

Toxicity Identification Evaluation (TIE)

Identifying causes of toxicity in complex environmental samples



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The Problem

Toxicity in environmental samples can arise from contaminants acting separately or in combination. Problems often occur at locations remote from the initial input, and the original cause may be masked by the mixing of several waste streams before discharge.

For effective control of the quality of the aquatic environment, Cefas offers environmental managers a complete toxicity-based fractionation diagnostic service. Our service assists with the task of identifying sources of toxicity in waste streams, and hence with the development of suitable remediation strategies.

Our Science

Scientists at our laboratories have many years experience in establishing the fate of toxic chemicals in waste streams. This includes the toxic effects of industrial wastes and sewage effluents that are discharged to river and marine waters.

Cefas has:

- A dedicated team of experienced analysts and ecotoxicologists able to provide an in-depth evaluation of complex issues
- A research and development programme into analytical chemical methods for characterising groups of active chemicals, or individual chemicals within toxic samples
- A breadth of experience in surveillance and monitoring of contaminants in the aquatic environment
- Specialist chemical analytical laboratories equipped with GC/MS, LC/MS, ICP/MS, to isolate and identify toxicologically important contaminants

Our Services

We design all toxicity-based fractionation investigation schemes individually to meet clients' specific requirements. Our capability and experience includes:

- A suite of algal, invertebrate, fish and sediment dwelling species for salt and fresh water testing
- A selection of end-points in test species including effects on survival, growth, reproductive potential, diagnostic biomarkers and hormone disruption
- In vitro receptor techniques for assessing specific ligand/receptor interactions (e.g. YES, YAS and CALUX assays)
- A wide range of matrices including sewage effluents, industrial wastes, fresh, saline and estuarine waters, sediments and soils, ground water and offshore produced water

1 Accelerated solvent extraction

2 *Skeletonema costatum*

3 Effluent outfall (©Jaap Hart/
iStockphoto)

Contact us

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About us

Cefas is a multidisciplinary scientific research and consultancy centre providing a comprehensive range of services in fisheries management, environmental monitoring and assessment, and aquaculture to a large number of clients worldwide.

We have more than 500 staff based in 3 laboratories, our own ocean-going research vessel, and over 100 years of fisheries experience. We have a long and successful track record in delivering high-quality services to clients in a confidential and impartial manner. (www.cefas.co.uk)

Cefas Technology Limited (CTL) is a wholly owned subsidiary of Cefas specialising in the application of Cefas technology to specific customer needs in a cost-effective and focussed manner.

CTL systems are developed by teams that are experienced in fisheries and environmental management and in working closely with clients to ensure that their needs are fully met. (www.cefastechnology.co.uk)

Customer focus

Our unique facilities and breadth of expertise in environmental and fisheries management, enable us to rapidly put together a multi-disciplinary team of experienced specialists, fully supported by our comprehensive in-house resources.

Our existing customers are drawn from a broad spectrum with wide ranging interests. Clients include:

- international and UK government departments
- the European Commission
- the World Bank
- United Nations Food and Agriculture Organisation (UNFAO)
- oil, water, chemical, pharmaceutical, agro-chemical, aggregate and marine industries
- non-governmental and environmental organisations
- regulators and enforcement agencies
- local authorities and other public bodies

We also work successfully in partnership with other organisations, operate in international consortia and have several joint ventures commercialising our intellectual property.



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4 Sampling from an oil installation

5 Sample fractionation

6 Sewage works