TRADE SECRET

Study Title

EVALUATION OF THE BIODEGRADABILITY OF [C] USING THE CLOSED BOTTLE TEST

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Laboratory Project ID

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GENERAL INFORMATION

Material Tested:	[ ]
Synonyms/Codes:	NONE
Submitter's NotebookNo.:	N/A
Sponsor:	William J. Brock FLPR
Experimental Start & Completion:	7-11-95/ 8-8-95

EVALUATION OF THE BIODEGRADABILITY OF [ ] USING THE CLOSED BOTTLE TEST

SUMMARY

The test chemical, [ ] was tested for biodegradability using the 28-day Closed Bottle Test. The results of the 28-day Closed Bottle Test indicated that a peak of 12.1 % Biodegradability was observed at Day 28. A minimum of 60 % biodegradability is required to pass this test. In addition, the "pass level" of 60 % must be reached within a 14 day window after exceeding the 10 % level. Therefore, it may be concluded that [ ] was not "Readily Biodegradable." Please note that failure to pass a "Ready Biodegradability Test" does not imply that the test material will persist in the environment for an extended period of time.

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RJZ023479

Introduction/Purpose

The Closed Bottle Test was performed to determine if [redacted] was "Readily Biodegradable". The Closed Bottle Test can be used for either water-soluble or water-insoluble and volatile or non-volatile chemicals. In this test, the Time-0 DO (Dissolved Oxygen) is measured and is considered the starting point. The Closed Bottle Test is a closed system. Therefore, no additional dissolved oxygen should be added to the system for the duration of the test. If the bacteria metabolize the test chemical in this closed system, then they will use up the dissolved oxygen. Consequently, biodegradation is measured as the loss of dissolved oxygen within the closed bottle. If the DO (Dissolved Oxygen) loss at Day 28 $\geq$ 60 %, and this level of biodegradability has been achieved within 14 days of exceeding 10 % biodegradability, then the test chemical is considered "Readily Biodegradable" and no further testing is necessary.

Materials/Method

The Closed Bottle Test determination was conducted in accordance with AEM SOP MI051-P "Ready Biodegradability: Closed Bottle Test". The source of the inoculum for the Closed Bottle Test was the City of Wilmington POTW. See Table 1 for materials tested.

Results/Discussion

In the 28-day Closed Bottle Test, [redacted] showed a peak of 12.1 % biodegradability at Day 28 (Tables 2 & 3 and Figure 1). Therefore, it was determined that [redacted] was not "Readily Biodegradable".

The control chemical, Sodium Acetate, exceeded 60 % biodegradability (Figure 1), therefore the test is valid. The Theoretical Oxygen Demand of [redacted] was calculated as 0.66 mg O_2 per mg of active substance.

Please note that failure to pass a "Ready Biodegradability Test" does not imply that the test material will persist in the environment for an extended period of time.

RJZ023480

EVALUATION OF THE BIODEGRADABILITY OF [ ] USING THE CLOSED BOTTLE TEST

TABLE 1

Description of Test and Control Substances

M-Number	Test Substance Description
[ ]	[ ]
46411	Sodium Acetate

TABLE 2 - CLOSED BOTTLE TEST: [ ]

TIME	[ ] % BIODEGRADABILITY
7 DAYS	9.1
14 DAYS	12.1
21 DAYS	-5.3
28 DAYS	12.1

TABLE 3 - CLOSED BOTTLE TEST: ZONYL C6+2TBS

Project #	204
M #	51008
Starting Date of Test	7/11/95
Test Chemical	C 3
Theoretical Test Concentration	2 mg AS/L
Inoculum:	POTW
Analysis: Oxygen Electrode	
ThOD or COD of Test Chemical	0.66 mg O2 /mgAS

A: O2 Determinations:

Culture Medium	BOD Flask	Analyses	mg O2/L after x days				
			0 Days	7 Days	14 Days	21 Days	28 Days
Mineral Nutrient Solution Without Test Chemical but With Inoculum	Inoculum Blank	IB-1	8.34	8.23	8.12	8.05	7.96
		IB-2	8.38	8.11	8.11	8.04	7.85
		IB-Mean	8.36	8.17	8.12	8.05	7.91
Mineral Nutrient Solution With Test Chemical and With Inoculum	Test Chemical	TC-1	8.40	8.05	7.94	8.38	7.82
		TC-2	8.41	8.05	7.97	7.86	7.67
		TC-Mean	8.41	8.05	7.96	8.12	7.75

