



## **Monitoring of phosphorus in Danish surface waters 1990-2012: Trends in phosphorus loading and phosphorus concentrations in streams, lakes and estuaries**

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For more than 20 years an integrated, standardized monitoring programme of Danish surface waters has provided information on status and trends in the phosphorus loading and phosphorus concentrations of Danish waters. Although the land-based phosphorus loading of Danish coastal waters has been reduced by 60% for several decades the excess loading of phosphorus from diffuse sources and sewage outlets contributed significantly to the eutrophication of surface waters, and this is still the case. Measures taken to combat this eutrophication have included among others improved sewage treatment, diversion of sewage outlets from lakes and reduction of the phosphorus surplus on agricultural land. The overall effects of the measures taken to reduce the phosphorus loading and thereby improve the water quality will be presented for 15 Danish lakes and 10 estuaries and for 160 Danish streams draining catchments with varying anthropogenic impacts. The generally reduced phosphorus loading has led to a decrease in phosphorus concentrations in Danish lakes and estuaries due to the direct – long-term – link between phosphorus loading and phosphorus concentrations in lakes and estuaries. Special focus will be given to the development since 1990 in phosphorus concentrations in 31 streams draining farmed catchments with no significant sewage outlets and the potential factors influencing trends and variations. In 14 of these streams there has been a significant reduction in phosphorus concentrations since 1990, and for all the streams a general reduction of 17