



“Gheorghe Asachi” Technical University of Iasi, Romania



ASSESSMENT OF THE PRESENT LEVEL OF THE MAIN COMPOUNDS OF POLLUTANT EMISSIONS FROM INLAND WATERWAY TRANSPORT SYSTEM IN THE DANUBE REGION WETLANDS-GREEN DANUBE

Iuliana–Mihaela Tudor^{1*}, Vasile Pipirigeanu², Doina Munteanu², Marian Tudor¹, Adrian Burada¹, Orhan Ibram¹, Liliana Teodorof¹, Cristina Despina¹, Marian Mierla¹, Cristian Trifanov¹, Ciprian Anore¹, Diana Bota¹, Ovidiu Sorin Cupsa², Mihaela Vintila², Natalia Budescu³, Rafael Robert⁴, Eppich Markus⁴, Péter Szuppinger⁵, Valeri Stoyanov Penchev⁶

¹Danube Delta National Institute for Research and Development, Babadag 165 Street, 820057 Tulcea, Romania

²Romanian Maritime Training Centre, Pescarilor 69A Street, 900581, Constanța, Romania

³Association for Cross Border Cooperation „Lower Danube Euroregion” Eroilor 64 Street, 800119, Galați, Romania

⁴Pro Danube Management GmbH Handelskai 265, A-1020 Viena, Austria

⁵The Regional Environmental Center for Central and Eastern Europe 2000 Szentendre Ady Endre ut 9-11, Hungary

⁶Black Sea - Danube Association of Research and Development High-Tech Business Incubator,
floor 2, pob 87 Asparuhovo, 9003 Varna, Bulgaria

Abstract

In order to quantify the NO, NO₂ and NO_x, SO₂, CO and PM emissions from ship traffic on the Danube, seasonal measurements (autumn, spring and summer) were performed during the period 2017-2018, using high precision mobile equipment. It is the first-time air quality monitoring actions and activities of this type have been carried out on inland waterway traffic in Romania. The selected indicators were analysed according to ISO standards in force, using chemiluminescence-based methods and non-dispersive infrared spectroscopy. The results were supplemented by measurements of ambient temperature, humidity and with observations on the number of ships transiting the fixed point, their category and the time interval. The statistical analysis is based on the daily average measurements for the monitoring points located upstream of the Danube Delta Biosphere Reserve; for Sulina monitoring area in the Danube Delta, hourly average values were used in correlation with the environmental factors. The results showed significant increases in emissions in the diurnal range, and the statistical analysis of the data showed good correlations between the power developed by ship engines and nitric gases. It has also been observed that the emission peaks can be attributed to the maximum power developed by the ships' engines. Ambient temperature and air humidity showed values typical of the monitored period, and the wind direction was favourable during the three monitoring campaigns.

Key words: carbon monoxide (CO), Danube navigation, nitrogen dioxides (NO₂), pollutant emissions, particulate matter (PM10 and PM2.5), sulphur dioxide (SO₂)

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* Author to whom all correspondence should be addressed: e-mail: mihaela.tudor@ddni.ro