MSc Opportunity (beginning May 2026)

Hazard assessment of 6PPD-quinone, a tire-wear compound found in roadway runoff

This project builds on an existing collaboration between the University of New Brunswick (Dr. Tillmann Benfey, Biology) and the Huntsman Marine Science Centre (Dr. Danielle Philibert, Aquatic Toxicology) investigating the impacts of the tire-wear contaminant 6PPD-quinone on aquatic animals. Our previous research showed that 6PPD-quinone toxicity varies among developmental stages and species of fish. We now wish to engage an MSc student to extend our research to investigate 6PPD-quinone toxicity to sea urchins. These animals are culturally and economically important to New Brunswick and are an integral part of kelp forests. The student's activities will address three research principal objectives: (1) determining which developmental stages are most sensitive to 6PPD-quinone exposure in green sea urchins; (2) elucidating the mechanism of toxicity of 6PPD-quinone using pharmaceutical interventions; and (3) screening other echinoderm species to see if they are similarly sensitive to 6PPD-quinone as the green sea urchin. The student will obtain valuable and transferable skills in rearing aquatic animals, studying developmental processes, assessing lethal and sublethal toxicological endpoints, running and analyzing assays for key regulatory enzymes in metabolic pathways essential for ion regulation, and using pharmaceutical modulators such as ion-pump blockers. Although based at UNB's Fredericton campus, the student will benefit tremendously from conducting their research at Huntsman's world-class toxicology facility in scenic St. Andrews, New Brunswick.

Requirements: Relevant B.Sc. (e.g., biology or biochemistry) and a willingness to conduct off-campus research. A valid driver's licence is essential, as there will be regular travel between Fredericton and St. Andrews (150 km). We are looking for a student who is highly motivated, independent, and has an interest in environmental biology and ecotoxicology.

Assets: Basic understanding of invertebrate biology, toxicology, and developmental biology; familiarity with biochemical assays, data entry, and statistical analysis.

To apply for this position: send your resume, copy of your undergraduate transcript (unofficial copy is acceptable), names and e-mail contacts for at least two people who can provide an adequate assessment of your qualifications for pursuing a graduate degree in this field, and a brief personal statement of why you are interested in this project and how you see it contributing to your future to **Dr. Benfey (benfey@unb.ca) and Dr. Philibert (danielle.philibert@huntsmanmarine.ca).**

DEADLINE TO APPLY IS DECEMBER 31, 2025