PhD in Organisms and Environment: the otter as a sentinel for environmental pharmaceuticals (PhD Studentship) Reference Number: R2516 The project is cross-institutional between Cardiff University and CEH Lancaster, and will be co-supervised by Dr E Chadwick (Cardiff), and Prof R Shore (CEH). Project title: The otter as a sentinel for environmental pharmaceuticals.

With an increasing and ageing human population, pharmaceuticals and personal care products are produced in quantities nearing agrochemicals, and are a major concern for human health. Discharge of pharmaceuticals into the environment is one of the top issues of global conservation concern, the effects of which on wildlife species have not been assessed . The well-publicised near extinction of vultures in Asia due to diclofenac is a shocking example of the potential for harm. Currently, there is no widespread surveillance using freshwater sentinel species to assess emerging pollutants such as pharmaceuticals in the UK. As part of the WILDCOMS network, Cardiff University Otter Project collects otters found dead in the UK and maintains an extensive tissue bank. As the UKâ□□s top predator of freshwaters, the otter is an excellent sentinel for environmental health, and aquatic contaminants. The scholarship will first review the existing literature on environmental pharmaceuticals in the UK and use the outcomes to identify the highest priority target pharmaceuticals. Frequency of detection and concentration of the selected compounds in otter tissues will be measured, and statistical modelling used to explain variations in concentration, according to biological (e.g. age, sex), spatial (e.g. proximity to large towns or sewage outflows), and temporal (e.g. association with increasing population, introduction of new chemicals) factors. Potential health impairments associated with high concentrations will also be measured. The ultimate aim is to identify the main drivers of contamination, and produce risk map for pharmaceutical exposure across the UK. This is an outstanding project opportunity to work on a charismatic EU protected species, and address novel research questions. It will provide diverse training opportunities in otter ecology, analytical chemistry, spatial analysis (using GIS), and statistical modelling and will be based in both an academic (Cardiff University) and research centre (Centre for Ecology & Hydrology) environment. It will in addition offer a range of more generic training (experimental design, project management, scientific writing available through Cardiff Universityâ□□s Graduate College). It offers the potential to deliver a major advance in our knowledge of the processes driving pharmaceutical exposure in UK freshwaters, with implications both for wildlife and human health. Further information: Informal enquiries should be directed to Dr. Elizabeth Chadwick by emailing ChadwickEA@cardiff.ac.uk. More details: http://courses.cardiff.ac.uk/funding/R2516.html Start date: October 2015