

## BIOLOGICAL NUTRIENT REMOVAL FROM MUNICIPAL WASTEWATER OF MOSUL CITY

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### ABSTRACT

Nitrogen and phosphorus are essential to the growth of microorganism, plants, and animals, so that, they are known as major nutrients. The removal of nutrient before discharging treated wastewater is desirable not only to prevent eutrophication, but for reuse purposes. In Iraq, Due to the insufficient water supplies in recent years, the wastewater Authority's initiate a new program aiming at upgrading existing treatment facility in order to achieve the nutrient removal for reuse applications. An activated sludge A2O process was developed in a Laboratory- bench scale plant to evaluate the influence of operating conditions on the Biological Nutrient Removal for the domestic wastewater of Mosul city. According to results obtained, the alkalinity content in the raw waste water under study is adequate to maintain the process of biological nutrient removal. The results revealed that at high percentages of return activated sludge recirculation ratio (RAS), the biological phosphorous removal is less efficient. The total nitrogen removal is slightly affected by RAS ratio. In order to meet Iraqi standard with respect to nutrient (N, P), organic (COD) and solid (TSS) contents , employing A2O scheme, The optimum internal cycle ratio IR obtained from the study is( 200%), While the significant range of Returned activated sludge recirculation ratio (RAS ) is located within the range 20-40%.

**KEYWORDS:** Biological Nutrient Removal, A2O, Internal Cycle, Recirculation Ratio