

## **LRI project RfP**

### ***Title: Identifying limitations of the OCED water-sediment test (OECD 308) and developing suitable alternatives to assess persistence***

### ***Project Code Number: LRI-ECO18***

Limitations associated with the interpretation of results from the OECD Water-sediment transformation test (OECD TG308) and the identification of suitable alternatives for understanding environmental persistence and exposure assessment under REACH

#### **Background**

In recent years an increased emphasis has been placed on identifying chemicals that persist in the environment. There is a lot of experience assessing the biodegradability of chemicals using screening tests, (e.g. „ready“ tests and „inherent“ tests). However, these screening tests were developed to identify chemicals that undergo rapid biodegradation in the environment or to identify chemicals that have the „potential“ to biodegrade. The tests were not developed to generate environmental half-lives or identify persistent chemicals. Higher tiered studies such as the OECD „Transformation in aerobic and anaerobic water sediment systems“ (OECD TG308, 1994) were developed in an attempt to develop a simulation of environmental conditions. However, due to the very complex nature of the test which includes many variables, it is very difficult to understand what is actually measured and what the actual risk for persistence and environmental impact is. Contrary to the ready and inherent tests, the 308 has not been tested extensively or validated through ring-testing. The OECD308 also lacks any quality assurance or quality control measures e.g. validity criteria or positive or negative controls. As a consequence of the complex experimental set-up it is extremely difficult to interpret the results in a scientific way. For example, biodegradation plays a role, but also sorption. It also mixes aerobic and anaerobic. Other difficulties are the fact that the system is static, while in reality systems are much more dynamic. The effect of combining aerobic and anaerobic phases is also difficult to interpret, for example if a rapidly degrading substance under aerobic conditions moves into the anaerobic zone quickly due to its sorption characteristics, then it may obscure its aerobic degradability.

The project aims to establish the real value of the OECD308 test, together with suitable alternative test systems, in terms of understanding a chemical substance“s persistency. The project should use substances which are well characterised in terms of biodegradation, with a body of existing data and knowledge in standard and non-standard tests. A starting point will be the validation set of chemicals developed in ECO12.

#### **Scope-objective**

To collate and critically review existing data generated according to higher tiered biodegradation test guidelines (e.g. OECD TG308 and TG309)

To conduct a number of higher tiered biodegradation and transformation tests (using established test guidelines e.g. TG308 and the enhanced studies identified within REACH) with substances having a well-characterised biodegradation profile.

To evaluate the results in the context of the full biodegradation profile as determined in other studies and conclude on the interpretation and value of test results for each test system and where appropriate recommend improvements.

To propose a generic cost-effective testing strategy to improve persistency assessments together with appropriate QA and QC procedures

**Cost and Timing** Budget: 500k€

**Reference**

OECD Guidelines for testing of Chemicals. Test Guideline 308, aerobic and anaerobic transformation in aquatic sediment systems. Adopted April 2004.