September 12, 1994

(A)

8EHQ-94-13204
INIT
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Document Processing Center (TS-790)
Office of Toxic Substances
U.S. ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W.
Washington, DC 20460

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94 SEP 20 AM 11:42

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Attn: 8(e) Coordinator

Although we at [CBI] do not believe that the information contained herein reasonably supports the conclusion of substantial risk, in the interest of caution, we are submitting the following information under TSCA Section 8(e) This letter summarizes the results of aquatic toxicity tests on developmental [CBI] being done by the [CBI], hereinafter referred to as [CBI]. Some of the coatings tested are based on [CBI] sealant products that have been modified by [CBI] (in the attached report referred to as [CBI]) and another based upon a developmental release product that is currently being optimized for performance by [CBI] (in the attached report referred to as [CBI]).

[CBI] recently orally presented to [CBI] the attached interim results on aquatic toxicity testing of these developmental products. [CBI] is merely the recipient of these data and was not involved in the development of testing protocols or formula modification. If a final report is made available to [CBI], we will submit it to EPA. Further inquires regarding these data should be directed to [CBI].

It is well "known to the administrator" that organotin compounds can be toxic to aquatic species at very low concentrations[1]. The organotin species used as the [CBI] in the tested systems was dibutyltin dilaurate, CAS # 77-58-7. However, we believe that the organotin species found in the aqueous extract by [CBI] is not the dilaurate because this [CBI] will rapidly hydrolyze to dibutyltin dihydroxide in water. The exact organo tin species causing the adverse effects was not completely characterized by [CBI] and, therefore, the exact toxicant is speculative. In addition, release rates of the tin species from these coating formulations have not been determined in these experiments. These studies were not designed to be extraction studies. Previous extraction studies with [CBI] (Draft Interim ASTM Method) showed no detectable levels of tin. Further, the tin level in the formulations that produced levels of toxicity in the enclosed study is orders of magnitude higher than would be used in typical [CBI] in an aquatic media. It is for these reasons that we believe that Section 8(e) has not been triggered. [CBI] could not find any public references to the exact organotin species used with the exact aquatic species tested.

[1]For example, M. H. Salazar and S. M. Salazar of the Naval Ocean Systems Center reported acute toxicity of (bis)tributyltin oxide on mysidopsis bahia in their Technical Report 1299 dated May, 1989. See also, B.M. Davidson et.al., Naval Ocean Systems Center NOSC/TR-1116 and A.T. Kahn et.al., Bull. Environ. Contam. Toxicol (1993), 50(1), 152-7.

mm
10/11/94

[CBI]'s procedure was to immerse cured coatings into water for a day, then test the water for acute toxicity to fish and shrimp as per the attached presentation. While the exact levels of [CBI] used in the test are not known to [CBI], we believe that the 100% concentration listed in their charts is in the range of 2 grams of cured coating per liter of water. The coatings tested had limited adverse effects on fish, but did have some adverse effects on shrimp when the coatings' concentration was in the several grams per liter of water range.

[CBI] further identified organotin compounds in the extract at the u/l concentration range and correlated the adverse acute toxicity results with the levels of organotin in the water extracts. [CBI] and [CBI] believe that the organotin compounds, which are added to the [CBI] based materials at catalytic levels, is responsible for the observed adverse effects and not the [CBI] materials. Very low levels of organotin compounds are added to the [CBI] materials as a cure [CBI] and not added for the purpose of harming the biota. We have evidence that release properties of these coatings occur by [CBI].

The purpose of this aquatic testing is to assure that [CBI] will have a low order of aquatic toxicity and environmental risk relative to currently used [CBI]. The latter classically use high loadings of highly toxic organometals and are toxic to fish at many orders of magnitude lower concentration (based on coating weight) than those tested here. Other [CBI]s are being explored to reduce the environmental risk of our [CBI].

Very truly yours,

[CBI]

cc: [CBI]

att.

