



Original thinking... applied

## Aerobic and Anaerobic Transformation in Aquatic Sediment System

Through this laboratory test method, the aerobic and anaerobic transformation of an organic chemical in fresh waters and sediments is assessed in order to determine the rate and route of degradation of the chemical in aquatic sediment system under controlled laboratory conditions.

In the aerobic test, we simulate an aerobic water column over an aerobic sediment layer underlain with an anaerobic gradient. In the anaerobic test, a fully anaerobic water sediment system is simulated. The test (both aerobic and anaerobic) is conducted in darkness and at constant temperature and at least two sediments and their associated waters are used.

The amounts of test substance in both water and sediment phases, transformation products, volatile substances (CO<sub>2</sub> and others), and non-extractable residues in sediment are measured which allow the measurement of:

- transformation rate of the test substance in a water-sediment system,
- rate constants for the formation and degradation of major transformation products,

- mineralisation rate of the test substance and/or its transformation products (when 14C-labelled test substance is used),
- distribution of the test substance and its transformation products between the two phases including mass balance.

Finally, assessment of the transformation kinetics of the test substance and, where appropriate, its transformation products are performed including estimation of half-life (DT50).

### Test Guidelines

OECD 308: Aerobic and Anaerobic Transformation in Aquatic Sediment Systems.

US-EPA: OPPTS 835.4300 Aerobic aquatic metabolism.

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# FERA'S WORK IN ENVIRONMENTAL FATE

Environmental fate studies play a crucial role in providing the data which supports chemical companies in completing thorough environmental risk assessments.

Fera's support and expertise helps chemical companies to achieve successful product registrations and operate ongoing due diligence. Our environmental fate studies include a range of regulatory compliant tests to assess the biodegradation of chemicals in soil and water, and we provide a range of services from single studies to complex, whole programmes, including dossier preparation and submission.

Fera's multidisciplinary teams combine decades of agrochemical and veterinary drug industry experience with world-class technical expertise and analytical capabilities.

We operate in GLP-compliant facilities in the UK and provide regulatory compliant studies for submission in all geographic regions.

## MORE ABOUT FERA

Fera is based at the National Agri-Food Innovation Campus near York, UK.

We work closely with plant protection and veterinary medicine product manufacturers to help develop effective, sustainable and safe chemical products that minimise ecosystem impacts and pollution, while maximising the beneficial effects for crops, plants and animals.

Combining the extensive expertise of our scientists with advanced resources and GLP-compliant laboratories, we provide valuable support to companies in their chemical evaluation and registration efforts.

## GET IN TOUCH

For more information and to book a test, call Fera on +44 (0)300 100 0321, email [sales@fera.co.uk](mailto:sales@fera.co.uk) or visit [www.fera.co.uk/chemical-regulation](http://www.fera.co.uk/chemical-regulation)

