

## Genesis of biomarker hydrocarbons in the environment and their role in assessing an oil pollution source

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### Abstract

Oil spills are classified according to chemical types that reflect qualitative and quantitative changes in petroleum composition during biodegradation in soil. Possible trends in composition of biomarker petroleum hydrocarbons in polluted soil, as determined by natural and climatic conditions and by activation of soil microflora, were revealed. It was shown that the use of selective bioremediation methods could lead to a noticeable redistribution of the relative amount of C27 : C28 : C29 steranes in marine crude oils owing to more intense degradation of C 27 steranes (5 $\alpha$ , 14 $\beta$ , 17 $\beta$ , 20R and 20S, as well as 5 $\alpha$ , 14 $\alpha$ , 17 $\alpha$ , 20R and 20S) as compared with their higher C29 homologues. The observed changes in the composition of steranes suggest another, namely, terrigenous origin of petroleum, and, thus, may lead to an erroneous conclusion concerning the genotype of crude oil as a pollution source. It was found that hopane hydrocarbons are highly stable under similar conditions. It was shown that the set of biomarker hydrocarbons might be useful as biological indicators in the assessment of a petroleum pollution source. © MAIK "Nauka/Interperiodica".

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