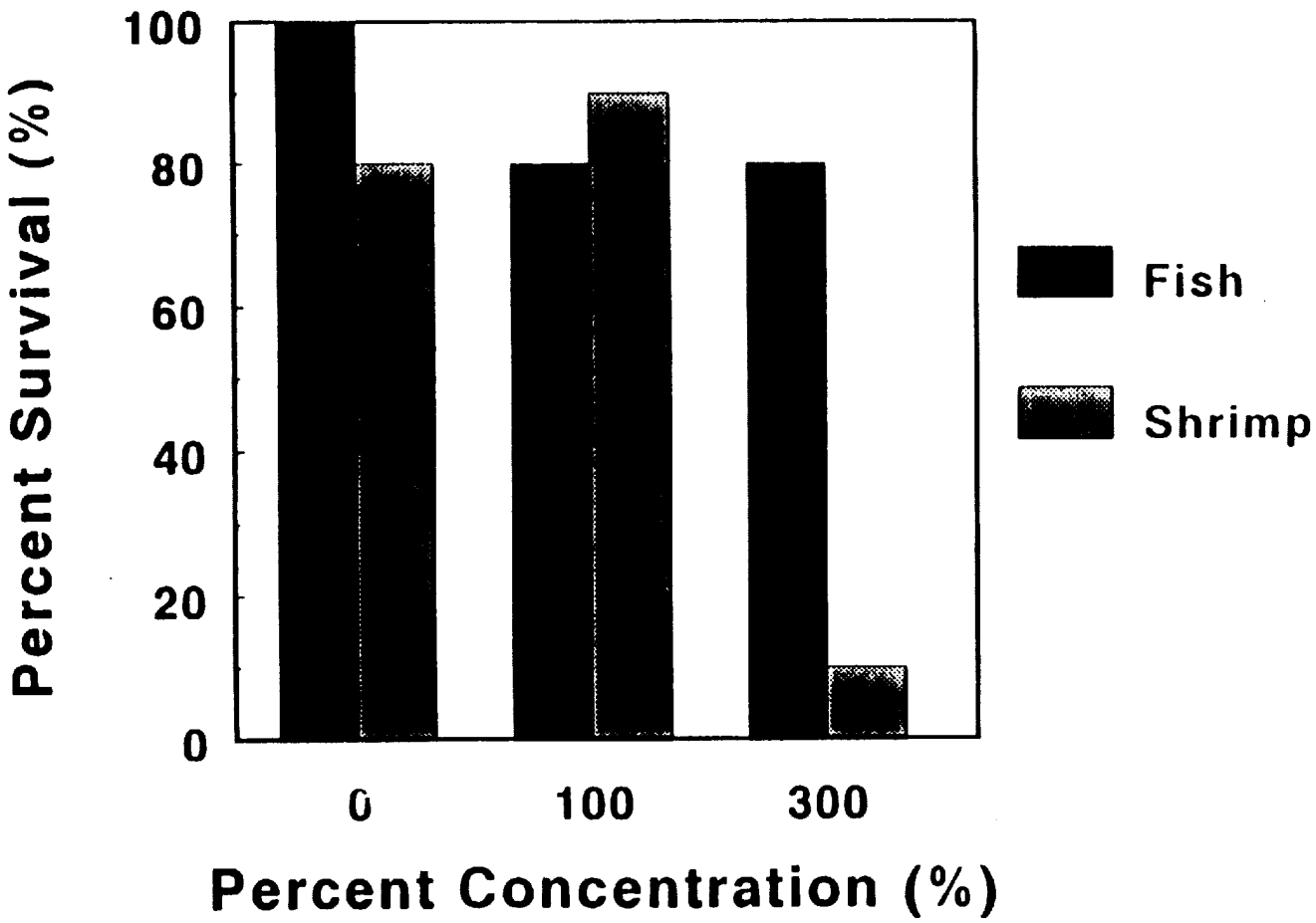
Quarterly Progress Report

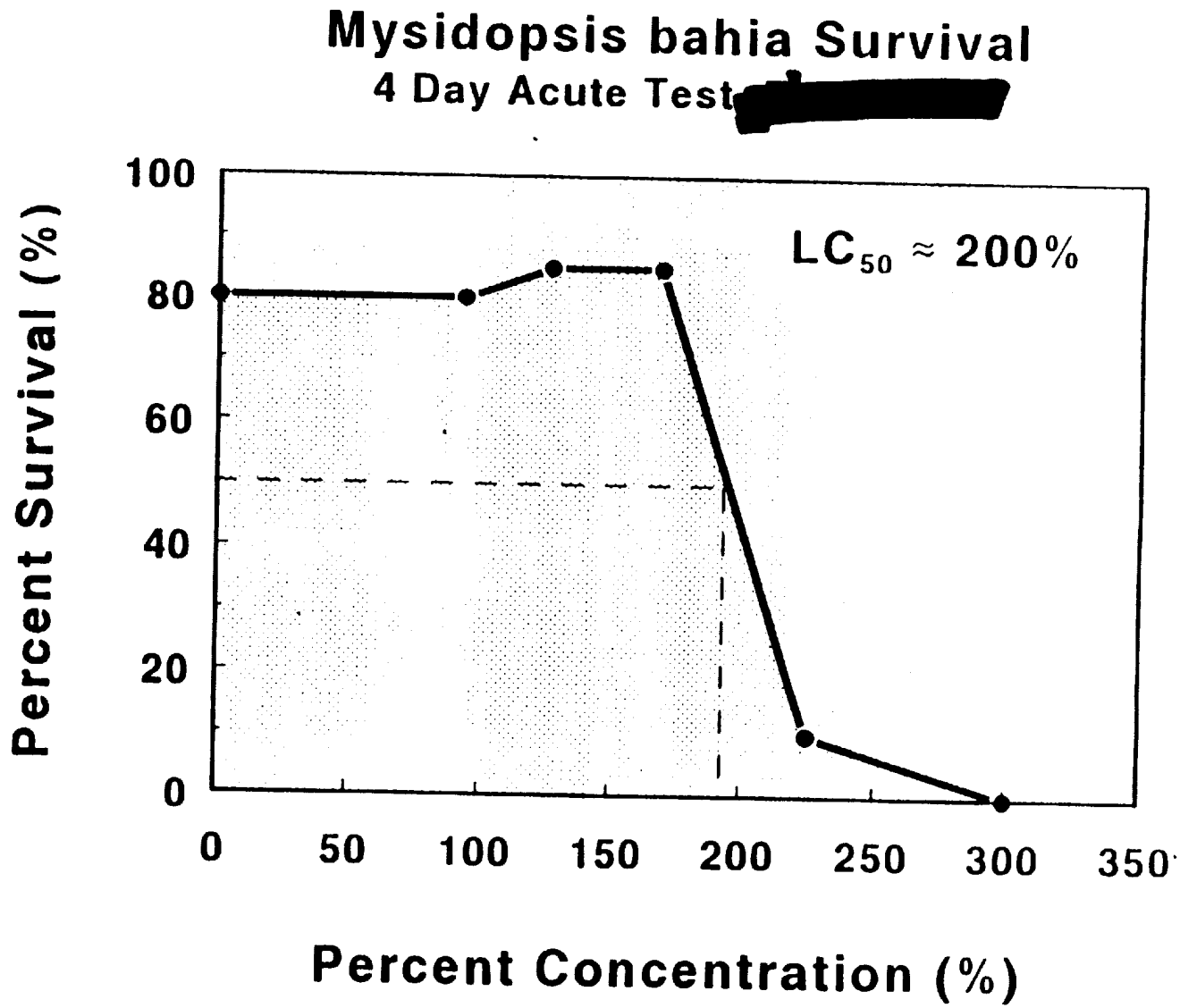
[redacted]

