

A rational assessment of the risk to the river aquatic environment from chemicals and substances in the UK

Supervisors: Dr Andrew Johnson¹, Professor John Sumpter²

- 1) Centre for Ecology & Hydrology, Wallingford*
- 2) Brunel University, London*

Application Deadline: 15th February 2012

Project Start date: April – October 2012

To apply for this project please send a CV and covering letter with details of two referees to Dr Andrew Johnson (ajo@ceh.ac.uk). Applicants should have a first or upper-second class honours degree (or equivalent) in a relevant science subject.

Project Description

Freshwaters in the UK and most particularly England are amongst the most exposed to chemicals emanating from the human population as any in the developed Western world. Given the increasing population in areas of the country with water scarcity, our continual enthusiasm for chemical products, including medicines, and potential declines in river flow due to climate change, these pressures will only increase. Essentially we want to avoid a situation where an important species, such as a fish, are harmed but at the same time not recommending more research, or even remediation measures, where the risks are negligible. The major difficulty is that there are 10-20,000 chemicals in everyday use in the UK, so which should we focus on?

The project aims to prepare a UK chemicals strategy for freshwaters by ranking the chemicals we used, use, or are likely to use, on the basis of the risk they represent. The remit of the study is to develop a strategy to prevent widespread harm to UK freshwater species. Ultimately the project will attempt to identify the single most important chemical which threatens our aquatic environment. Is it a metal, a persistent organic pollutant, a drug, or none of the above?

The successful candidate will undertake evaluation processes using published knowledge to generate a risk ranking table where chemicals are scored against a range of criteria. It is expected that the candidate will develop innovative approaches to help manage and rank the large numbers of chemicals that need to be considered. The candidate will use the principles of 'intelligent ecotoxicity' to help predict, where evidence is lacking, what effects we might expect by reading across from other species, or similar chemicals. To complement these desk studies, we anticipate the project will also include a laboratory component where the presence of selected chemicals will be assessed in a range of aquatic species in a river.

The successful candidate will have a basic understanding of ecotoxicology and the behaviour of chemicals in water. An ability to analyse literature rapidly and efficiently manage large amounts of data would also be desirable. Training will be provided to a high level in the principles of sound ecotoxicology and assessing chemical behaviour. It is intended that the field study by used to extend the candidate further and give them practical skills in chemical sampling and analysis.

This project will be based at the Centre for Ecology & Hydrology (CEH)'s Wallingford site in Oxfordshire, UK under the supervision of Dr Andrew Johnson and will be co-supervised by Prof. John Sumpter at Brunel University in Uxbridge, London.

CEH and Brunel University are committed to a high quality graduate training programme to ensure that the successful candidate has opportunities to develop their career skills and experience.

Funding notes

The project is funded by Defra for three years with an initial stipend in year 1 of £17,500 rising to £18,500 in year 3