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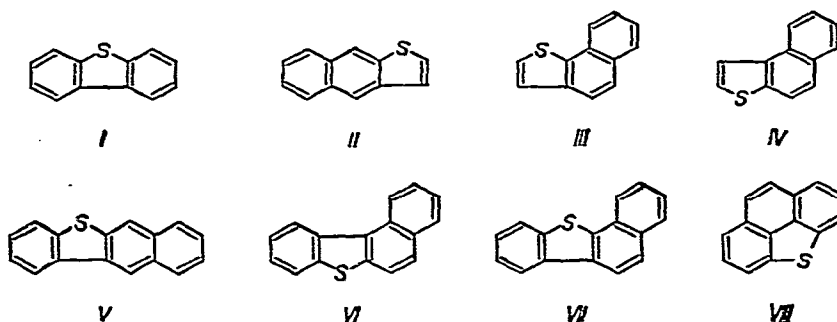
Letter to the Editor

Contamination of some polynuclear aromatic standards

Sir,

In a recent letter¹ there was noted, in connection with the testing of a flame photometric detector (FPD)², an unpleasant contamination of some polynuclear aromatic standards, particularly of phenanthrene, with unknown minor compounds which were eluted with, or close to, the major components and responded strongly in the FPD. The impurities were assumed to be sulphur-containing polynuclear aromatics of appropriate volatility. Being engaged in studies on the composition and analysis of coal-tar products, we can support this assumption and describe some of the contaminants.

On the basis of a survey of coal-tar compounds arranged according to their boiling points³ and taking into account further data⁴⁻⁶, it is possible, by analogy with the known contamination of benzene with thiophene and of naphthalene with benzo[*b*]thiophene, to postulate the contamination of phenanthrene (b.p. 338°) and anthracene (b.p. 340°) with dibenzo[*b,d*]thiophene (I, b.p. 331°), naphtho[2,3-*b*]thiophene (II, b.p. 335°), naphtho[1,2-*b*]thiophene (III, b.p. 330°) and naphtho[2,1-*b*]thiophene (IV, b.p. 330°). The sulphur impurities in benz[*a*]anthracene (b.p. 438°) should be benzo[*b*]naphtho[2,3-*d*]thiophene (V, b.p. 440°), benzo[*b*]baphtho[1,2-*d*]thiophene (VI, b.p. 440°) and benzo[*b*]naphtho[2,1-*d*]thiophene (VII, b.p. 430°). Pyrene should be contaminated with phenanthro[4,5-*bcd*]thiophene (VIII).



In this Institute we have carried out gas chromatographic (GC) analyses of phenanthrene and anthracene, and in both hydrocarbons we found compounds I and II; compound I dominated in phenanthrene and compound II in anthracene. The full data will be given in a paper dealing with GC analyses of coal-tar products on selective packed columns, which is in preparation.

NOTE ADDED IN PROOF

On the basis of a recent paper on the separation and identification of polynuclear aromatics in coal tar⁷ it is also possible to suppose that the dibenzophenanthrene and dibenzanthracene standards are contaminated with dinaphthothiophenes.

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