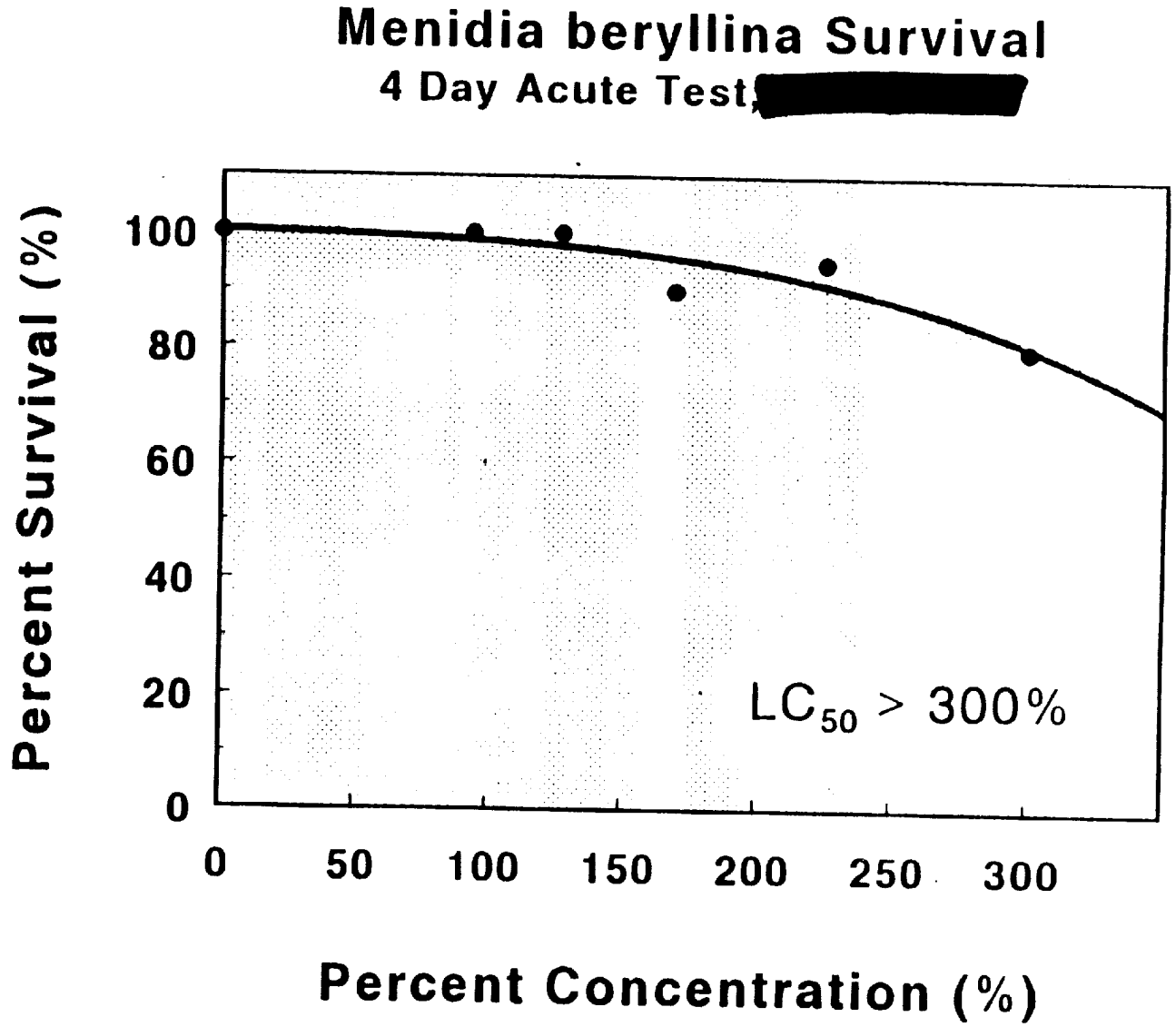
25 July 1994

Fish & Shrimp Screen Test

[redacted]

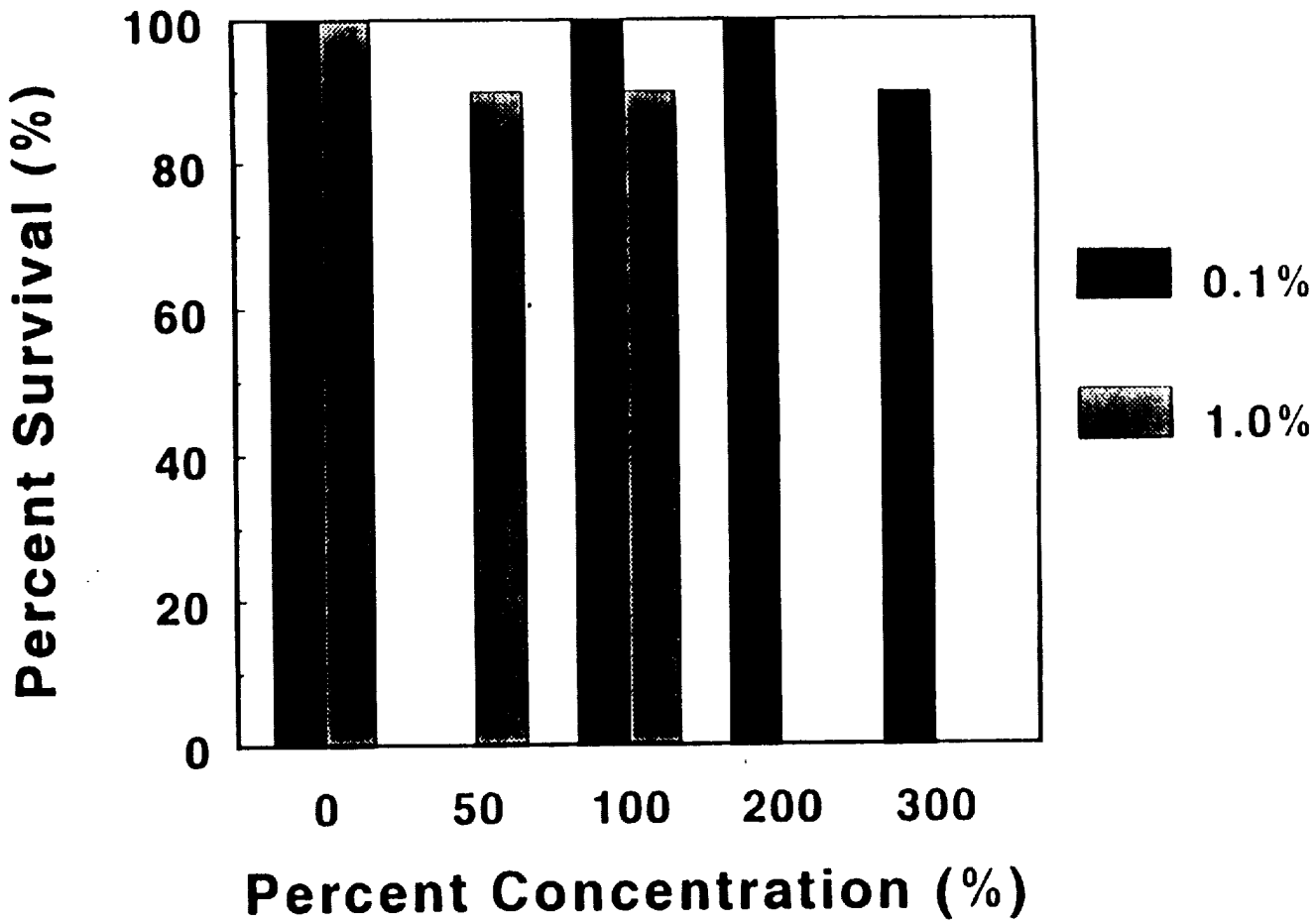



Mysidopsis bahia Survival
4 Day Acute Test [redacted]
LC50 ≈ 200%
Percent Survival (%)
100
80
60
40
20
0
0
50
100
150
200
250
300
350
Percent Concentration (%)


Menidia beryllina Survival
4 Day Acute Test,[redacted]
Percent Survival (%)
100
80
60
40
20
0
0
50
100
150
200
250
300
Percent Concentration (%)
LC50 > 300%

