

Bacteriological and physicochemical monitoring of inland surface waters within the administrative boundaries of Gdańsk city in 2011

The examined material consisted of water samples collected from four lakes located within the administrative boundaries of Gdańsk. The lakes are described as: lake 1, lake 2, lake 3, lake 4.

There were two sample collection sites located at lakes 1,2 and 3 each, and one sample collection site at lake 4:

Lake 1: sites C1 and C2

Lake 2: sites C3 and C4

Lake 3: site C5 and C6

Lake 4: site C7

The water samples were collected from 20.04.2010 to 02.12.2010, once a month. From January to March 2010, all tested water bodies were frozen, which did not allow sample collection. Each water sample was analysed for the following:

- number of *Escherichia coli* bacteria by Most Probable Number (MPN) method, with presumptive, confirmed and completed phases, in accordance with PN-EN ISO 9308-3,
- number of intestinal enterococci (cfu/100ml) using a membrane filtration method, in accordance with PN-EN ISO 7899-2, on Slanetz – Bartley Enterococcus Agar with confirmation assays,
- chlorophyll *a* – by filtration through 0,7 µm pore diameter filters, extraction with 96% ethanol and spectrophotometric assessment of absorbance, according to HELCOM model (1988 with later modifications)
- fosfor całkowity – metodą utleniania związków fosforu nadtleno-disiarczanem(VI) potasu do ortofosforanów(V) i następnie oznaczania fosforanów metodą spektrofotometryczną z zastosowaniem heptamolibdenianu(VI) amonu i kwasu askorbinowego jako reduktora, według normy PN-EN1189:2002,
- total nitrogen – by method of oxidation of nitrogen compounds with potassium persulfate, reduction of nitrates to nitrites with metallic cadmium and identifying nitrites by spectrophotometric method of Bendschneider and Robinson (PN-EN ISO 13395:1996) ,
- total phosphorus – by method of oxidation of phosphorus compounds with potassium peroxodisulphate(VI) to orthophosphates(V) and subsequently identifying phosphates by spectrophotometry, using ammonium heptamolybdate(V) and ascorbic acid as a reductor, in accordance with PN-EN1189:2002 norm,
- conductivity – using conductometric method, in accordance with PN-ISO 27 888:1999,
- mineral oils – using gas chromatography, after extraction with n-pentane in accordance with PN-EN ISO 9377-2:2002.

The results of microbiological and physicochemical studies conducted in selected lakes allow to survey the changing levels of microbiological and physicochemical contamination observed in waters which are used for recreational and sporting purposes, as well as identifying the sources of contamination of these waters.