



# Polycyclic aromatic hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs) are substances produced in thermal decomposition and incomplete combustion of organic matter with limited access of oxygen at temperatures of 500 to 900 °C. Many PAHs are persistent, bioaccumulative and carcinogenic. Out of these chemical contaminants, benzo (a) pyrene is drawing most attention, although some other PAHs show even greater carcinogenic effects.

**In the ALS laboratories, we determine the basic group as well as the expanded group, including total PAHs.**

#### Basic group - PAH (4)

Benzo[a]anthracene  
Chrysene  
Benzo[b]fluoranthene  
Benzo[a]pyrene  
Sum PAHs - Lowerbound  
Sum PAHs - Upperbound

#### Expanded group

Naphthalene  
Acenaphthylene  
Acenaphthene  
Fluorene  
Phenanthrene  
Anthracene  
Fluoranthene  
Pyrene  
Benzo[a]anthracene  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Chrysene  
Indeno[1,2,3-cd]pyrene  
Dibenzo[a,h]anthracene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Sum PAHs - Lowerbound  
Sum PAHs - Upperbound

The largest source of PAHs for humans (non-smokers) is food, especially grilled and smoked products, fats and oils, dried fruit and cereals, fresh fruit and vegetables, but traces can be also present in coffee, tea or milk. Other sources can be found in the environment (exhaust fumes, heating, fumes from industrial plants, power plants and heating plants).

PAHs in foodstuffs are regulated in various countries via limits imposed either on the total PAHs and/or on benzo (a) pyrene. Maximum amounts range from 0.5 to 30 µg / kg depending on the food type.



benzo[a]pyrene

In the European Union, the maximum amounts of PAHs are regulated by the Commission Regulation (EC) No. 1881/2006, as amended, which lays down the types of contaminants and toxicologically relevant substances and their maximum permitted levels in foodstuffs. A review of the maximum levels for certain foods is currently under discussion by the European Commission. Important, independently tackled sources of PAHs are smoking processes. Regulation 2065/2003/EC, as amended, applies to the use of smoke condensates and their derivatives.

ALS Czech Republic operates state-of-the-art laboratories performing ultra-trace analyses of PAHs by high performance liquid chromatography HPLC as well as by the method of isotope dilution using high resolution gas chromatography in combination with high resolution mass spectrometry (HRGC-HRMS).

- ISO 17025 accredited analyses in accordance with the EU regulations and globally recognized standards and methodologies
- Up to 30,000 analyses per year in a variety of matrices (e.g. water, soil, emissions, air, waste as well as food and feed)
- Key staff sharing up to 30 years of experience not only in the determination of PAHs, but also other persistent organic pollutants (POPs)
- Monitoring of POPs, including PAHs, within both national and international projects
- Regular participation in the certification of reference materials and interlaboratory comparison tests with excellent results

**For more information, please contact us by tel.: +420 226 226 998 or e-mail: [czsupport.food@alsglobal.com](mailto:czsupport.food@alsglobal.com).**