

## Performance of Conventional Activated Sludge to Remove Nitrogen Compounds from Tomato Factory Wastewater

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Today discharge of raw or treated wastewater containing nutrients (nitrogen and phosphorus compounds) to the surface water causing an Utrification phenomenon, will be due to excessive growth of algae in the receptive water source. Each of the of wastewater treatment system, providing principled design and operation can be reduced nutrients to standard level [1]. The purpose of this study was to evaluate the efficacy of conventional activated sludge systems to remove nitrogen compounds from wastewater of Kermanshah Rojintak tomato factory and comparison of the final effluent quality with discharge standards to water resource and reuse it in agricultural irrigation in term of nitrogen compounds are considered.

Kermanshah Rojintak tomato factory with capacity of 2200 tons per day produce the desired products. The factory has two wastewater treatment plant of a conventional activated sludge system with a capacity 3000 m<sup>3</sup>/d, which in tomato produce and harvest season(peak season), only the first treatment plant with a capacity of 1200 m<sup>3</sup>/d is active.

In this study, a cross sectional study, the weekly intake of raw wastewater and effluent of first treatment plants (total 48 samples) and second wastewater treatment plant (total 30 samples) during peak and non-peak season were taken. In each of the samples, the parameters NH<sub>4</sub>, NO<sub>3</sub> and NO<sub>2</sub> according to standard procedures of water and wastewater examinations was carried out [2].

The results showed that the removal rate of parameters in the peak season, the first treatment plant 64.5, 64.25 and 64.44% and the second treatment plant 56.25%, 56.59% and 56.79% was obtained respectively. While in non-peak season, removal efficiency of first treatment plant in theses parameters respectively 68%, 63.2% and 68% was achieved. Gohil et al. study found that the removal efficiency parameters NH<sub>4</sub>, NO<sub>3</sub> and NO<sub>2</sub> from a wastewater of tomato factory by Up flow anaerobic sludge blanket (UASB) was 85%, 20% and 68%, respectively [3].

Comparison of results related to treated wastewater effluent of Kermanshah Rojintak tomato factory with mentioned case will show that efficiency of wastewater treatment plant of Rojintak factory in removal of NO<sub>3</sub> was better but less efficient in removing NH<sub>4</sub> and was similar efficient in removing NO<sub>2</sub>. According to the results, we can say which in non-peak season, Exception ammonia parameter there is no limitation about effluent discharge into receptive water source but in the peak season there is this limitation. According to the environmental Protection Agency Guidelines of Iran associated with nitrogen compounds for agriculture reuse there is no certain limitation, so the treated wastewater effluent of Kermanshah Rojintak tomato factory used without any problems in agriculture irrigation.

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### References

1. Tchobanoglus G, Burton FL. Wastewater engineering. 4<sup>th</sup> ed. New York: McGraw Hill Press; 2003: 320-324.
2. APHA, AWWA and WPCF. Standard method for the examination of water and wastewater. 21<sup>th</sup> ed. Washington DC: American Public Health Association; 2005: 4-114.
3. Gohil A, Nakhla G. Treatment of tomato processing wastewater by an upflow anaerobic sludge blanket-anoxic-aerobic system. *Bioresour Technol* 2006; 97(16): 2141-2152.

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