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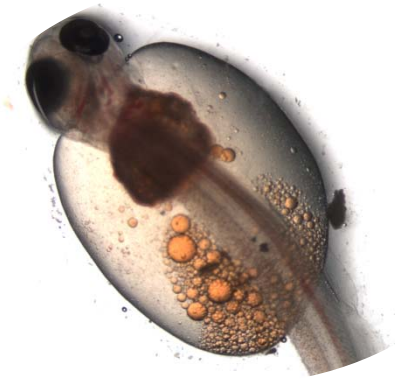

TOXICITY TEST FACT SHEET #13 – Freshwater

Rainbowfish 10-d Embryonic Development and Post-Hatch Survival

This chronic toxicity test using the Eastern Rainbowfish (*Melanotaenia splendida*) has been recently developed to fulfil a need to provide chronic ecotoxicity test data for use with Species Sensitivity Distributions (SSDs) under the ANZECC and ARMCANZ Water Quality Guidelines (2000). Until recently only 96-h Fish Imbalance tests were routinely available for Australian freshwater fish, however being akin to an acute assay, these Fish Imbalance Test results were subject to an acute:chronic application factor, which at times resulted in excessively conservative estimates.

The 10-day embryo development and survival assay is based on a similar USEPA test Method 1001.0: Fathead Minnow Embyo-larval Survival and Teratogenicity test. Trials using 7 day larval growth and survival using the rainbowfish proved to be too problematic with respect to variable survival, largely due to difficulties with meeting dietary requirements once yolk sacs were exhausted 4 days post-hatch. The embryo development and post-hatch survival test method overcomes this problem, as the test covers the first 6 days of embryonic development and 4-days post hatch period, 10-day exposure period in total.

Like the 96-h Fish Imbalance Test, the test is usually undertaken on a range of concentrations of a test material, eg 100, 50, 25, 12.5 and 6.3% effluent. The number of embryos successfully emerged at around Day 6 and the number of surviving larval fish at Day 10 are recorded.

Statistical analyses are then applied to the test data to determine for example, the concentration of the test material causing 50% reduction for both embryo emergence and survival endpoints (EC50 estimates). The test data can then be used to estimate concentrations of the test material likely to cause chronic toxicity to fish in the environment and for SSD calulations without the need for an acute:chronic application factor.

The 10-d embyo development and survival test may be used to assess the toxicity of:
- Chemicals
- Effluents
- Leachates and groundwater
- Sediments

Rainbowfish 10-d Embryonic Development and Post Hatch Survival	
Test type	chronic static
Test end-point	Embryo emergence at 6-d, survival at 10-d
Test duration	10-days
Test Temperature	25 ± 2°C
Sample quantity required	10 L
Test availability	7 days notice requested
Test turnaround time	Advice given within 72 hours of test initiation

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