

The results of measuring concentrations of heavy metals, petroleum hydrocarbons and humic acids in watercourses around the municipality of Gdańsk in 2005

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:

- Humic acids - colorimetrically after initial extraction with isoamyl alcohol according to BN-90 9567.18.08 (applies only to point B15),
- Petroleum hydrocarbons – gas chromatography after extraction with n-pentane, in accordance with PN-EN ISO 9377-2:2002 norm,
- Cadmium and lead – atomic emission spectrometry, with inductively coupled plasma, using PERKIN-ELMER OPTIMA 2000 DV spectrometer, in accordance with PN-ISO 11885:2001 norm,

- Mercury – cold – vapor atomic absorption spectrometry, using VARIAN AA -2000/50 PLUS spectrometer with VGA 77 agilent vapor generation accessory, in accordance with PN-EN 1483 norm,