Environmental monitoring of riverine plastic contamination in Asia

Marianne Olsen, Rachel Hurley, Nina Buenaventura, David Eidsvoll, Hans Fredrik Braaten, Yan Lin, Eirik Steindal, Luca Nizetto, and Thorjørn Larsen
Norwegian Institute for Water Research (NIVA), Oslo

Rivers have been identified as an important pathway for the release of plastic waste to the oceans, connecting land-based sources to the marine environment. Asian rivers, in particular, have been highlighted by several published studies as contributing a considerable proportion of global macro- and microplastic release. To evaluate this, several parallel projects (ASEANO, SINOPLAST, INOPOL) have commenced environmental monitoring of riverine plastic contamination in China, India, and several ASEAN countries. Monitoring is being undertaken in selected study catchments, which have been identified based on their geographical context and their relevance to global plastic contamination. They include several rivers that have been reported as being amongst the most contaminating systems in the world. Macroplastic flows in the active river channel will be assessed, as well as the role of the riverbank zone in the storage and transport of plastic waste. Monitoring of riverine microplastic contamination will also be included in some countries. The aims of this environmental monitoring is to: i) provide estimates for the flux of plastics to the ocean; ii) identify appropriate and optimum methods for routine monitoring of riverine plastic contamination; iii) supply qualitative and quantitative data on macroplastic flows and contamination to support social science research that is also taking place within these river catchments; and iv) provide data for the calibration and validation of riverine plastic transport models.

This presentation will give an overview of monitoring plans and preliminary findings and experiences from these ongoing projects. This will include a discussion about the ways in which monitoring methods have been adapted to river systems with different morphologies and flow regimes, and to satisfy different research questions across the projects. The complexities associated with undertaking environmental monitoring in large river systems will also be addressed.