

Treatment of Cow-Farm Wastewaters using an Environmentally Friendly Method

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A cow-farm of wastewaters rejection without control creates serious environmental problems. Frequent complaints rise, because these wastewaters end up in non-approved areas. As a result, this process creates environmental pollution at least in surface waters. In an effort to solve the environmental problems induced by these wastewaters, the scientific community is conducting research to establish treatment methods; two of those are photocatalysis and phytoremediation (Parsons, 2004, Peuke & Rennenberg, 2005).

The target of this work is the degradation of cow farm wastewaters with the aforementioned treatment methods.

In this research aqueous solutions were treated photocatalytically, employing different sources of light. In addition, aqueous solutions were hydroponically treated using different species of seaweed as means of phytoremediation. These plants are encountered in the lake of Kastoria (Greece). The seaweed species were identified in herbarium.

The mentioned wastewaters contain nitrogen, phosphorus, potassium, metals, suspended solids, pathogenic microorganisms, organic compounds, etc. So, the parameters that should be received to assess the pollutant load are the biochemical and chemical oxygen demand (BOD, COD), the total organic carbon (TOC), the determination of nitrogen, phosphorus, suspended solids, PH, etc (Reed et al., 1995). For this reason, this work gets a qualitative assessment of the pollutant load using phytotoxicity and phyto-genotoxicity methods, as well as spectrophotometric methods (Fiskesjo, G. 1993, 1994).

The qualitative assessment represents that UV treatment and solar photocatalysis is capable of cleaning cow farm wastewaters. Concerning the phytoremediation, different species displayed different removal capacity and resistance to their toxicity.

In conclusion, both methods appear very promising in the effective and economical removal of cow farm wastewaters. Further studies are required in order to develop an integrated method which will practically enable complete removal or degradation of those compounds from waters or soil.

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