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28 February 2007

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Re: TSCA Section 8(e) Substantial Risk Notification for draft Environmental Studies on 1,5-Cyclooctadiene

Dear Sir:

INVISTA is submitting draft results from 3 screening studies on 1,5-Cyclooctadiene (COD), CASRN 111-78-4, conducted by SafePharm Labs in the UK.

1. The acute aquatic toxicity of COD to Green Algae was analyzed by means of an OECD 201 assay. The $E_{10}C_{50}$ (0 - 72 h) based on the geometric mean measured test concentrations was 6.3 mg/l; 95% confidence limits 5.6 - 7.2 mg/l, the $E_{10}C_{50}$ (0 - 72 h) was 3.3 mg/l; 95% confidence limits 2.9 - 3.6 mg/l, and the $E_{10}C_{50}$ (0 - 72 h) was 3.4 mg/l; 95% confidence limits 2.9 - 4.0 mg/l. The Lowest Observed Effect Concentration based on inhibition of growth rate, yield and log-biomass integral was 2.3 mg/l, and the No Observed Effect Concentration was 0.76mg/l.
2. The acute toxicity (96 hr LC_{50}) of COD to Rainbow trout (*Oncorhynchus mykiss*) was reported to be 5.5 mg/l [95% Confidence Limits of 4.5 - 6.8 mg/l] in an OECD 203 assay.
3. The acute toxicity (48 hr EC_{50}) of COD to the crustacean, *Daphnia magna*, was reported to be 0.13 mg/l [95% Confidence Limits of 0.10 - 0.16 mg/l] in an OECD 202 assay.

The above information is from draft studies that have not yet been completed. INVISTA will submit the final versions to EPA when they become available.

These reports are being submitted in accordance with TSCA Section 8(e) guidance. Please do not hesitate to contact me if you have any questions. I may be reached at (316) 828-1470.

Sincerely,

Betsy Duncan

Betsy Duncan
TSCA Program Manager
Environmental Health and Safety



Attachment



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Introduction. A study was performed to assess the effect of the test material on the growth of the green alga *Pseudokirchneriella subcapitata*. The method followed that described in the OECD Guidelines for Testing of Chemicals (2006) No 201, "Freshwater Alga and Cyanobacteria, Growth Inhibition Test" referenced as Method C.3 of Commission Directive 92/69/EEC (which constitutes Annex V of Council Directive 67/548/EEC).

Methods. Information supplied by the Sponsor indicated that the test material forms peroxides when in contact with air. Initial stability analysis suggested that the test material was stable in the light; however, information pertaining to the test material suggested that light conditions may accelerate peroxide formation. Therefore the test material was weighed out and prepared under non-actinic light using completely filled glass stoppered conical flasks in order to minimise any losses.

Following a preliminary range-finding test, *Pseudokirchneriella subcapitata* was exposed to solutions of the test material at nominal concentrations of 0.88, 2.8, 8.8, 28 and 88 mg/l* (three replicate flasks per concentration) for 72 hours, under constant illumination and shaking at a temperature of $24 \pm 1^\circ\text{C}$. The test material solutions were prepared by shaking an excess (300 mg/500 ml) of test material in culture medium (6 replicates) at approximately 300 rpm at a temperature of approximately 30°C for 24 hours. After the stirring period the replicates were pooled and any undissolved test material was removed by filtration (0.2 μm Gelman Acrocap filter, first approximate 100 ml discarded in order to pre-condition the filter) to produce a saturated solution of the test material with a nominal concentration of 88mg/l*. This saturated solution was then further diluted as necessary, to provide the remaining test groups.

Samples of the algal populations were removed daily and cell concentrations determined for each control and treatment group, using a Coulter[®] Multisizer Particle Counter.

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Results. In terms of growth rate, exposure of *Pseudokirchneriella subcapitata* to the test material gave an E_rC_{50} (0 - 72 h) value of 7.4 mg/l; 95% confidence limits 6.5 - 8.4 mg/l.

* Concentration determined by pre-study analysis of a saturated solution prepared in a similar manner.

The Lowest Observed Effect Concentration based on inhibition of growth rate was 2.8 mg/l and the No Observed Effect Concentration was 0.88 mg/l.

In terms of yield, exposure of *Pseudokirchneriella subcapitata* to the test material gave an E_yC_{50} (0 - 72 h) value of 3.9 mg/l; 95% confidence limits 3.5 - 4.4 mg/l. The Lowest Observed Effect Concentration based on yield was 2.8 mg/l and the No Observed Effect Concentration was 0.88 mg/l.

In terms of log-biomass integral, exposure of *Pseudokirchneriella subcapitata* to the test material gave an E_rC_{50} (0 - 72 h) value of 4.1 mg/l; 95% confidence limits 3.6 - 4.7 mg/l. The Lowest Observed Effect Concentration based on inhibition of log-biomass integral was 2.8 mg/l and the No Observed Effect Concentration was 0.88 mg/l.

Analysis of the test preparations at 0 hours showed measured test concentrations to range from 82% to 98% of nominal. Analysis of the test preparations at 72 hours showed a slight decline in measured test concentrations in the range 71% to 86% of nominal.

Due to the volatile nature of the test material, additional test replicates were prepared at 0 hours and incubated alongside the test to provide samples for unopened vessel analysis at 72 hours. Analysis of these preparations showed measured test concentrations to range from 82% to 114% of nominal. Given that these measured concentrations were near nominal it was considered that the decline seen in the 72 hour test samples was through losses due to volatility.

Given this decline in measured test concentrations it was considered justifiable to base the results on the geometric mean measured test concentrations in order to give a "worst case" analysis of the data. The E_rC_{50} (0 - 72 h) based on the geometric mean measured test concentrations was 6.3 mg/l; 95% confidence limits 5.6 - 7.2 mg/l, the E_yC_{50} (0 - 72 h) was 3.3 mg/l; 95% confidence limits 2.9 - 3.6 mg/l, and the E_bC_{50} (0 - 72 h) was 3.4 mg/l; 95% confidence limits 2.9 - 4.0 mg/l. The Lowest Observed Effect Concentration based on inhibition of growth rate, yield and log-biomass integral was 2.3 mg/l, and the No Observed Effect Concentration was 0.76mg/l.