CEFAS SOLVING PROBLEMS IN FISHERIES AND THE ENVIRONMENT

Identifying Causes of Toxicity in Complex Environmental Samples

For effective control of the quality of the aquatic environment, CEFAS offers environmental managers a complete toxicity-based fractionation diagnostic service to assist in the task of identifying sources of toxicity in waste streams.

RIVER AND ESTUARINE WATER QUALITY
COMPLEX EFFLUENT DIAGNOSIS
WASTE EFFLUENT MANAGEMENT AND CONTROL
CONTAMINATED SOILS AND RUN-OFF
GROUND-WATER ASSESSMENT
SEDIMENT CONTAMINATION

Identifying 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.

As the number of synthetic compounds in the environment grows and our ability to detect them at trace levels improves, identifying causal contaminants is becoming increasing difficult, time-consuming and expensive.

Toxicity based fractionation techniques offer a cost-effective solution

Fractionation studies provide diagnostic evidence to enable environmental managers to target problem contaminants and hence develop suitable remediation strategies.

CEFAS has invested in separation techniques based on the physico-chemical properties of elements and compounds to isolate them from complex matrices. At each stage of a logical fractionation procedure the toxicity of the sample is evaluated. Finally sophistocated identification techniques including GC/MS, LC/MS and ICP/MS are deployed to ensure unambiguous identification of the toxic components.

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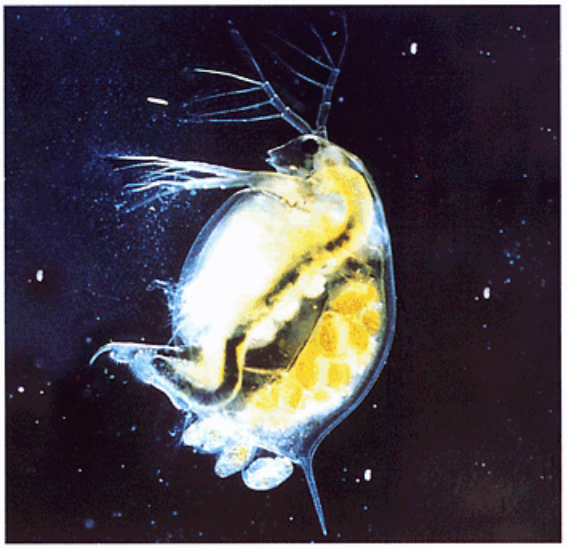

Extensive facilities and diagnostic capability

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

Our unrivalled combination of ecotoxicological experience, facilities and high precision analytical chemistry enables us to offer a comprehensive assessment of the toxicity of individual or groups of isolated chemicals. 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 specific, or groups of, chemicals
- a breadth of experience in surveillance and monitoring of contaminants in the aquatic environment
- specialist chemical analytical laboratories equipped with GC/MS, LC/MS and ICP/MS to isolate and identify toxicologically important contaminants
- controlled indoor tankroom facilities and outdoor ponds for mesocosm studies

Rapid and responsive service

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
- a variety of water and biological sampling methods
- a wide range of matrices including sewage effluents, industrial wastes and fresh, saline and estuarine waters

Successful Track Record

CEFAS's Burnham-on-Crouch Laboratory has been at the forefront of ecotoxicological testing for over 20 years. We have successfully applied toxicity based fractionation techniques to solving the following problems for clients:

- identified steroids and surfactants as the cause of oestrogenic effects in sewage effluents;
- pinpointed toxic effects of local hot spots in UK estuaries to be caused by pesticides and industrial chemical intermediates;
- identified organophosphorous pesticides as the cause of effects in toxic sewage effluent.

Impartial, confidential service

- We are independent of any manufacturer and have a long established track record for the quality and integrity of our work.
- We are experienced in providing full and confidential evaluations for clients engaged in commercially sensitive development projects.

For further information about any of our services or to discuss your needs with one of our specialists please contact

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