



ses

school of environmental sciences

The Research Seminar Presentation by

Sandeep Shunmugarajah

Will be held on

Tuesday November 17th, 2015

At 11:10 am

ALEXANDER HALL 337

Title: Dissolved oxygen required to optimize maximum nitrification in a lab scale bioreactor under supersaturated and unsaturated conditions

Abstract

Abundant quantities ($>1\text{mg/L}$) of Ammonia-Nitrogen ($\text{NH}_4\text{-N}$) within farm wastewater result in social and environmental problems, such as eutrophication. Currently, it is difficult for wastewater treatment to reduce $\text{NH}_4\text{-N}$ towards the municipal standards of $<1\text{mg/L}$ set by Provincial Water Quality Guidelines, Ontario. Present methods for $\text{NH}_4\text{-N}$ removal occur via biological, chemical and physical techniques. This presentation will explain biological removal of $\text{NH}_4\text{-N}$ through the process of nitrification. Dissolved oxygen (DO) is one of the main parameters that influence the nitrification rate. Previous studies have struggled to determine the DO required to optimize maximum nitrification for $\text{NH}_4\text{-N}$ removal. In addition, there has been little research conducted evaluating the effect of supersaturated conditions ($>8\text{mg/L}$) at 25°C on nitrification. Therefore, my experiment will evaluate the influence at both unsaturated (2, 4, 6, 8 mg/L) and super saturated (10, 12 mg/L) conditions, to determine at which DO maximum nitrification will occur. Evaluation will be carried out in the lab using a bioreactor to control temperature and pH. Samples are taken and analyzed using a spectrophotometer in order to depict a relationship between DO and nitrification rate. Obtained results would be useful for wastewater administrators to reduce $\text{NH}_4\text{-N}$ concentrations towards $<1\text{mg/L}$.

Everyone is welcome to attend

(This is a Research Proposal presentation by students in ENVS*6900)