



# Toxicity Testing Report on behalf of Guerbet

Sampling Date – 29<sup>th</sup> June 2023

## Sample Details

---

Zenith Energy requested toxicity testing on their final effluent in quarter 2 of 2023 as part of their EPA Licence requirements.

Zenith Energy provided a sample which was sent to Enva laboratory in Ringaskiddy for analysis. The sample was to be tested on the following species.

- 30 Minutes EC50 to *Vibrio fischeri*
- 48 Hours LC50 to *Brachionus Plicatilis*

## Methods

---

**Method 1:** ENVCM.136: Based on ISO 11348-3:2007 Determination of the inhibitory effect of water sample on the light emission of *Vibrio fischeri*.

ISO 11348 describes three methods for determining the inhibition of the luminescence emitted by the marine bacterium *Vibrio fischeri* (NRRL B-11177). ISO 11348-3:2007 specifies a method using freeze-dried bacteria.

This method is applicable to wastewater, fresh water (surface and ground water), sea and brackish water.

**Method 2** ENVCM.137: Rotifer *Brachionus plicatilis*: Based on ASTM E1440-91.

This guide describes procedures for obtaining laboratory data concerning the acute toxicity of chemicals and aqueous effluents released into estuarine or marine waters. Acute toxicity is measured by exposing *Brachionus* newly hatched from cysts to a series of toxicant concentrations under controlled conditions.

The *Brachionus plicatilis* rotifer is specific to sea and brackish water.

## Client Information

<b>Contact Name</b>	David Lee	<b>Address</b>	Zenith Energy Bantry Bay Terminal c/o Murphy & O'Connor Topline DUNBITTERN EAST, BANTRY, CO. CORK
---------------------	-----------	----------------	---

## Certification Details

<b>Certificate Number</b>	280720232327202	<b>Enva Lab ID</b>	2327202
<b>Date Received</b>	29 <sup>th</sup> June 2023	<b>Certificate Date</b>	28 <sup>th</sup> July 2023
<b>Order Number</b>	PO 0030797	<b>Test Date</b>	30 <sup>th</sup> June 2023

## Sample Information

<b>Sampled By</b>	Customer
<b>Sampling Procedure</b>	Grab
<b>Storage Conditions</b>	Refrigerated
<b>Temperature (°C)</b>	24.8
<b>pH (at 25°C)</b>	6.33
<b>Dissolved Oxygen (mg/L)</b>	8.62
<b>Dissolved Oxygen (% Saturation)</b>	104.1
<b>Conductivity (µs/cm at 25°C)</b>	322

## Aquatic Toxicity Test Results

---

Test Parameters	Concentration (% Vol./Vol.)	Toxic Units	95% Confidence Limits (% Vol./Vol.)	Method of Calculation
30 min EC50 to <i>Vibrio fischeri</i>	85.97	1.16	-	Microtox
48 LC50 to <i>Brachionus plicatilis</i>	>100	<1	N/A	Rotifer LC50 Calculation Programme

## Conclusions

---

All tests performed were deemed to be valid as they met all the criteria specified in the guidelines.

## Reported By

---



Bruno Caputo

Project Scientist

Enva Ireland, Cork