To det. whether polycyclic arom. hydrocarbons (PAHs) in household soot were derived from the combustion of scrap wood or creosote that was impregnated in the wood (or some combination of both), the mol. compn. and radiocarbon (14C) content of the total carbon and several PAHs in the soot was studied. The 5730-yr half-life of 14C makes it an ideal marker for identifying creosote-derived PAHs (14C-free) vs. those derived from the combustion of wood (contemporary 14C). The 14C abundance of phenanthrene, fluoranthene, pyrene, and retene was detd. by accelerator mass spectrometry after solvent extn. and purifn. by preparative capillary gas chromatog. The mol. anal. (presence of retene and 1,7-dimethylphenanthrene) and bulk 14C content (contemporary) of the soot indicated that wood combustion was a strong source of carbon to the soot. The 14C of retene in two soot samples was also contemporary, indicating that it was derived from the combustion of the scrap wood. These results are consistent with previous work that suggested that retene is an excellent marker of wood combustion. However, the 14C content of phenanthrene, fluoranthene, and pyrene in one soot sample was much lower and revealed that these compds. had a mixed creosote and wood source. Using an isotopic mass balance approach, the authors est. that 40 to 70% of phenanthrene, fluoranthene, and pyrene were derived from the combustion of the scrap wood. The results of this study show that mol. marker and bulk 14C anal. can be potentially misleading in apportioning sources of every PAH, and that mol.-level 14C anal. of PAHs can be a powerful tool for environmental forensics.