

Anticonvulsant carbamazepine is a pharmaceutical, which is necessary to be taken continuously. Moreover carbamazepine and its metabolites are resistant to microbial degradation and sorption onto sludge in present municipal wastewater treatment plants. Therefore carbamazepine and its metabolites pass through WWTP and are constantly discharged to surface waters. Concentrations of carbamazepine measured in surface waters are too low to cause acute toxicological effects, but chronic toxicological effects or synergic effects with other pharmaceuticals cannot be excluded. Due to its physico-chemical properties carbamazepine is recalcitrant to degradation in surface waters and in soil, thus it infiltrates through bedrock to ground water. So far there is not enough information on behaviour and effects of metabolites of carbamazepine in surface waters. Besides carbamazepine, also other pharmaceuticals are nowadays often detected in surface and ground water and in the soil. Furthermore, as the population grows the consumption of pharmaceuticals increases as does their input into environment. However, given the risks, which pharmaceuticals in the environment entail, it is necessary to reduce additional input of these micropollutants into environment. As pharmaceuticals can enter the environment by many pathways, there is also more possible strategies to limit input of these micropollutants into the environment. It was found out, that strategies, which are the best, regarding sustainable development, are as well the most difficult to implement. Nonetheless it is important to prevent pharmaceuticals from entering the environment in the shortest possible term, therefore the strategies that are not fully compatible with sustainable development are going to be used inevitably. This bachelor thesis summarizes current knowledge of input of carbamazepine to municipal wastewater and to rivers. It also summarizes fate of carbamazepine in WWTP and in the aquatic environment and its possible influence on aquatic organisms. It as well introduces the technical possibilities of its removal and strategies for reducing its input to municipal wastewater.