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A Study on the Biodegradation of Aquatic Life Using Computational and Physical Simulation SEONG UG KIM, DAVID YANG, JAE WON LIM, Choice Research Group — The detrimental effects of improperly disposing biodegradable substances are growing concerns for people. Biological oxygen demand represents how much oxygen the bacteria requires in order to digest organic substances in the water. Essentially, BOD measures the level of organic pollution, or amount of organic matter in the water. Such biodegradation affects the dissolved oxygen level and biochemical oxygen demand level, which are important factors to maintain an ecologically healthy aquatic system. In this paper, Streeter-Phelps equation of biodegradable material has been used to analyze bio-degradation process. The equation is based on a mass balance, which is affected by two processes: Oxygen removal from water by the degradation of organic materials, and reaeration by oxygen transfer into the water from the atmosphere. This paper has shown how to experimentally manipulate the aquatic environment in order to create a faster rate of biodegradation. Also, depending on the range of reaeration constants, the DO and BOD of the bodies have been proved to converge to equilibrium in different ways.

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