

The results of physico – chemical and microbiological testing of watercourses around the municipality of Gdańsk in 2004

The main objective of this study was to conduct a monitoring research of selected watercourses around the municipality of Gdańsk.

#### Research material and methods

The research included 15 watercourses (5 rivers, 6 streams, 2 storm water sewers, 1 artificial arm of a river, 1 drainage trench) flowing directly into the Gulf of Gdańsk, or indirectly, through Martwa Wisła river tributary system. The research material constituted of water samples collected at 23 measurement stations, from the depth of around 24 centimeters under the water surface.

The following watercourses were researched:

1. Martwa Wisła river 2 measuring stations,
2. Motława river and an artificial arm 3 measuring stations in total; (2 at the river, 1 at the artificial arm)
3. Radunia river 1 measuring station– outlet into Motława,
4. Czarna Łacha river 1 measuring station– outlet into Motława,
5. Rozwójka river 1 measuring,
6. Radunia canal 2 measuring stations,
7. Oruński stream 2 measuring stations,
8. Siedlicki stream 2 measuring stations
9. Strzyża stream 2 measuring stations,
10. Jelitkowski stream 2 measuring stations,
11. Rynarzewski stream 1 measuring station – outlet into Jelitkowski stream
12. „Kołobrzaska” storm water sewer 2 measuring stations, (outlet and inlet of a retention basin)
13. Artificial arm of the Motława river see point 2
14. Brzeźno storm water sewer 1 measuring station; outlet into „Kołobrzaska” storm water sewer
15. Drainage trench, draining water from ponds located in coastline area 1 measuring station

The water samples were analysed for the following:

- Total amount of suspensions – weighting method, using filtration through glass fiber filters (0,45 µm diameter pores), drying in 105 °C and weighing; in accordance with PN-EN8872:2002 norm,
- Biological oxygen demand (BOD<sub>5</sub>)– using dilution and seeding method with elimination of nitrification proces by addition of allylthiourea and initial filtration through glass fiber filters (0,60µm pore diameter), in accordance with PN-EN 1899-1:2002 and PN-EN 1899-2:20002 norms,
- Chemical oxygen demand – determination of permanganate index in acidic environment, in accordance with PN-85/C-04578.02. norm,

- Concentration of dissolved oxygen – iodometric method, in accordance with PN-EN 25813:1997 norm,
- Total nitrogen – oxidizing phosphorus compounds with potassium persulfate, reduction of nitrates to nitrites with metallic cadmium and identifying nitrites using spectrophotometric method (Bendschneider and Robinson), in accordance with PN-EN ISO 13395:1996 norm,
- Total phosphorus – oxidizing phosphorus compounds with potassium persulfate and identifying phosphates using spectrophotometric method, conducted with ammonium molybdate and ascorbic acid as a reductor, in accordance with PN-EN1189:2002 norm,
- Chlorides – Mohr method, in accordance with PN-ISO 9297:1994 norm,
- Conductivity – conductometric method, in accordance with PN-ISO 27888:1999 norm,
- Petroleum hydrocarbons – gas chromatography after extraction with n-pentane, in accordance with PN-EN ISO 9377-2:2002 norm
- Humic acids - colorimetrically after initial extraction with isoamyl alcohol according to BN-90 9567.18.08 (applies only to point B15),
- Most probable number of *Escherichia coli* and coliform bacteria – dilution method, in accordance with PN –ISO 9308-1:1999, PN-75/C4615.05 and PN-ISO 9308-1:1999, PN-77/C4615.07 norms,
- Number of intestinal *Enterococci* – filtration method, using Slanetz-Bartley medium, in accordance with PN-EN ISO 7899-2 norm,