

SL07 **Pharmaceuticals in the Danish Environment. An Overview of Identified Pharmaceuticals That May Pose a Threat to the Environment**

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This talk will give an overview of the current situation in Denmark giving the level of pharmaceuticals exposure to the environment and a comparison to the environmental effect levels of the exposed drugs. The occurrence of pharmaceuticals in different water bodies and the findings of effects on aquatic organisms in ecotoxicity tests have raised concerns about environmental risks of pharmaceuticals in receiving waters. Due to the fact that the amount of ecotoxicological studies has increased significantly during the last decade, probabilistic approaches for risk characterization of these compounds may be feasible. This approach was evaluated by applying it to 22 high volume human-used pharmaceuticals using ecotoxicological effect data from laboratory studies, followed by a comparison of predicted risks to monitoring data on the effluents from sewage treatment plants in Europe and pharmaceutical sales quantities. We found that for 19 of the 22 selected pharmaceuticals the existing laboratory data were sufficient for probabilistic risk characterizations. The subsequently modeled ratios between monitored concentrations and risk limits considered to be sufficiently safe, were mostly above a factor of 100, which suggests that the current paradigm for environmental risk assessments in the EU is protective for the aquatic environment. However, similarly calculated ratios for five pharmaceuticals (propranolol, ibuprofen, furosemide, ofloxacin, and ciprofloxacin) were below 100, while ibuprofen and ciprofloxacin are considered to be of high concern due to lack of ecotoxicity studies. This paper shows that by applying probabilistic approaches, existing data can be used to execute a comprehensive study on probability of impacts, thereby contributing to a more comprehensive environmental risk assessment of pharmaceuticals.