*Indian Journal of Ecology (2019) 46(3): 662-667*

**Manuscript Number: 2897**
**NAAS Rating: 4.96**

# Using Pre-chemical and Membrane Bioreactor for Dairy Effluent Treatment

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***Abstract:*** In this research, the performance of the biological aerobic treatment accomplished with chemical primary treatment using alum system has been tested and aerobic biological treatment then comparing it with aerobic biological treatment alone in reducing the concentration of organic load, phosphorus and nitrogen from dairy waste water plants. The average water flow of the effluent from the system 1 $m^3 hr^{-1}$. and consists of sedimentation tank volume of 2.5 $m^3$, aerobic reactor size of 5 $m^3$ and membrane bioreactor size of 5 $m^3$ inside the one piece of hollow fiber membrane submersible. The use of pre-treatment with alum and then membrane bio reactor reduced the concentration of total solids TSS to less than 1 mg $l^{-1}$, the concentration of phosphorus as PO4 decreased to less than 2 mg $l^{-1}$, and nitrate $NO_3$ to less than 8 mg $l^{-1}$. The alum primary treatment was able to reduce the residual Chemical Oxygen Demand COD= < 40 mg $l^{-1}$. Thus, from that specifications of the water from biological treatment with alum limits of the total suspended solid TSS <1 mg $l^{-1}$, the concentration of phosphate PO4-P < 5 mg $l^{-1}$, nitrate NO3< 25 mg $l^{-1}$ and the concentration of organic material of COD 150-90 mg $l^{-1}$ to dispose of organic materials and to obtain safe water for agricultural rivers.

***Keywords:*** Dairy, Membrane, Alum, Phosphate, Hallow fiber