



NRW is a Welsh Government Sponsored Body. Our purpose is to ensure that the environment and natural resources of Wales are sustainably maintained, used, and enhanced, now and in the future. Our Well Being & Future Generation Act (2015) and the Environment Act (2016), requires NRW to undertake and deliver its functions in a way that both optimises Wales's natural resources and delivers multiple environmental and social benefits.

### **Lead Contact**

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### **Projects Outline**

#### **Project 1: Understanding sources, pathways, and impacts from Polyaromatic Hydrocarbons to natural Waters in Wales**

In the latest Water Framework Directive classification for Wales (2021), we had an increase in failures of the acute limit (MAC-EQS) for Polyaromatic Hydrocarbons (PAHs). No apparent or obvious reason for this increase has been detected, such as land use change or unexpected new emissions from typical sources. It also appears that other parts of the UK have not experienced a similar level of increase in the same period. Some hypotheses have been proposed, such as extreme rainfall events, possibly linked with rainfall intensity as result of climate change effects, related to higher sedimentation or even microplastics, that could be carriers of PAHs. Furthermore, there are possible weaknesses in the existing, originally EU-derived standard leading to a weak characterisation of risk levels to the water environment.

The primary objective of this placement is to investigate PAH failures, considering likely sources and pathways, including the possible role of extreme events. This will include analysis of water quality data in light of other datasets such as land use and rainfall, as well as comparison of data from other parts of the UK.

A second objective, to be pursued if there is time and/or capacity, is to assess whether the existing standard is adequate, via a review of the literature published since the standard has been in place.

#### **Project 2: A critical review of options and approaches to designate mixing zones for point source pollution**

The Environmental Quality Standards Directive (2008) and related transposed legislation require environmental regulators to designate mixing zones adjacent to points of discharge. NRW needs to review and strengthen its approach to mixing zones, as well as consider its

relevance to other policy drivers such as marine protected areas. This project will thus, review the requirement of existing legislation, existing evidence, and best practice on how to establish and manage mixing zones. The desired output would be a literature review and recommendations to draw guidance documents.

### **Essential Skills**

- Excellent research skills
- Ability to analyse complex information and data
- Ability to write clearly and concisely
- Ability of presenting technical material in an accessible format
- Presentation skills
- Creative thinking
- Ability to apply an innovative approach

### **Skills Developed**

The placement will provide insights into the functioning of a UK Environmental Regulation body and the application of evidence-based policy. The post-holder will work in a highly technical and diverse team within the Water Policy group, with opportunities to widen the knowledge and experience on how environmental policy is enacted in various components of the water environment. The post-holder will be expected to work independently and comply with internal policies and procedures. There will be the chance to experience further collaboration with other parts of NRW, such as the laboratory and front-line operations, as well as experiencing the way we work together and collaborate with external partners such as the water industry, academia and the third sector.

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### **Number of Placements Offered**

2 to 4. Each project can take 1 or 2 students. Having 2 students will lead to a more in-depth analysis with a different focus for each. Project 1 can be divided into a. source/pathways; with data analysis and risk assessment and b. impact; review of EQS derivation and options for a better tailored bioavailability approach to develop an EQS. Project 2 would be divided into a. focus on EQSD, permitting and river basing management planning and b. focus on marine SACs and options for modelling approaches.

### **Possible Timeframe**

Flexible

### **Application Process**

Please contact NRW's placement team: [Leoliadau@cyfoethnaturiolcymru.gov.uk](mailto:Leoliadau@cyfoethnaturiolcymru.gov.uk)

Any further queries please sure the lead contact above.