

First data of PAHs along a sediment core from Ría de Vigo

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Introduction

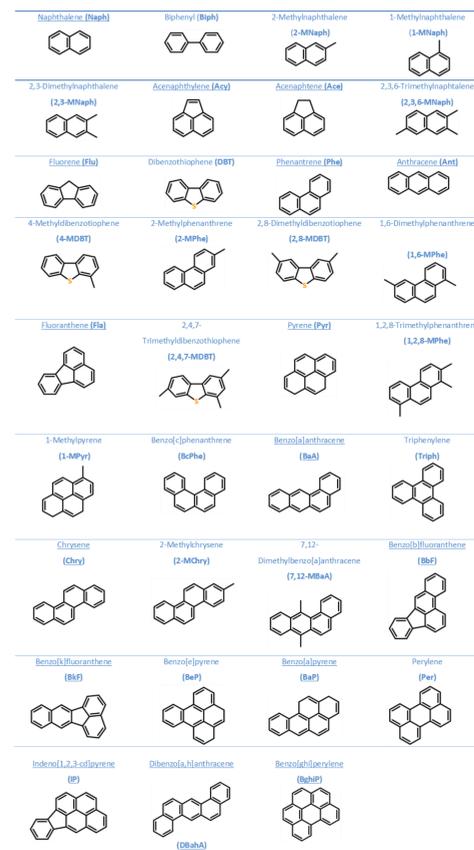
Sediment cores can inform about the temporal trend of pollutants in an environment. Different sediment layers, settled at different times represent the pollution in that moment.

A sediment core in the inner part of the Ría de Vigo was collected and some layers analysed in order to determine the temporal trend of PAHs in the last decades.

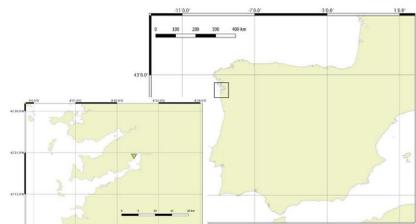
PAHs (Polycyclic Aromatic Hydrocarbons)

PAHs can have both a natural (biogenic) and anthropogenic origin but generally the last one is the predominant. The main sources of PAHs to the environment are petroleum and coal combustions as well as fires or even the use of pitch or other petroleum products. In this study 35 individual PAHs were analysed (including parent and alkylated ones) as well as some groups of alkylated PAHs following a previously validated method (Pérez-Fernandez *et al.*, 2015) A QA/QC is put in place to guarantee the quality of the analysis

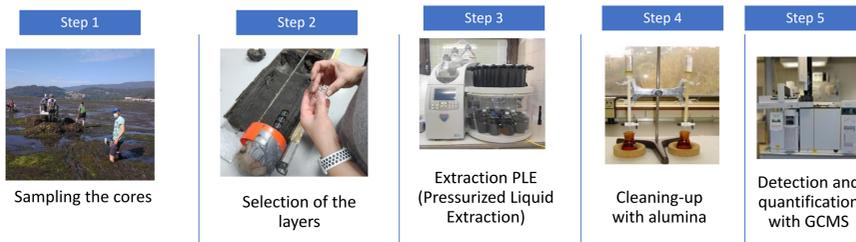
Compounds analysed in this study. 16EPA PAHs are underlined.



Sampling site



Procedure



Results

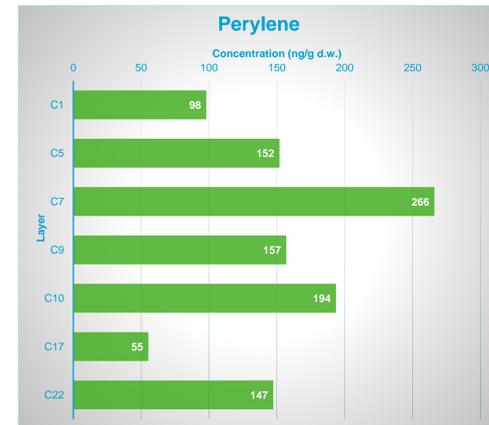


The sum of 16 EPA PAHs was in the range of 200-1000 $\mu\text{g}/\text{kg}$ d.w. with a clear increase in the values in the most superficial layers pointing at the anthropogenic activity as one of the main drivers of the PAH concentrations in sediments.

The values are in the range of other estuarine areas with values above the reference values (OSPAR background values) but generally below the USAEPA ERL and so not expected to be causing adverse biological effects (OSPAR Commission, 2009).

Isomeric ratios (Phe/Ant, Fla/Pyr, BaA/Chrys and BghiP/IP) point at a combustion origin as the main source for the PAHs in all the studied layers (Tobiszewski and Namieśnik, 2012).

Perylene has a mixed origin (both biogenic and anthropogenic, Hanke *et al.*, 2019). The profile of perylene with depth is slightly different of that of the rest of the PAHs, mainly in the deepest layers, indicating a possible contribution of biogenic origin in those strata.



Conclusions

- The PAH values in the deepest layers are lower than those in the more superficial layers.
- The origin of PAHs is mainly combustion although in the deepest layers there is some contribution of biogenic sources.
- The PAH concentrations found are below what those expected to cause adverse biological effects.

References

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