



Scenario
DOCTORAL TRAINING PARTNERSHIP

NERC
SCIENCE OF THE
ENVIRONMENT

The fate and impacts of microplastics in freshwater systems

Lead Supervisor: Tom Bond, University of Surrey

Email: t.bond@surrey.ac.uk

Co-supervisors: Mónica Felipe-Sotelo, University of Surrey and Dan Lapworth, British Geological Survey, Wallingford

Microplastics can enter freshwater systems from a variety of sources, including littering and sewage effluent. Currently very little is known about how much of these microplastics are transferred into freshwater systems and river sediments and to what extent they act as vectors for the transport of hazardous pollutants such as metals. Initially you will focus on the development of robust experimental methods for the isolation and identification of plastics in freshwater systems. Starting with synthetic samples, you will compare the efficacy of different isolation and detection steps. Subsequently, you will document the occurrence of microplastics in river water and sediments, before and after riverbank filtration, in groundwater, and following drinking water treatment processes. Uptake and leaching of hazardous pollutants in plastic particles, including metals and plastic additives, collected across a range of environmental samples will be analysed. This will facilitate an assessment of the role that plastics play in the transport and release of hazardous pollutants across a range of freshwater environments. The project will provide you with the knowledge to evaluate the significance of pathways by which plastic litter migrates between different environmental compartments and what is its ultimate environmental fate.



Training opportunities:

In the first year, you will be trained as a part of a single cohort on research methods and core skills at University of Surrey. Throughout the PhD, training will progress from core skills sets to MSc classes related to the student's projects and themes. Specifically, they will be able to attend modules on the University of Surrey's renowned MSc in Water and Environmental Health Engineering. Specific technical training will also be given by the NERC and Surrey. In-kind assistance and hands-on experience in field and analytical methods needed to undertake the research will be provided by BGS and Surrey.

Student profile:

This project would be suitable for students with a good degree (first class or 2:1) in environmental or physical sciences or engineering and/or students with a relevant MSc. Previous experience in undertaking fieldwork would be highly desirable, as would a high level of numeracy and experience of laboratory analysis. A willingness to undertake fieldwork and laboratory work is essential - this will form key activities for the PhD.

Funding particulars:

Collaborative funding will be provided by BGS.

<http://www.reading.ac.uk/nercdtp>