georgia Tech and worked as an optical engineer at the Eastman Kodak Company for 10 years before earning an MS degree in biological sciences at Brockport. Currently she is an adjunct professor of biology at Pellissippi Community College

stwellman@pstcc.edu

J Environ Anal Toxicol, an open access journal
ISSN: 2161-0525

Environmental Toxicology 2017
October 19-20, 2017

Volume 7, Issue 5 (Suppl)

Page 36