## Monitoring of priority substances in sediments of Switzerland

C. Casado-Martinez[1], S. Valsecchi[2], P. A. Lara-Martin[3], P. Marchand[4], F. Breider[5], Y. Schindler-Windhaber [6], B. J. Ferrari[1], I. Werner[7]

[1]Swiss Centre for Applied Ecotoxicology, Lausanne CH, [2]Istituto di Ricerca sulle Aque (IRSA), CNR, Brugherio IT, [3]Faculty of Marine and Environmental Sciences, UCA, Cadiz ES, [4]Oniris, INRAE, LABERCA, Nantes, FR, [5]EPFL, Lausanne CH, [6]Federal Office of the Environment (FOEN), Bern CH, [7] Swiss Centre for Applied Ecotoxicology, Dübendorf CH

In Switzerland, surface waters are protected by the Swiss Water Protection Ordinance (OEaux), which stipulates that the water quality shall be such that: "the water, suspended matter and sediments contain no persistent synthetic substances to ensure the protection of aquatic life". Current sediment quality assessment in Switzerland mainly consists of physico-chemical analyses, primarily of metals and to a lesser extent polycyclic aromatic hydrocarbons and polychlorinated biphenyls. Sediments, however, may accumulate a large number of substances including, e.g. pesticides, pharmaceuticals and industrial chemicals. For the preparation of recommendations for sediment quality assessment in Switzerland, a screening system was implemented in 2017 for the identification and ranking of substances relevant for sediment monitoring. The screening approach was largely based on the NORMAN (network of reference laboratories, research centers and related organizations for monitoring emerging environmental substances) system. Based on the available quantity of exposure and effect data, sediment-relevant substances were classified into five action categories: 1) substances with enough monitoring data on Swiss sediments and identified environmental risks; 2) substances with limited monitoring data; 3) substances with no or limited ecotoxicological data; 4) substances with no environmental data for Swiss sediments; 5) substances with enough monitoring data and no identified risks. This classification was useful in setting monitoring recommendations and priorities while it could be updated as new data emerged. A set of 20 substances was prioritized for sediment monitoring, according to several exposure, hazard and risk scores. This set of substances included the traditional sediment contaminants (metals, PAHs, PCBs), several pesticides (e.g. chlorpyrifos), one antibiotic and the hormones (EE2, E2 and E1), several sewage effluent markers (e.g. triclosan, tonalide), one phthalate, one PFAS and BDEs among others. In 2017 and 2018 two monitoring campaigns were carried out that targeted these 20 substances and other substances that could be simultaneously measured using the same analytical methods. We will present the results of these monitoring campaigns in terms of measured environmental concentrations and distribution in Swiss sediments. We will also discuss recommendations for improving sediment quality monitoring in Switzerland.