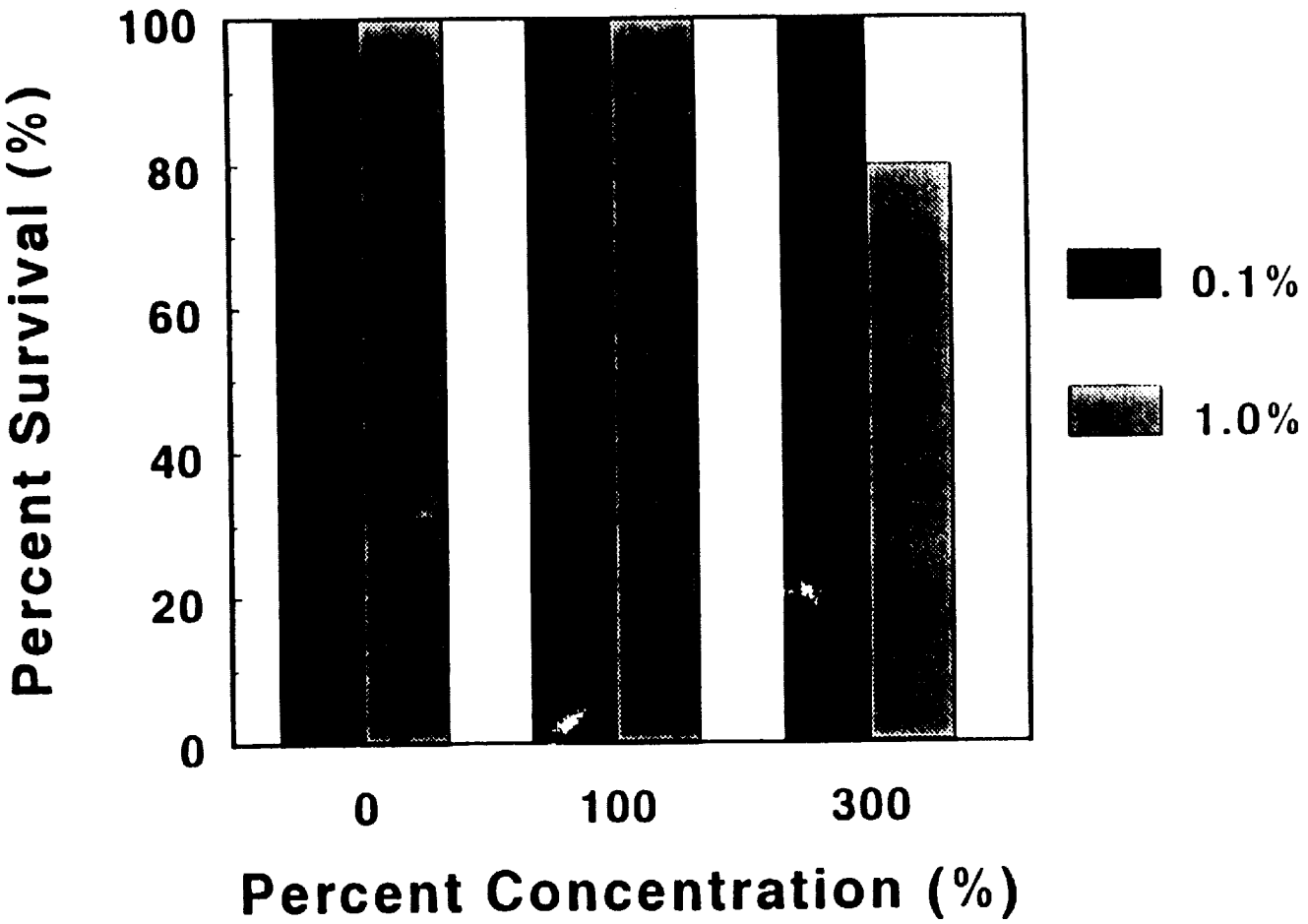
Shrimp Screen Test - 96 hrs

[redacted]



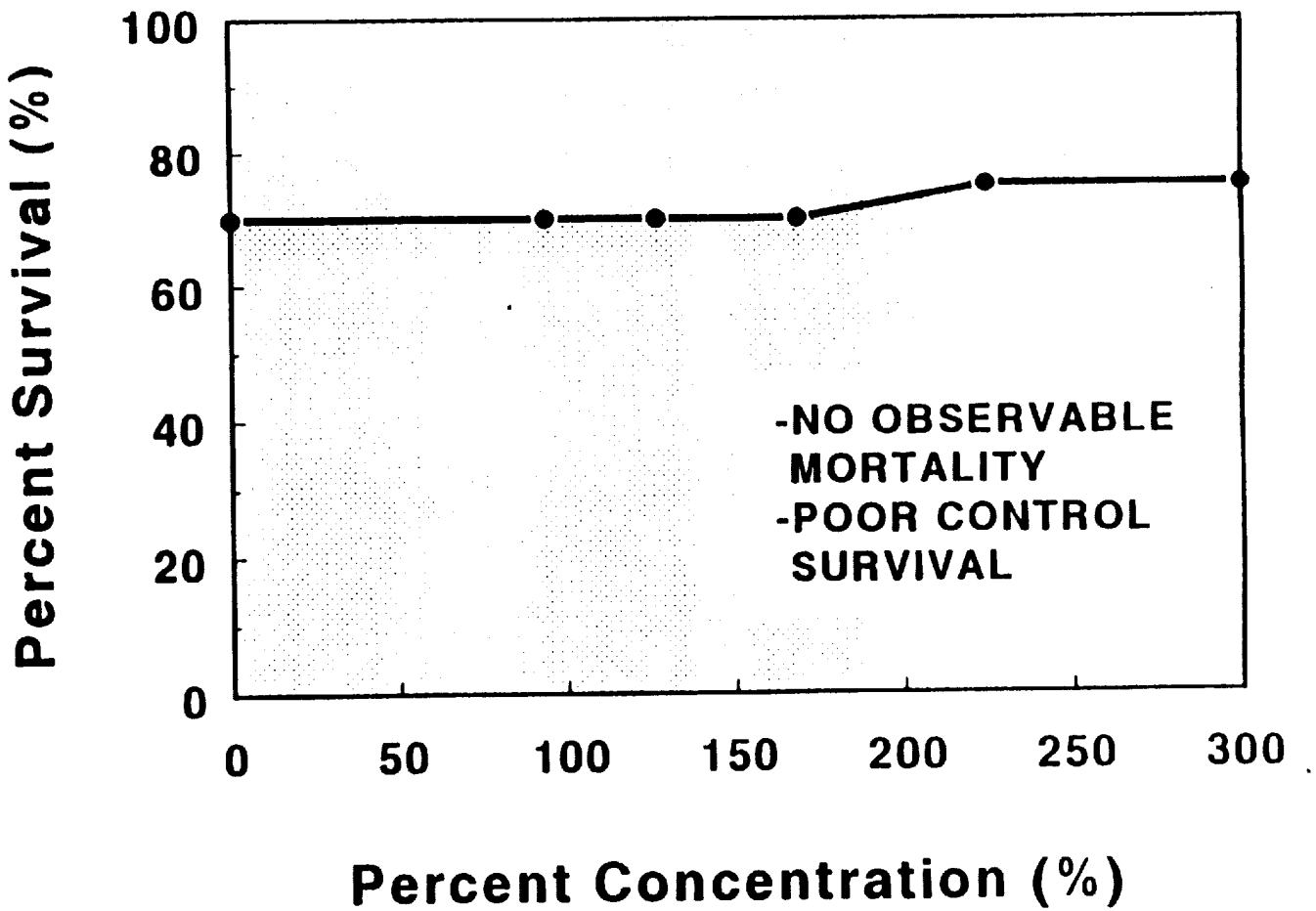
Fish Screen Test - 96 hrs

[redacted]



