

## **Mt. Hope Bay Sediment and Martian Regolith Simulant Nutrient Flux Impact on Algal and Diatoms Oxygen Production**

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Sediment nutrient anions ( $\text{NO}_2^-$ ,  $\text{NO}_3^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{NH}_4^+$ ) and cations ( $\text{Cu}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Zn}^{3+}$ ,  $\text{Ni}^{2+}$ ) fluxes play an essential role in the requirements of algae (*Tisochrysis lutea*) and diatom (*Thalassiosira weissfloggi*) growth. Sediment fluxes have been used to characterize Mt. Hope bay and Mars regolith simulant water profiles and give insight into the nutrient levels and easily extractable metals released in the water column. The research investigated the impact sediment fluxes had on the algae and diatom oxygen production and variation in nitrate and nitrite concentration in the above water profiles sediments in BOD microcosms. The underlying sediment substrates were collected from sites in the estuarine Mt. Hope Bay in RI and contrasted with Martian regolith simulant. The extent of these fluxes was gauged by the  $\text{O}_2$  production of algae and diatom communities by fluorescence-quenching optodes. Spectrocolorimetric HACH® spot tests determined the suite of nutrients and the concentration of metal cations was determined by ICP OES from filtered samples.