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Sources of polycyclic arom. hydrocarbons (PAHs) in sediments in the Elizabeth River, VA, a highly industrialized urban estuary, were examd. using multiple source identification techniques. Large-scale historical creosote releases from former wood-treatment facilities had long been considered the dominant source of PAHs to the estuary. Using principal component anal. (PCA) along with identification of source-specific isomer ratios, contributions from 2 former wood-treatment facilities were differentiated. A significant coal contribution was detd. by also incorporating compd.-specific C isotope ratio anal. (CSIA). Use of CSIA also successfully isolated and sepd. the coal signature from a coal gasification signature, which could not be distinguished using only PCA and isomer ratios. The major contributors to sediment PAH contamination in the river were successfully identified, which included a former wood-treatment facility and historical and/or current coal transport and use, a source not considered in previous studies.