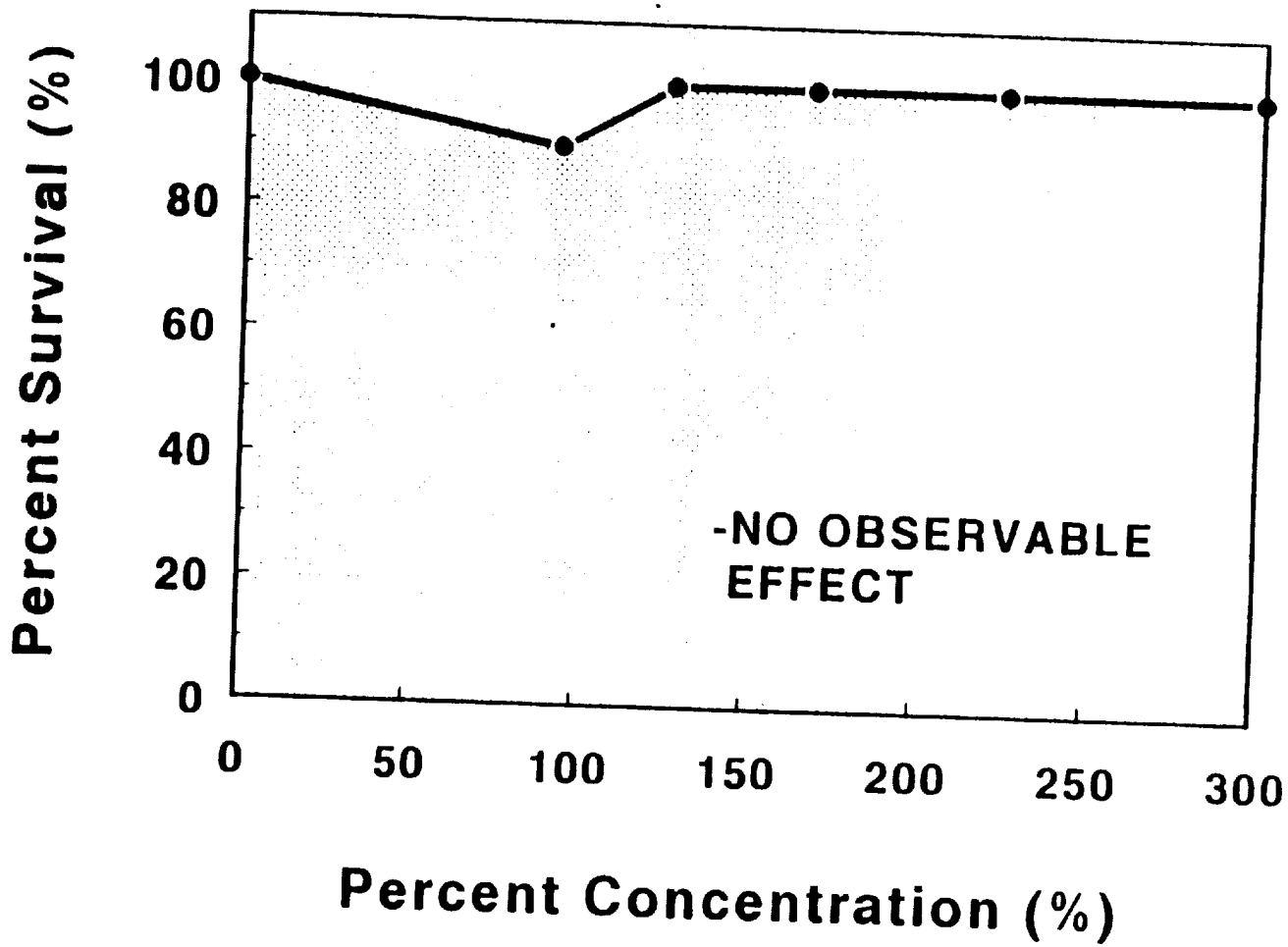
Mysidopsis bahia Survival

[redacted]



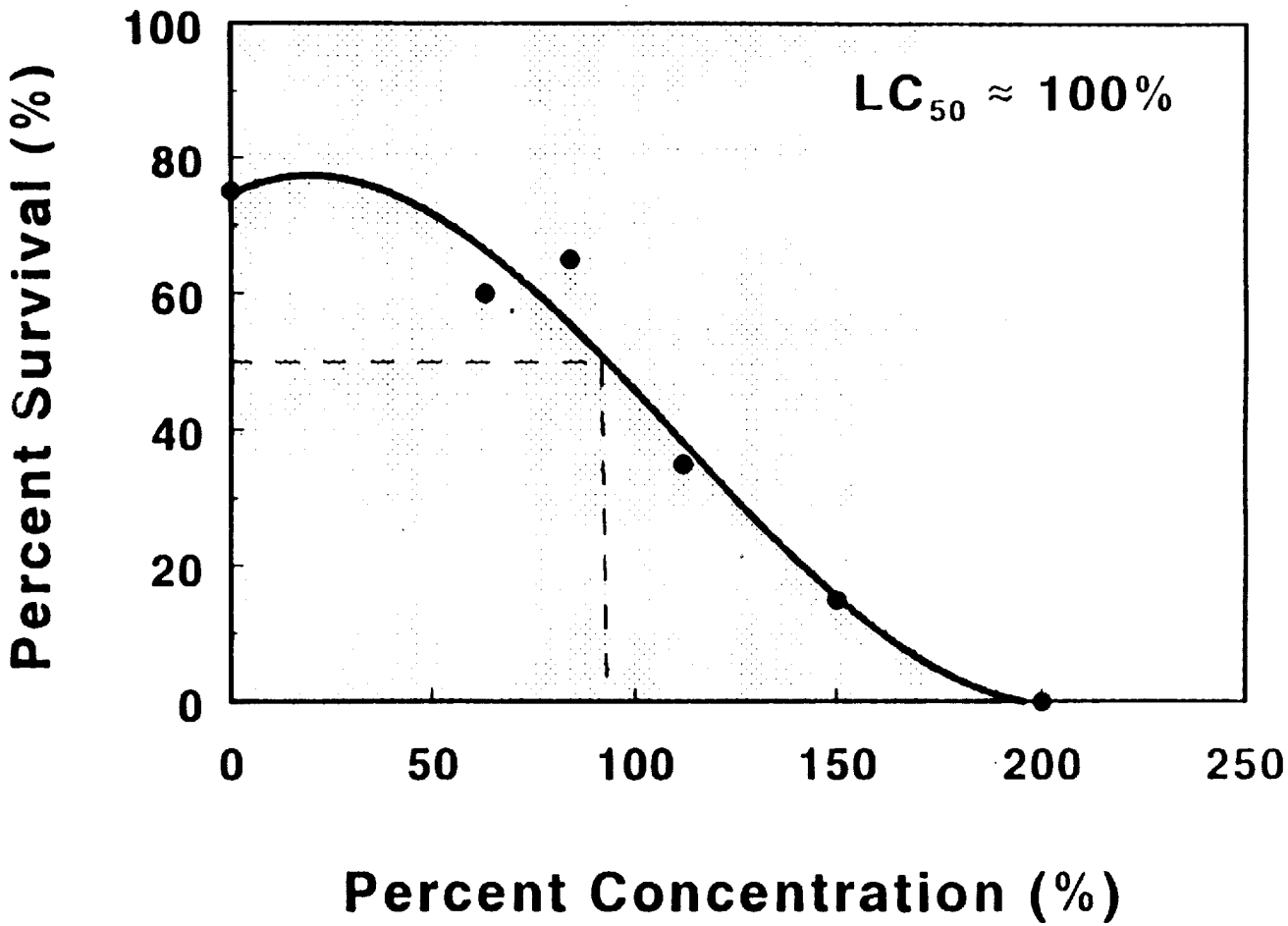
Menidia beryllina Survival

[redacted]



