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Characterizing and Quantifying Solid Waste Landfill Leachate of Tabriz City, Iran

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ABSTRACT

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Background and Objective(s): The landfill leachate contains various contaminants as a result of the release of leachate into city of Tabriz. Landfill is an important environmental and health issue. Having a population of more than 1900,000 as well as four municipality districts, the solid waste generation rate is approximately more than 1200 tons/day in Tabriz City. The wastes generated are disposed at the Tabriz City landfill with an area of approximately 34 hectares which is located off-road at the Tabriz –Sefidan highway.

Material and Methods: In this experimental study, Samples were collected from around the landfill site of Tabriz city before and after the treatment. At this site, membrane biological reactors were used for the treatment of lanchate. Various physical, chemical and biological parameters were detected. All tests were performed according to the standard methods for the examination.

Results: The results obtained at pH=6.35 mg/l, were biological oxygen demand of 27000 mg/l, carbon oxygen demand of 56800 mg/l, Nitrate=215 mg/l, NO³=474 mg/l, NO²=3 mg/l, phosphate=109 mg/l, total electrical conductivity=29300 s/cm, total dissolved solids=17580 mg/l, Ca=1400, Mg⁺²=960, SO₄⁻=1390, Cd=0.064 mg/l, Co=0.541 mg/l, Cr=0.706 mg/l, Cu=0.382 mg/l, Fe=17.12 mg/l, Ni=0.711mg/l, Pb=0.392 mg/l, Zn=1.542 mg/l, As=0.12 mg/l and at pH=9.47 mg/l, the results were biological oxygen demand of 70 mg/l, carbon oxygen demand of 95 mg/l, Nitrate=47.3 mg/l, NO³=42.88 mg/l, NO²=0 mg/l, phosphate=0.24 mg/l, electrical conductivity= 855 s/cm, total dissolved solids=641 mg/l, Ca=0, Mg⁺²=0, SO₄⁻=0. The result showed that all of the heavy metals (Cd²⁺, Co, Cr, Cu, Fe, Ni, Pb, Zn, As) were removed completely.

Conclusion: Results show that the method used for landfill leachate treatment is effective for removing hazardous material from waste.

KEYWORDS:

Solid waste, Landfill, Leacheat, Tabriz, Iran.

