



# Microplastic pollution in freshwater environments - focus on Switzerland

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**Abstract:** Marine microplastic (< 5 mm) water pollution has met growing public and scientific interest in the last years. The situation in freshwater environments remains largely unknown, although they appear to play an important role as part of the origin of marine pollution. Apart from the physical impacts on biota, chemical effects are to be expected as well, especially with smaller particles. Our studies focus at assessing the situation for Switzerland, especially the Swiss Lakes Geneva, Constance, Neuchâtel, Maggiore, Zurich and Brienz, and identifying potential impacts. Lake surface transects, a few rivers as well as urban runoff outlets and WWTPs have been sampled using a floating manta net, and beach sediments have been analysed. Plastics have been sorted in types (fragments, pellets, cosmetic beads, lines, fibres, films, foams) and composition (PP, PE, PS, etc.). Fishes and water birds have been dissected to assess their potential exposure, and analyses of the hydrophobic micropollutants adsorbed to the microplastics as well as some potentially toxic additives they contained have been conducted. It appears that all lakes are affected by this pollution, microplastics of all types and diverse composition having been found in all samples. Birds and fishes are prone to microplastic ingestion, and all the tested chemicals (both adsorbed micropollutants and contained additives) were found above the detection limit, and often the quantification limit. The sources and their respective contribution need to be confirmed and quantified, and the ecotoxicological impacts also need further investigation. Other questions remain open and are currently being investigated, including the transport and fate of the plastic particles in the environment.