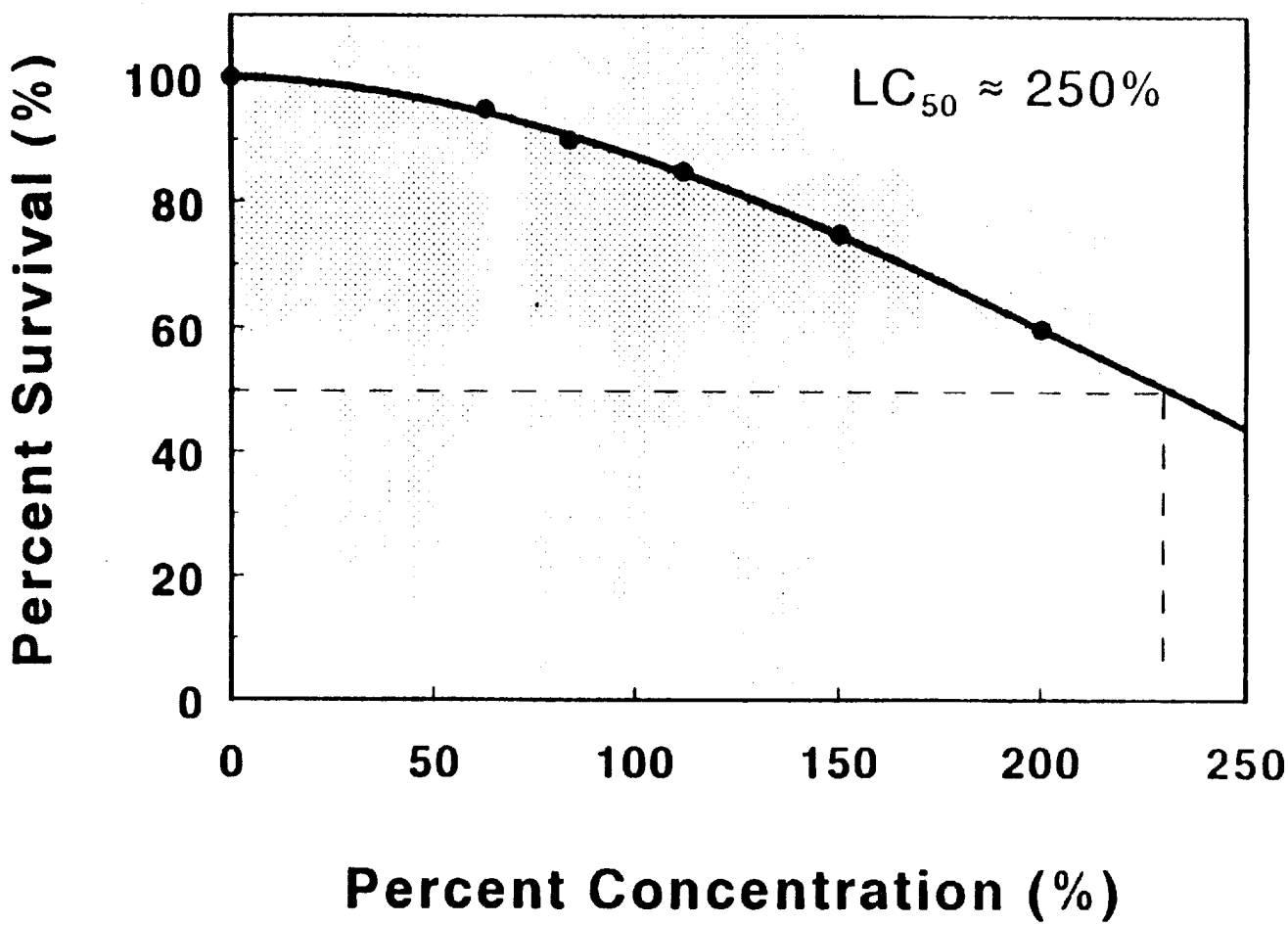
Mysidopsis bahia Survival

[redacted]



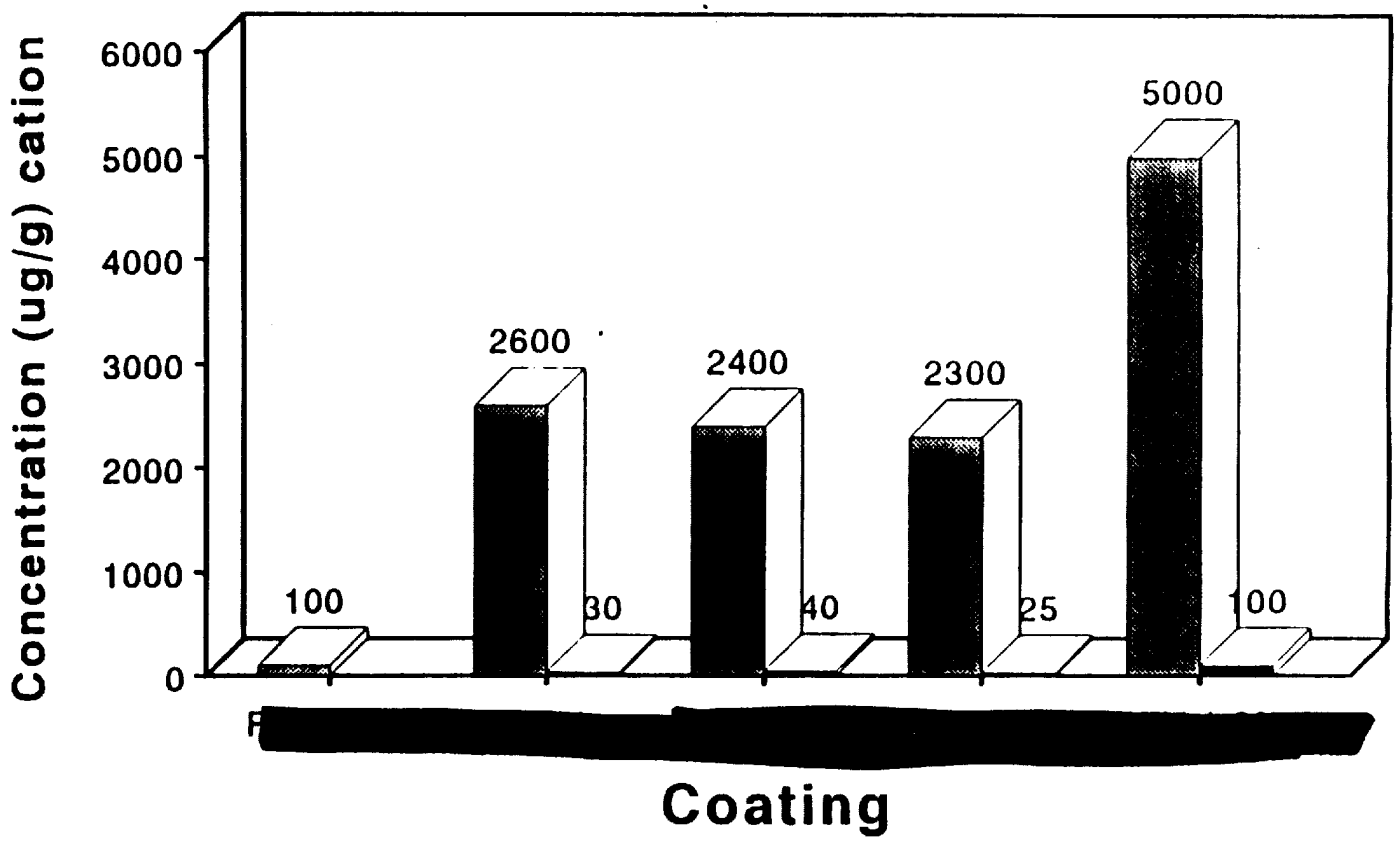
Menidia beryllina Survival

[redacted]



