CEE Graduate Seminar on March 8, 2021 at 4:10 pm

Roadway Runoff As A Source of Toxic Trace Organic Contaminants To Surface Waters

Edward P. Kolodziej, Zhenyu Tian, Nina Zhao, Kathy Peter, Melissa Gonzalez, Christopher Wu, Jen McIntyre, Mike Dodd, Andre Simpson, Nat Scholz, and many other co-authors..

Center for Urban Waters, Tacoma, Washington
Division of Sciences and Mathematics, U. of Washington-Tacoma
Department of Civil and Environmental Engineering, U. of Washington-Seattle

Abstract.

In the U.S. Pacific Northwest, one species of salmon, (coho salmon, *Oncorhynchus kisutch*), annually exhibit unexplained acute mortality upon stormwater exposure when adult salmon migrate to urban and near urban creeks to reproduce. By investigating this phenomenon with a portfolio of techniques based upon liquid chromatography-high resolution mass spectrometry, we identified a quinone transformation product of a globally ubiquitous tire rubber antioxidant as the primary causal toxicant for this mortality phenomena. Retrospective analysis of representative roadway runoff and stormwater-impacted creeks of the U.S. West Coast indicated widespread occurrence of the quinone product (<0.3-19 µg/L) at toxic concentrations (LC_{50} of 0.8±0.16 µg/L). These results reveal unanticipated risks of tire rubber antioxidants to an aquatic species and imply toxicological relevance for widely dissipated tire rubber residues. Additional evaluation of the effects of roadway runoff on water quality and sensitive aquatic species is likely merited.

Short Bio.

Ed Kolodziej is an associate professor at the University of Washington with joint faculty appointments at Environmental Sciences at UW-Tacoma and in Civil and Environmental Engineering at UW-Seattle. He also is a Principal Investigator at the Center for Urban Waters (Tacoma, WA) where Ed and his research group use advanced mass spectrometry and hard work to investigate contaminant fate and transport, build effective treatment systems, and insure ecosystem health.

Join: March 8, 2021 at 4:10 pm

from PC, Mac, Linux, iOS, or Android: https://wsu.zoom.us/j/95676475739?pwd=V1QzWFdGN21YQ1puVUZVTndwdHVTZz09

Meeting ID: 956 7647 5739; Passcode: 6g279i