

Waste Derived from Refinery and Petrochemical Plants Activities: Processing of Oil Sludge through Thermal Desorption

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Abstract : Oil sludge with its main characteristic of high acidity is a waste product generated from the operation of refinery and petrochemical plants. Former refinery and petrochemical plant - Petrochema Dubová is present in Slovakia as well. Its activities was to process the crude oil through sulfonation and adsorption technology for production of lubricating and special oils, synthetic detergents and special white oils for cosmetic and medical purposes. Seventy years ago - period, when this historical acid sludge burden has been created - comparing to the environmental awareness the production was in preference. That is the reason why, as in many countries, also in Slovakia a historical environmental burden is present until now - 229 211 m³ of oil sludge in the middle of the National Park of Nízke Tatry mountain chain. Neither one of tried treatment methods - bio or non-biologic one - was proved as suitable for processing or for recovery in the reason of different factors admission: i.e. strong aggressivity, difficulty with handling because of its sludgy and liquid state et sim. As a potential solution, also incineration was tested, but it was not proven as a suitable method, as the concentration of SO₂ in combustion gases was too high, and it was not possible to decrease it under the acceptable value of 2000 mg.mn-3. That is the reason why the operation of incineration plant has been terminated, and the acid sludge landfills are present until nowadays. The objective of this paper is to present a new possibility of processing and valorization of acid sludgy-waste. The processing of oil sludge was performed through the effective separation - thermal desorption technology, through which it is possible to split the sludgy material into the matrix (soil, sediments) and organic contaminants. In order to boost the efficiency in the processing of acid sludge through thermal desorption, the work will present the possibility of application of an original technology - Method of Blowing Decomposition for recovering of organic matter into technological lubricating oil.

Keywords : hazardous waste, oil sludge, remediation, thermal desorption

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