

Lima, A.L.C., Eglinton, T.I., and Reddy, C.M., *A high-resolution record of pyrogenic polycyclic aromatic hydrocarbon deposition during the 20th century*, *Env. Sci. and Technol.*, 2003; v37, 53-61

A high-resoln. record of polycyclic arom. hydrocarbon (PAH) deposition in Rhode Island over the past .apprx.180 yr was constructed using a sediment core from the anoxic Pettaquamscutt River basin. The record showed significantly more structure than has hitherto been reported and revealed four distinct max. in PAH flux. The characteristic increase in PAH flux at the turn of the 20th century was captured in detail, leading to an initial max. prior to the Great Depression. The overall peak in PAH flux in the 1950s was followed by a max. that immediately preceded the 1973 Organization of Petroleum Exporting Countries (OPEC) oil embargo. During the most recent portion of the record, an abrupt increase in PAH flux between 1996 and 1999 has been found to follow a period of near const. fluxes. Because source-diagnostic ratios indicate that petrogenic inputs are minor throughout the record, these trends are interpreted in terms of past variations in the magnitude and type of combustion processes. For the most recent PAH max., energy consumption data suggest that diesel fuel combustion, and hence traffic of heavier vehicles, is the most probable cause for the increase in PAH flux. Systematic variations in the relative abundance of individual PAHs in conjunction with the above changes in flux are interpreted in relation to the evolution of combustion processes. Coronene, retene, and perylene are notable exceptions, exhibiting unique down-core profiles.