Depletions (mg BOD/L) after x days

7 days	14 Days	21 Days	28 Days
0.12	0.15	-0.07	0.16

% Biodegradability

7 Days	14 days	21 Days	28 Days
9.1	12.1	-5.3	12.1

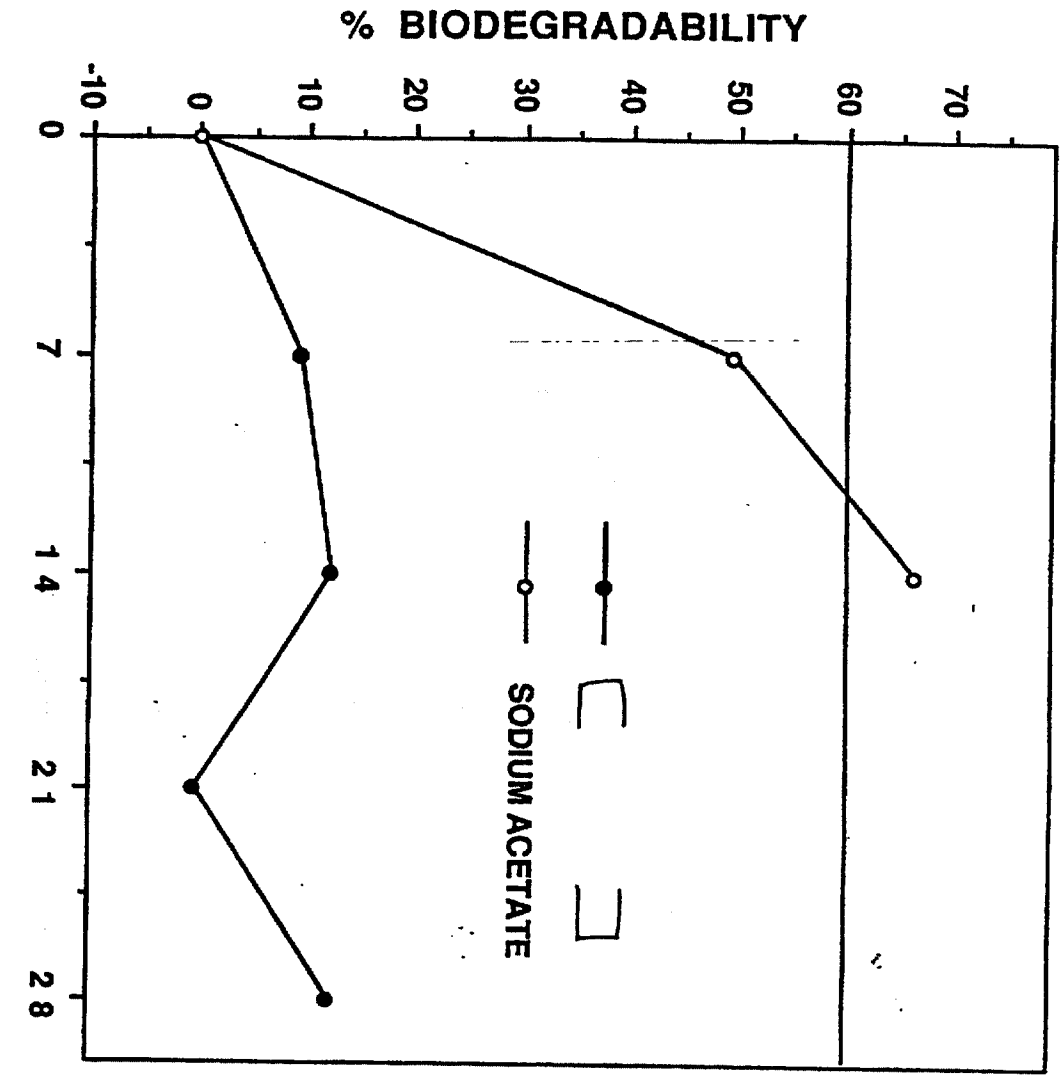

FIG. 1: CLOSED BOTTLE TEST -

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