Bio-Dredge® Toxicity Testing

LAB REPORT

Conducted by: Independent Laboratory

Abstract

BIO-DREDGE® is frequently used in aquaculture ponds/lagoons to reduce organic waste and increase dissolved oxygen levels. A study was conducted by an independent laboratory to measure possible negative effects BIO-DREDGE® might have on a freshwater test species (rainbow trout).

Using EPA-approved methodology to evaluate BIO-DREDGE®, the lab administered the product at 10 ppm to a test tank and a control tank over a 96-hour period. It was concluded that BIO-DREDGE® had no negative effect on the health or mortality of the test species.

Products Evaluated

- Probiotic Solutions® BIO-DREDGE®

Methodology

An independent laboratory conducted a Whole Effluent Toxicity (WET) test on BIO-DREDGE®, using rainbow trout (*oncorhynchus mykiss*) as the freshwater test species. EPA-approved* Method 2019.0, which includes acute toxicity testing LC-50 (percent effluent concentration that is lethal to 50% of the test organisms).

A glass tank with a disposable plastic liner was used to hold the trout and 20 liters of ammonia-free, dechlorinated water, to which BIO-DREDGE® was added at a concentration of 10 ppm (most fish-farming activities do not use concentrations higher than 7 ppm). A control tank was also set up and monitored that did not include BIO-DREDGE® (0 ppm). The two tanks were monitored and measurements were taken at the start and at 0.25 hours, 0.50 hours, 1.0 hour, 2.0 hours, 4.0 hours, 24.0 hours, 48.0 hours, 72.0 hours, and 96.0 hours (see **Summary Table 1**).

Results

Over a 96-hour testing period, it was determined that BIO-DREDGE® administered to water at a concentration of 10 ppm had no measurable acute negative effects on the health or mortality of rainbow trout.

** Biological testing has long been used by the U.S. Environmental Protection Agency (EPA) as a method of identifying potentially toxic pollutants to the nation's waterways. The requirements for testing are regulated in the Clean Water Act, Section 304 (h). Standard methods titled Whole Effluent Testing (WET) are specified in 40 CFR 136.6, Table I A, of the Code of Federal Regulations (CFR).*

Summary Table 1. *96-Hour Rainbow Trout Bioassay Report*

Time	Description	BIO-DREDGE® Concentration (p.p.m.)	
		0	10
Start	Temperature (°C)	14.1	14.1
	pH	7.7	7.7
	EC (µS cm-1)	299	309
	Dissolved Oxygen (mg/L)	8.7	8.8
1/4 Hour	Number Dead	0	0
	Atypical/Stressed Behavior	0	0
1 Hour	Number Dead	0	0
	Atypical/Stressed Behavior	0	0
24 Hours	Temperature (°C)	14.5	15.2
	pH	7.5	7.6
	EC (µS cm-1)	311	318
	Dissolved Oxygen (mg/L)	7.8	8.0
	Number Dead	0	0
	Atypical/Stressed Behavior	0	0
48 Hours	Temperature (°C)	14.8	15.4
	pH	7.6	7.6
	EC (µS cm-1)	310	320
	Dissolved Oxygen (mg/L)	7.9	7.7
	Number Dead	0	0
	Atypical/Stressed Behavior	0	0
96 Hours	Temperature (°C)	15.0	15.7
	pH	7.4	7.5
	EC (µS cm-1)	309	323
	Dissolved Oxygen (mg/L)	6.7	7.1
	Number Dead	0	0
	Atypical/Stressed Behavior	0	0

Product Information

Probiotic Solutions® BIO-DREDGE® complexed with Micro Carbon Technology® (MCT) is a probiotic formulation of organic acids, natural biological systems, buffers, nutrients, and energy systems that enhance biological degradation. BIO-DREDGE® oxidizes pond/tank accumulated sludge into carbon dioxide through an innovative "wet burn" process. BIO-DREDGE® helps balance the microbial ecosystem of the indigenous microbes, causing biodegradation of the carbonaceous materials to harmless gases.

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