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Title: *MERCURY IN THE SURFACE SEDIMENTS AND FERROMANGANESE NODULES FROM THE CHUKCHI SEA*

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This presentation examines the characteristics and factors of the natural (non-human) distribution and accumulation of Hg in the surface (0-2 cm) layer of the sediments and authigenic formations of the Chukchi Sea.

The content of Hg in the surface layer of the bottom sediments in the Chukchi Sea varies quite widely - from 6 to 92 ppb with a mean of 33 ppb (it does not exceed even the value of a minimal effect concentration of 130 ppb, and more likely the effect of the level of 700 ppb [1]). The maximum and near-maximum concentration detected on the outer shelf, increase - in the inner part of the sea, at the intersection of different structures of the graben-rift system. The most significant positive correlation of Hg was observed with such macroelements as Mn (0.62), Al (0.55), Mg (0.52), Fe (0.49) and Ti (0.43), negative one - with Si (-0.63). In addition, Hg shows a significant positive correlation with increasing depth (0.37), sediment grain size smaller than 0.001 mm (0.67) and negative, respectively, with a fraction larger than 0.1 mm (-0.56). Also, Hg has a significant positive correlation with the content in the sediment of the total organic carbon (0.27).

The content of Hg in the ferromanganese nodules (FMN) of the Chukchi Sea of diagenetic nature, varies from 41 to 165 ppb. (The study of the oceanic FMN revealed that the mercury concentrations above 58 ppb are characteristic for the nodules from the areas with the manifestations of volcanic and hydrothermal activity [2]). Comparison of mercury concentrations in the sediments and FMN revealed a mild tendency to accumulate metals in nodules. Only in rare cases, the concentration ratio reaches 3-5, basically, it is just over 1. The highest content of mercury and the concentration ratio are typical for FMN of the Herald Canyon, which is a part of the Chukchi graben - a structure of the neotectonic graben-rift system of the Chukchi Sea.

Based on the results of the research, we can say that the content of Hg in the surface sediments of the Chukchi Sea and the FMN is low and is now controlled only by natural factors. Major role in the distribution of metal is played by the deep sea floor morphology, sediment grain size, redox conditions of the environment. Obviously, a local action (mostly in the Herald Canyon) is also imposed by fluid dynamic processes, a possible consequence of activation of the graben-rift system of the Chukchi Sea.



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1. Canadian sediment quality guidelines for the protection of aquatic life: summary tables // Canadian Council of Ministers of the Environment, 2001. 5 p.

2. Harriss, R.C. Mercury content of deep-sea manganese nodules // Nature. 1968. V. 219. P. 54-55.