

ALTERNATIVE WAYS OF HAZARDOUS WASTE TREATMENT FROM PETROLEUM INDUSTRY IN CROATIA

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Part of the technological waste produced in petroleum industry in Croatia is hazardous waste. Such kind of waste is treated with lime and through processes of stabilisation-solidification it transforms into poorly soluble-inert material which is then deposited in central oilfield pits. Stabilisation-solidification with lime is world-wide used as a technique of treatment of organic and inorganic technological waste. Foreign experiences showed that by usage of this technique for treatment of organic technological waste, or waste with organic and inorganic pollutants, sufficient reduction of pollutant movement in the environment is not caused. Due to this fact, one has to be careful in its application.

The new techniques of treatment are being developed for materials which contain organic or inorganic and organic pollutants. The aim of this research was to examine alternative ways of treatment of technological waste from petroleum industry. The sample of technological waste from central oilfield pit Vinkovci was treated in laboratory conditions with application of single material or application of material combinations: (a) cement, (b) organophilic clay, (c) calcined Moler clay, (d) lime + organophilic clay + bentonite, (e) cement + organophilic clay + bentonite, (f) lime + calcined Moler clay and (g) cement + calcined Moler clay. The sample of technolo-

gical waste treated with lime was used for comparison of results. The following parameters were determined in treated samples: (a) total oils, (b) mineral oils, (c) polycyclic aromatic hydrocarbons (16) and (d) heavy metals and potentially toxic elements (10). The content of stated parameters is determined in original samples and their distilled water leachates.

The most successful treatment for majority of parameters was treatment with organophilic clay. Such treated sample releases, for example, 63 times less total oils, 67 times less mineral oils, 798 times less naphthalene and 136 times less lead than sample treated with lime. The organophilic clay, as the most successful material, is followed by calcined Moler clay. The obtained results clearly show that reduction of hydrocarbons content with some of the field acceptable ways and detailed chemical analysis of left organic and inorganic pollutants has to be done before the selection of the best method for treatment of technological waste in petroleum industry. Depending on results of analysis, hazardous technological waste can be treated more effective by application of more suitable materials (e.g. organophilic clay) which reduce pollutant release from such treated waste in the environment. In this way the problem of permanent disposal of treated waste can be solved.