Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
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"Gheorghe Asachi" Technical University of Iasi, Romania

SURVEY OF INDUSTRIAL WASTEWATER TREATMENT PERFORMANCE WITH BIOLOGICAL MONITORING OF PROTOZOA IN THE INDUSTRIAL PARK OF ABADAN

Abotaleb Bay[1], Mahdi Sadeghi[1*], Hadi Rahimzade[1], Nasser Behnampour[2]

[1]*Environmental Health Research Center, Golstan University of Medical Sciences, Gorgan, Iran*
[2]*Department of Public Health, School of public Health, Golstan University of Medical Sciences, Gorgan, Iran*

Abstract

Industrial wastewater is of particular importance. In most wastewater treatments, physicochemical parameters are used to determine the performances which are costly while Protozoa can be used as less expensive biological indicators to determine the efficiency of the treatment plant. The purpose of this study was to investigate the relationship between protozoa and physicochemical characteristics of the Abadan wastewater treatment industry.
Samples were collected from wastewater stabilization ponds in the Abadan industrial park. A total of 66 samples for biochemical and chemical tests and protozoa counts were taken. The sites of sampling were influent of sewage and effluent from maturation pond. For the parameters from influent, first 300 ml of samples was collected in depths of 0.1, 0.35 and 1 m and then mixed to provide a composite sample. 300 mL sample was directly taken from the effluent.
The results of this study indicate that there is a positive relationship between the number and population percentage of amoeba and mastigophora (flagellate) with BOD and COD whereas is the negative relationship between sticking ciliates with BOD and COD. Furthermore there is a positive relation between DO, the percentage, number of ciliates and amoeba population and there is a correlation, with flagellate population. Increase of flagellate numbers is indicative of high effluent Kjeldahl nitrogen. There was also an increase of input TSS and amoeba population percentage and a reduction of free ciliates numbers.
The type and abundance of protozoa in industrial wastewater treatment following biological methods is an indicator of the system performance and effluent quality. This study shows the use of biological indicators can be used for monitoring as a much cheaper alternative resulting in a better economy. It is also a good indicator for the detection of toxic materials entering the plant or refinery and also its organic load shocks.

Key words: abadan, amoeba, ciliate, industrial wastewater, monitoring, mastighophora, protozoa

Received: August, 2013; Revised final: September, 2014; Accepted: September, 2014

*Author to whom all correspondence should be addressed: e-mail: mahdikargar1@gmail.com; Phone:+9817- 32431602; Fax: +981732431607