[redacted] Measured in Coatings

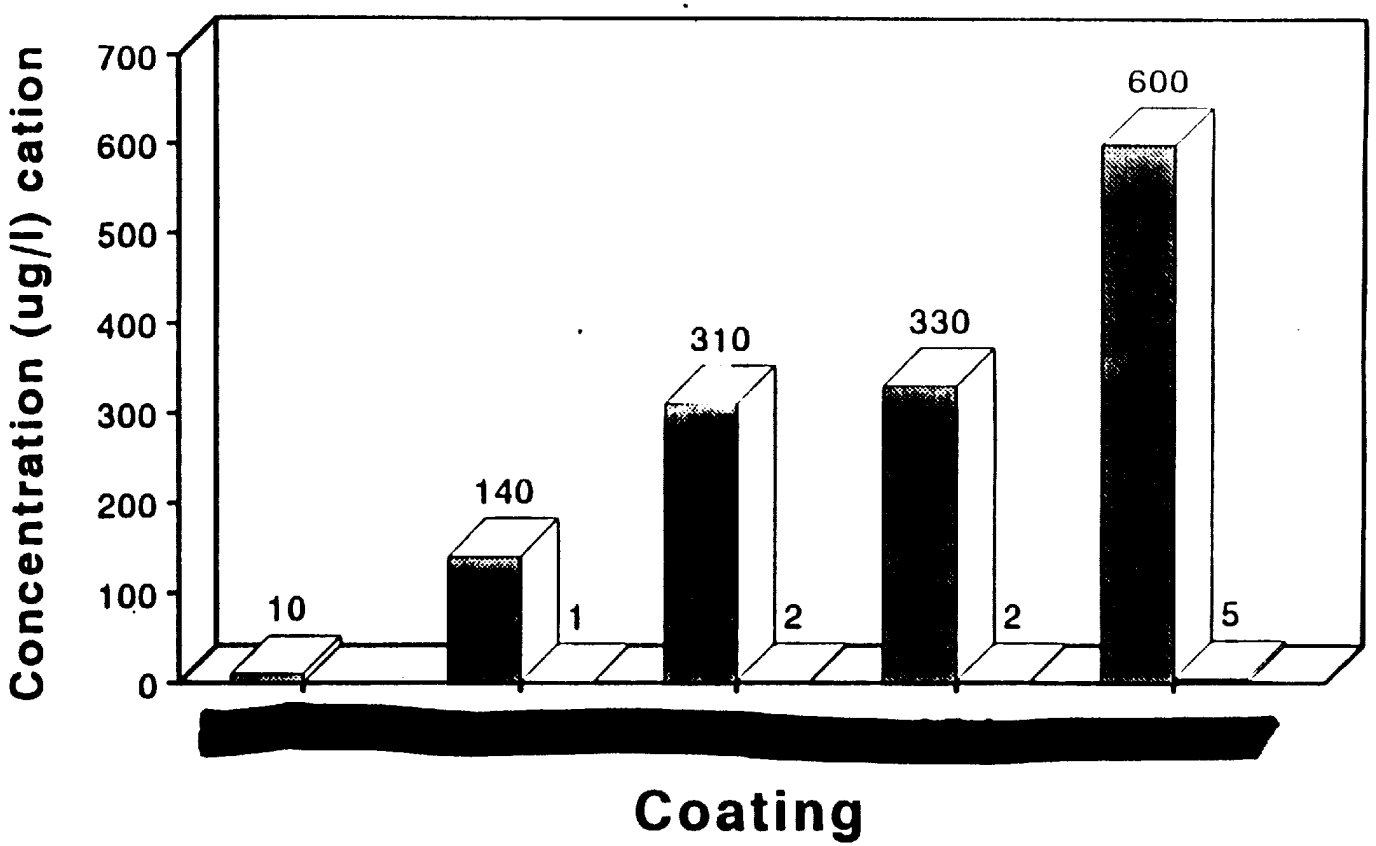
GCMS Analysis - Hexane Analysis



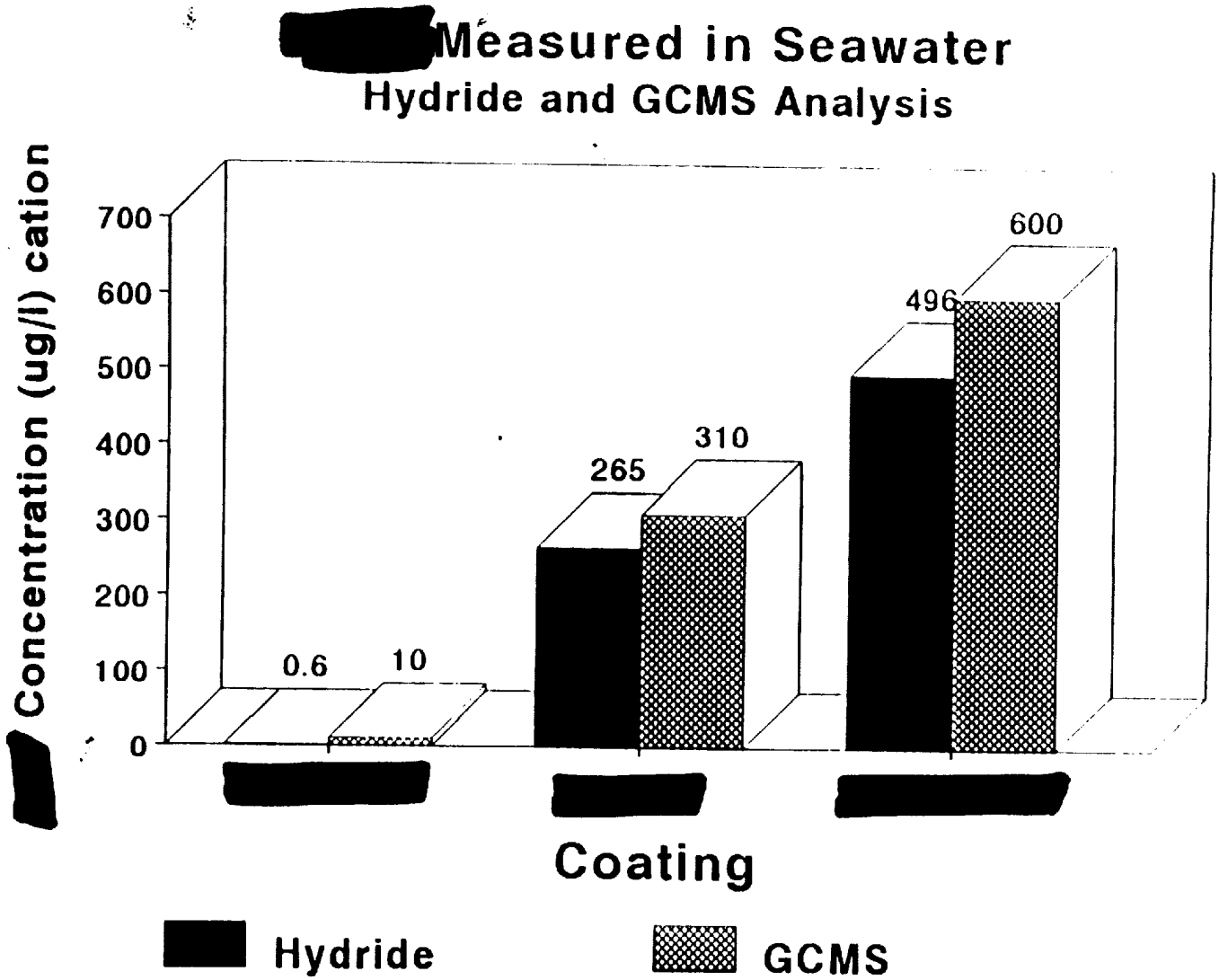
[redacted]

