

**Dump organic matter characteristics: view by  
geochemical proxies**

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The timeliness of the problem is based on the paucity of studies on organic geochemistry of dump materials from open pit coal mines, of the vast buried territories of agricultural terrains, and of potential environmental impact of some of organic constituents.

A set of anthropogenically weathered, organic matter (OM) rich surface dump materials from 3 dumps of Mini Maritsa Iztok EAD (Bulgaria) was studied. TOC varies in the range 1.2-2.4 %. XRD study showed clay minerals (I/Sm, kaolinite/halloysite and illite) as the main constituents. Additionally, quartz, feldspars pyrite and gypsum were identified.

Chloroform was used for extractable organic matter (EOM) preparation. Yields determined varied from 0.08 to 1.62 %. All extracts were strongly dominated by 16 $\alpha$ (H)-Phyllocladane. *n*-Alkane distributions were bimodal with a broad span. Regular isoprenoids and values of calculated parameters varied in a relatively narrow interval. Generally, algal/bacterial and terrigenous inputs are characteristic for the OM based on *n*-alkanes pattern of distribution, CPI data (~2.0) and TAR values (0.8-1.8), while P<sub>aq</sub> values (0.4-0.6) argued for floating to submerged parent vegetation. The low amounts of regular isoprenoids were characteristic for immature OM, as isoprenoids are still covalently attached to kerogen. Nevertheless, the relationship Pr/*n*C<sub>17</sub> vs. Ph/*n*C<sub>18</sub> depicted Type II kerogen denoted by algal source for OM and reductive environment. Hopane distributions were comparable, attesting OM immature state: H<sub>27 $\beta$</sub> /H<sub>27 $\alpha$</sub>  ratio 4 and "bio"/"geo" hopanes ratio > 1. The low magnitudes of methyl phenanthrene index, MPI-3, from 0.81 to 1.45, also characterized immature OM.

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