



## Whole catchment hydrochemical analysis of the Rivers Ribble and Wyre

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The Ribble and Wyre Integrated Catchment Science monitoring program focuses on the water quality and biological functioning of the Ribble, a key system for DEFRA and the UK Environment Agency in relation to the WFD and part of an EU Pilot River Basin network, comprised of fifteen river basin projects across the EU. It also examines the Wyre with extensive lowland agriculture and is an ideal site for examining riverine and freshwater and saline inter-tidal areas. Both the Ribble and Wyre are part of the Defra/EA catchment sensitive farming projects and as such are of high strategic and policy importance where mitigation of diffuse pollution is a key focus alongside stakeholder engagement. Both catchments have full time catchment officers and liaison teams. Within this project a core aim is to link hydrological, water quality and biological functioning and the core data for strategic modeling.

An initial GIS assessment of the general water quality of the Ribble and Wyre in relation to catchment characteristics, point and diffuse sources of pollution was performed. Detailed water quality (major, minor and trace elements including nutrients) and biology (pathogens, algae, chlorophyll etc) from a weekly campaign based monitoring programme, at key locations in the Ribble and Wyre catchments have been initiated.

We also provide the first high quality measurements for mercury in river waters and extend the methodology for analysis of methyl mercury. For the methyl mercury studies there will be issues of industrial sources and mobilization/generation within peat-land and flood plain areas.

Initial assessment of the data collected so far indicates broad ranges of hydrochemical constituents across individual catchments. In many cases these are closely linked to land use and urban areas. In other instances it may be more closely related to subsurface geology.

Future developments include the deployment of WISER and continuous nutrient and chlorophyll/pH/conductivity sondes on an urban and an agricultural stretch of the Ribble/Wyre and passive sample tests for the determination of steroids and pharmaceuticals.