

Accepted Manuscript

Implementation of material flow cost accounting for efficiency improvement in wastewater treatment unit of Tabriz oil refining company

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PII: S0959-6526(17)31584-6

DOI: [10.1016/j.jclepro.2017.07.137](https://doi.org/10.1016/j.jclepro.2017.07.137)

Reference: JCLP 10140

To appear in: *Journal of Cleaner Production*

Received Date: 21 November 2016

Revised Date: 11 July 2017

Accepted Date: 17 July 2017

Please cite this article as: Mahmoudi E, Jodeiri N, Fatehifar E, Implementation of material flow cost accounting for efficiency improvement in wastewater treatment unit of Tabriz oil refining company, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.07.137.

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Word count: 19916

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Company**

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Abstract

The optimal use of material and energy by different industries has recently become an issue of great importance due to limited energy resources around the world. Material flow cost accounting (MFCA) has been suggested as a novel management system that can enhance waste management and provide an estimation of actual values of losses. This research aims to apply MFCA to the wastewater treatment unit of the Tabriz Oil Refining Company. In order to establish MFCA, the amount of input and output material, material costs, system costs and energy costs were studied. Using mass balance in all sections of wastewater treatment unit, losses were identified and costs and benefits were established. Results from MFCA calculation indicated that the annual cost of the unit is 28.14 million USD. This study also investigated the effect of changing the type of microorganisms in the biological treatment section that are able to digest high levels of ammonia and hydrogen sulfide and addition of reverse osmosis to the cooling drain section. It was found that the positive product's value increased from

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