# Bioaccumulation

## OECD 315: BIOACCUMULATION IN SEDIMENT-DWELLING BENTHIC OLIGOCHAETES

### TITLE OF THE TEST GUIDELINES (YEAR OF APPROVAL)

OECD 315: Bioaccumulation in Sediment-dwelling Benthic Oligochaetes, 2008

**Keywords:** bioaccumulation, sediment, adsorptive, lipophilic

### LINK TO THE OECD SITE

- http://www.oecd-ilibrary.org/environment/test-no-315-bioaccumulation-in-sediment-dwelling-benthic-oligochaetes_9789264067516-en

### WHICH OF THE REACH INFORMATION REQUIREMENTS MAY BE MET WITH THE TEST(S)

Annex IX, 9.3.2 mentions that a bioaccumulation study in aquatic species is preferably to be conducted with fish. However, this test with sediment-dwelling benthic oligochaetes may in certain specific cases cover the information requirement.

### STATUS OF THE VALIDATION BY EURL ECVAM

Not relevant, since this is an in vivo non-vertebrate test.

### HOW TO USE THIS METHOD

The Guidance on information requirements and chemical safety assessment (IR&CSA), Chapter R.7c: Endpoint specific guidance (November 2012, version 1.2) refers to the draft of OECD test guideline 315. A number of specific considerations are listed which should be considered when interpreting results of bioaccumulation tests with sediment invertebrates. Expert judgement is required in interpreting these studies.

## THE SPECIFIC SCOPE OF THE TG, E.G. LIMITATION ON CHEMICAL CATEGORIES COVERED, IF ANY, AND LIMITATION ON CLASSIFICATION AND LABELLING

This test is designed to assess bioaccumulation of sediment-associated chemicals in endobenthic oligochaete worms. It applies to stable, neutral organic chemicals having log Kow values between 3.0 and 6.0, superlipophilic substances that show a log Kow of more than 6.0, or stable metallo-organic compounds which tend to associate with sediments. The worms are exposed to chemicals via several uptake routes, including direct ingestion of sediment, surface contact and ingestion of porewater. The study provides a steady-state and kinetic bioaccumulation factor (BAF) rather than a bioconcentration factor (BCF). The biota-sediment accumulation factor (BSAF) may also be reported. While there is a preference under REACH for measured fish BCF data, data from sediment-dwelling organisms may be more relevant when exposure from sediment is expected to be more significant than from the water column. For example, the test may be considered for highly adsorptive substances or highly lipophilic substances which are expected to partition mainly to sediment. It should be noted that there are currently no trigger values available for BAF and BSAF in sediment for comparison with the PBT criteria given in Annex XIII of REACH.

# OECD 317: BIOACCUMULATION IN TERRESTRIAL OLIGOCHAETES

## TITLE OF THE TEST GUIDELINE AND THE YEAR OF APPROVAL

OECD 317: Bioaccumulation in Terrestrial Oligochaetes, 2010

**Keywords**: bioaccumulation, soil, terrestrial, adsorptive, lipophilic

## LINK TO THE OECD SITE

- http://www.oecd-ilibrary.org/environment/test-no-317-bioaccumulation-in-terrestrial-oligochaetes_9789264090934-en

## WHICH OF THE REACH INFORMATION REQUIREMENTS MAY BE MET WITH THE TEST

There is no specific information requirement for terrestrial bioaccumulation tests in REACH. However, terrestrial bioaccumulation tests may be provided in accordance with Annex X, Section 9.3.4 which indicates that further information on environmental fate and behaviour may be needed for registered substances or their degradation products.

## STATUS OF THE VALIDATION BY EURL ECVAM

Not relevant, since this is an in vivo non-vertebrate test.

## HOW TO USE THIS METHOD

The Guidance on information requirements and chemical safety assessment (IR&CSA), Chapter R.7c: Endpoint specific guidance (November 2012, version 1.2) refers to the draft of OECD test guideline 317. A number of specific considerations are listed which should be considered when interpreting results of bioaccumulation tests with terrestrial invertebrates. Expert judgement is required in interpreting these studies.

## THE SPECIFIC SCOPE OF THE TG, E.G. LIMITATION ON CHEMICAL CATEGORIES COVERED, IF ANY, AND LIMITATION ON CLASSIFICATION AND LABELLING

This test is designed to assess bioaccumulation of soil-associated chemicals in terrestrial oligochaete worms. The test organisms are exposed to spiked soil in an uptake phase and then moved to clean soil for the elimination phase. The study provides a steady-state and kinetic bioaccumulation factor (BAF) rather than a bioconcentration factor (BCF). The biota-soil accumulation factor (BSAF) may also be reported. The study may be used for the evaluation of secondary poisoning in the terrestrial food chain and may be useful for PBT assessment. It is particularly relevant for highly adsorptive substances or highly lipophilic substances which are expected to partition mainly to soil and sediment. It should be noted that there are currently no trigger values available for BAF and BSAF in soil for comparison with the PBT criteria given in Annex XIII of REACH.

# OECD 305: BIOACCUMULATION IN FISH: AQUEOUS AND DIETARY EXPOSURE

## TITLE OF THE TEST GUIDELINE AND THE YEAR OF APPROVAL

OECD 305: Bioaccumulation in Fish: Aqueous and Dietary Exposure, 2012

**Keywords:** bioaccumulation, bioconcentration, fish, aquatic, dietary, feeding

## LINK TO THE OECD SITE

- http://www.oecd-ilibrary.org/environment/test-no-305-bioaccumulation-in-fish-aqueous-and-dietary-exposure_9789264185296-en

## WHICH OF THE REACH INFORMATION REQUIREMENTS MAY BE MET WITH THE TEST

Covers Annex IX, 9.3.2.

## STATUS OF THE VALIDATION BY EURL ECVAM

Not relevant, since this is an in vivo vertebrate test.

## HOW TO USE THIS METHOD

The Guidance on information requirements and chemical safety assessment (IR&CSA), Chapter R.7c: Endpoint specific guidance (November 2012, version 1.2) refers to the older versions of the OECD test guideline 305. These older test guidelines did not include the option for dietary exposure of fish. However, there is also reference to fish dietary bioaccumulation tests.

## THE SPECIFIC SCOPE OF THE TG, E.G. LIMITATION ON CHEMICAL CATEGORIES COVERED, IF ANY, AND LIMITATION ON CLASSIFICATION AND LABELLING

This test is designed to assess the bioconcentration potential of substances in fish and offers two different exposure regimes: aqueous exposure or dietary exposure. There is also an option to conduct a minimised aqueous exposure fish test which uses fewer fish.

The dietary exposure fish bioaccumulation test is recommended for substances where the aqueous exposure methodology is not practicable. For example, when it is not possible to establish a reliable aqueous exposure concentration or when potential bioaccumulation may be predominantly expected from uptake via feed. This may occur, for example, for strongly hydrophobic substances with very low water solubility. The aqueous exposure tests result in a steady-state or kinetic bioconcentration factor (BCF) which can be directly used for exposure assessment and PBT assessment. The dietary fish bioaccumulation test provides a dietary biomagnification factor (BMF). BCF and BMF results are usually lipid normalized to a fish with 5% lipid content. It should be noted that there are currently no trigger values available for comparison of BMF from a fish dietary study with the PBT criteria in Annex XIII of REACH.

EUROPEAN CHEMICALS AGENCY
ANNANKATU 18, P.O. BOX 400,
FI-00121 HELSINKI, FINLAND
ECHA.EUROPA.EU