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ABSTRACT

Contamination of Arctic lakes with toxic compounds (PCBs and PAHs) of anthropogenic origin (Bellsund, Spitsbergen)

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The present studies concerns contamination of Arctic water by atmospheric pollutants. Water samples of more than thirty closed-drainage water bodies were collected in NW part of Wedel Jarlsberg Land (SW Svalbard Archipelago). Lakes were located at the forefields of Scott and Renard Glaciers, and on the periglacial plain of Calypsostranda in the vicinity of the Research Station of Maria Curie-Skłodowska University in Lublin- Calypsobyen. In this work the concentration levels of organic pollutants (PCBs and PAHs) in various genetic types of Arctic lakes were examined. Samples were collected from 13.07 till 23.08 of 2012.

Arctic lakes functioning in various environmental conditions, determining the genetic type of the basins: supraglacial, ablation, moraine, coastal, tundra, kame and outwash plain, were examined on presence of pollutants. high Arctic lakes responds rapidly to slight changes in environmental conditions. Due to progressive warming and long range transport of pollutants from urbanized and industrialized Eurasia areas, polar lakes and ponds are becoming a sink for wide range of xenobiotics.

The results of water samples from the area of Scott and Renard Glacier catchments indicate the presence and spatial distribution of pollutants being of interests. Presence of PCBs and PAHs in analyzed water samples proves that long range transport of pollutants through the atmosphere (LRTAP) Arctic is still current issue and Arctic can not be considered anymore as area free from pollutants. The conducted research shows that levels of pollutants differs between each other due to the genetic types of the basins in which lakes are functioning and also dependent on their localization. Moreover it may be stated that lakes and small ponds may play a role of sink of atmospheric pollutants in the Arctic.

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