

PROJECT SIMONA

TRANSNATIONALLY HARMONIZED SEDIMENT SAMPLING AND LABORATORY PROTOCOLS FOR HSs IN DRB'S SURFACE WATERS PROPOSAL

Lidija Galović¹, Ajka Šorša¹, Ana Čaić Janković¹, Danijel Ivanišević¹, Ivan Mišur¹, Đorđa Medić², Jasmina Antolić², Neven Bujas², Jelena Vićanović³, Aleksandra Kovačević³

¹Croatian Geological Survey, Sachsova 2, 10 000 Zagreb, Croatia, lgalovic@hgi-cgs.hr

²Croatian Waters, Ulica grada Vukovara 220, 10 000 Zagreb, Croatia

³Public Institution „Waters of Srpska“, Miloša Obilića 51, 76 300 Bijeljina, Republic of Srpska, Bosnia and Herzegovina



The participants in the SIMONA project include institutions from the Danube River Basin (DRB) countries:

Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, and Ukraine.

- The main task of the project SIMONA: a proposal of a tool for harmonized monitoring of the hazardous substances (HSs) in drainage sediment in the DRB countries.
- Monitoring of HSs in sediments includes sampling, chemical analyses and risk assessments.
- The criteria proposed by EQS Directive 2013/39/EU for the selections of the HSs in sediment to be monitored are their insolubility in water, tendency to accumulate in sediments or association with pore water.



Drava north of Novo Virje - stream/bottom sediment

The Croatian Geological Survey participates in all 6 Work packages; responsible for Working Package 4 (WP4).

- The objective of the WP4 is to develop transnationally harmonized sampling and laboratory analysis protocols for mid- and long-time surface water sediment quality monitoring and assessment to assist the water authorities in their daily work across the DRB countries.
- This protocols aim to provide proposals for harmonized sampling strategy and laboratory analyses of the HSs in sediments according to the 2000/60/EC Water Framework Directive (WFD), in particular the EQS Directives (2013/39/EU and 2008/105/EC) and CIS Guidance Document 7, 19, 25 and 27 (EC, 2003, 2009, 2010, 2018), ISO standards, ICPDR (ISPDR, 2003), and taking into consideration geological background and anthropogenic influences.

Sampling protocol for HSs in DRB's surface waters:

The drainage sediments suitable for monitoring:

- Stream/bottom sediments;
- Suspended sediment or suspended solids;
- Active floodplain sediment.

A monitoring procedure includes:

- Selections of compounds to be monitored in sediments;
- Selection of sediment sampling station (relevant norms for stream/bottom sediment: ISO 5667-12:2017 and ISO 5667-17:2008);
- Sediment collection (composite samples, sampling depth and frequency, sample fraction for analysis, sample volume);
- Sampling equipment;
- Field observation sheet;
- Wet-sieving in the field;
- Transport;
- Quality control and
- Safety measures

(Šorša and SIMONA Project team, 2019).



■ Danube Transnational Programme area



Sampling Group Workshop, Zagreb, 2019

Laboratory analysis protocol for HSs in DRB's surface waters:

- ICP-MS - determination of heavy metals;
- Liquid chromatography and/or gas chromatography linked to mass spectrometry (LC-MS and GC-MS) - the organic substances;
- The ISO and/or EPA standards for chemical analytical methods for the HSs.
- The HSs for monitoring in the protocol were selected under the EQS Directive 2013/39/EU amending the Directive 2008/105/EC.
- Additionally, 5 heavy metals (As, Cr, Cu, Ni, and Zn) from the List of Priority Substances for the Danube River Basin are included in this protocol (ICPDR, 2003).
- Proposed procedures for sieving and drying sediment samples;
- Proposed procedures for storage and archive;
- Normalization (grain-size correction, quartz correction, Al- and Li-normalization) and
- Quality control (Čaić Janković and SIMONA Project Team, 2019).

Sampling protocol and Laboratory analysis protocol, propose techniques for monitoring of selected HSs in sediments in the Danube river basin according to the WFD requirements and other relevant regulative documents in Europe.

