

## Geochemistry of Polycyclic Aromatic Hydrocarbons in Bottom Sediments of the Laptev and the East Siberian seas

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This study is devoted to the eastern seas of Russia - The Laptev Sea and The East Siberian Sea. This is due to several reasons. Firstly, the region is still not as well studied as the Western Arctic. Secondly as other high Arctic ecosystem has a low tolerance to human impacts. And also because even slight human impact in the region, we can say that the real parameters of the different components of the environment can be considered as background. And that they can be used in future evaluation of changes in the conditions of marine ecosystems. Bottom sediments from the eastern part of Russian Arctic were analysed to identify major sources and pathways of polycyclic aromatic hydrocarbons (PAHs).

Materials for the research were sediments sampled at 97 bottom stations on the Eastern Arctic shelf during Russian and international research expeditions carried out in 1993-1995s. The bottom sediments were taken by grabs and gravity corers with plastic liners. Samples from the surface layer (0–5 cm) were placed into sterile boxes and kept under a temperature of  $-18^{\circ}\text{C}$ .

Natural organic-geochemical background of PAH in the marine sediments is formed under the influence of genetic and lithological–facial factors, while its variations depend on conditions of sedimentation. In the sediments of the eastern Arctic shelf, the total PAH contents vary from 3 to 180 ng/g with the average value not exceeding 40 ng/g, which is substantially lower as compared with that previously reported for the sediments of its western part [1, 3, 4]. The study of the spatial PAH distribution in the sediments reveals the dominant role of the river discharge. For example, the elevated PAH contents are confined to delta zones of large rivers and are traced along their paleovalleys up to deposition areas of the sedimentary material near the continental slope. Their composition is dominated by phenanthrene and chrysene structures. The distribution of perylene, which is indicator of a terrestrial organic matter flux, confirms this. The pyrogenic component in the PAH composition is poorly pronounced ( $FI/202 = 0.25$ ) and is registered mainly in the sediments of the Lena River delta area.

In conclusion, the PAH distribution in the sediments sampled in Tiksi Bay should be mentioned. The total PAH content in the sediments of the harbor amounts to 3695 ng/g, which is two orders of magnitude as high as the background values. The dominant component is represented by pyrogenic group 202, the content of which is as high as 1193 ng/g, which is characteristic of strongly polluted technogenous sediments [2,3].

### References

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