

For Immediate Release
August 1, 2023

Dalhousie University to lead dye-tracing study in Halifax Harbour to study new carbon dioxide removal method

Halifax, NS – Dalhousie scientists will conduct a dye-tracing study on August 9, 2023, beginning at approximately 9 a.m., which includes the release of 500 liters of a dilute solution of a dye into Halifax Harbour via the cooling water outfall from Nova Scotia Power's Tufts Cove Generating Station. If weather does not permit, the field study will take place on August 10 or 11, 2023.

The dye-tracing study is being conducted to prepare for subsequent field trials in September and October 2023 focused on technology developed by Dartmouth-based company Planetary Technologies to remove carbon dioxide (CO₂) from the atmosphere. It is the first study in a multi-year research program.

Called ocean alkalinity enhancement, the process studied aims to remove CO₂ from the atmosphere by dispersing a mildly alkaline substance, similar to the antacids we take for heartburn, in the ocean. By doing this, Planetary aims to increase the ocean's capacity to draw down and retain CO₂ from the atmosphere.

"This dye-tracing study will enable us to determine how quickly the water from the cooling outfall disperses, where it moves within the harbour, and whether our model predictions about dispersion and movement of the outflowing water are accurate," said Dr. Katja Fennel, the Dalhousie Oceanographer who is leading the university's research team conducting the study.

When Planetary adds the alkaline substance to Halifax Harbour in fall 2023 via the water outfall from Nova Scotia Power's Tufts Cove Generating Station, Dalhousie scientists will repeat the dye study to observe the movement of the mildly alkalized water and measure the additional CO₂ absorbed from the air due to the alkalinity addition.

If the method pursued by Planetary proves successful, it could provide a useful tool for CO₂ removal, to supplement urgently needed CO₂ emission reductions. It is widely acknowledged that, even with drastic emissions reductions, humankind will fall short of net zero-targets by 2050 and that CO₂ removal technologies like ocean alkalinity enhancement are needed to avoid the worst impacts of global warming.

"We appreciate Planetary Technologies' partnership in this work and their openness and commitment to scientific rigor as they develop their technology. It is essential that new technologies like this are investigated by independent scientists with in-depth expertise and without any financial interests in the outcome of the trials, before any implementation for routine operation," said Dr. Fennel. "Dalhousie researchers are well positioned to investigate the

effectiveness of this method and help determine whether its hypothetical promise can become reality.”

During the field experiments members of the public may see a plume of coloured water ranging from pink to orange to purple. The visible plume is expected to cover an area approximately 500 meters in diameter. The concentration will decrease rapidly and will likely be visible to the naked eye for only a few hours.

Dalhousie’s team will be on the water during daylight hours to trace the plume for multiple days until the dye is fully dispersed, measuring the spread with sensitive instruments deployed on boats, drones, and remotely operated underwater vehicles.

Rhodamine WT is a water soluble, fluorescent dye that has been used extensively for 50 years to study dispersion and flow within water systems and natural water bodies, including rivers, streams, lakes, groundwater, estuaries, and the open ocean, and is [recommended by the Government of Canada](#) to observe water dispersion.

Learn more about the Dalhousie dye-tracing study.

https://memg.ocean.dal.ca/BB_field_study/

Learn more about Planetary Technologies’ ocean alkalinity enhancement.

<https://www.planetarytech.com/projects/nova-scotia/>

Dalhousie media contact

Andrew Riley
Senior manager, research and innovation communications
Office of the Vice President Research and Innovation
Mobile: 902.456.7904 | andrew.riley@dal.ca

Planetary media contact

Peter Chargin
Vice President, Commercialization and Community Relations
NovaScotia_project@planetarytech.com
+1 650.219.3757