[redacted] Measured in Seawater

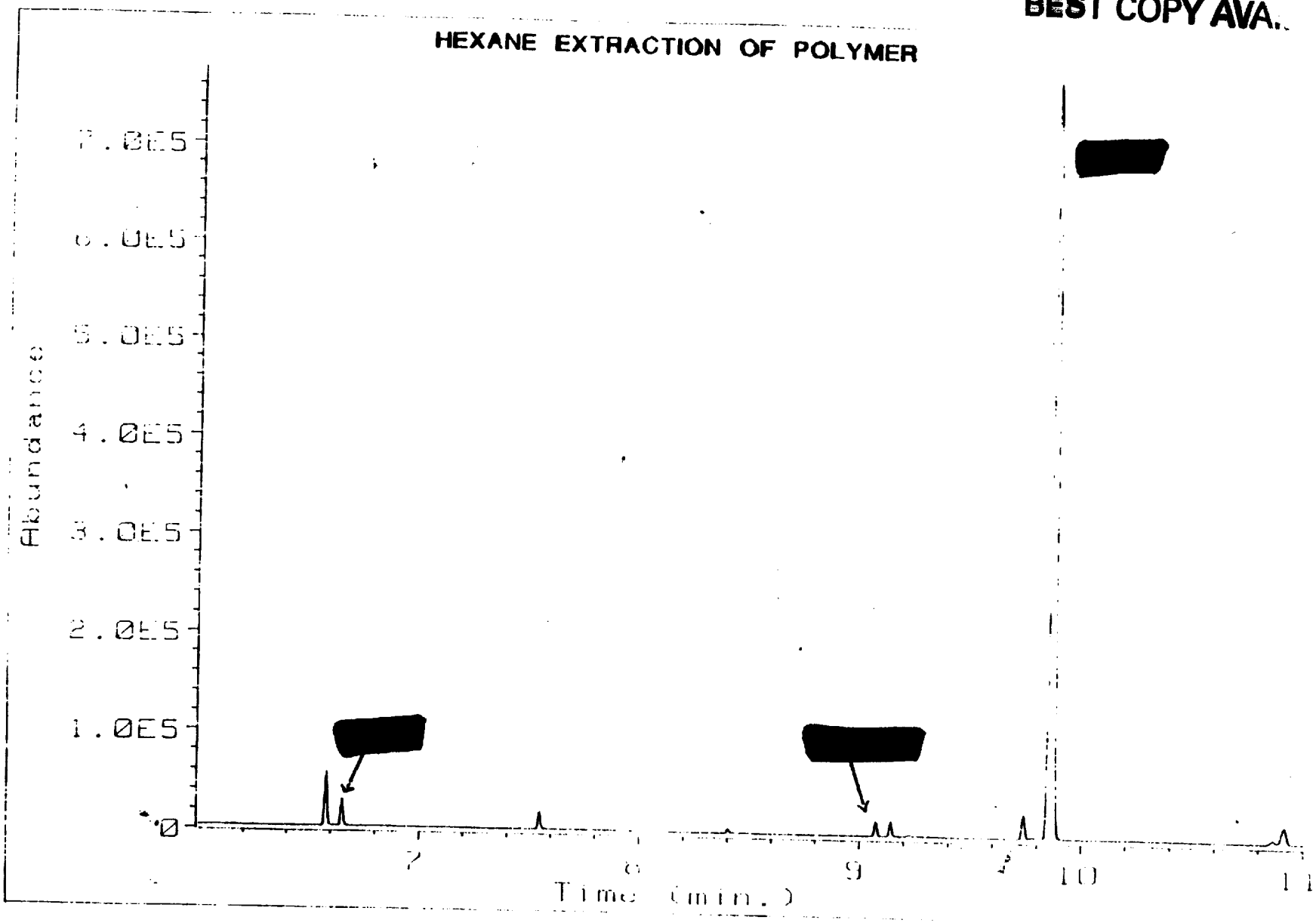
GCMS Analysis



[redacted]


[redacted]Measured in Seawater
Hydride and GCMS Analysis
[redacted] Concentration (ug/l) cation
700
600
500
400
300
200
100
0
0.6
10
265
310
496
600
[redacted]
[redacted]
[redacted]
Coating
Hydride
GCMS

BEST COPY AVA.

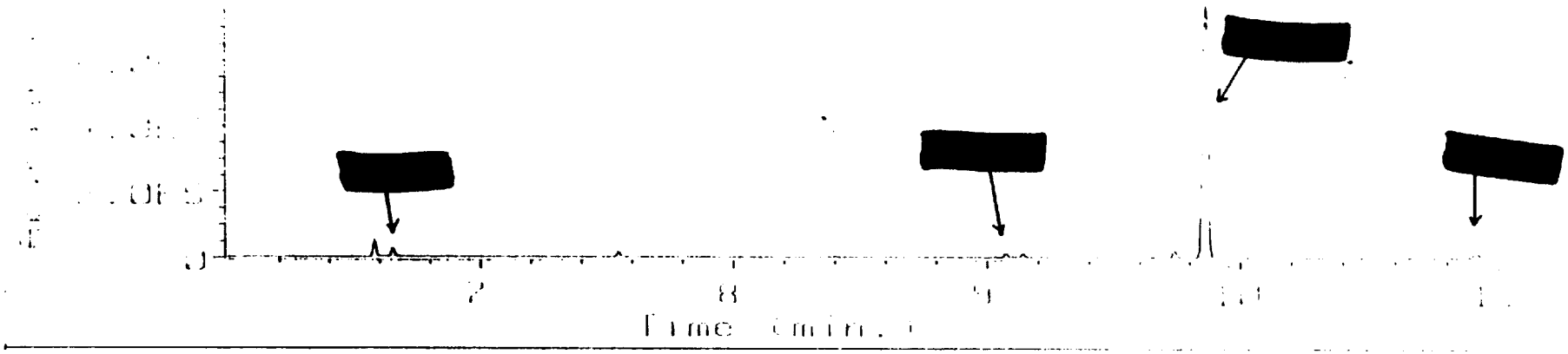


[redacted]

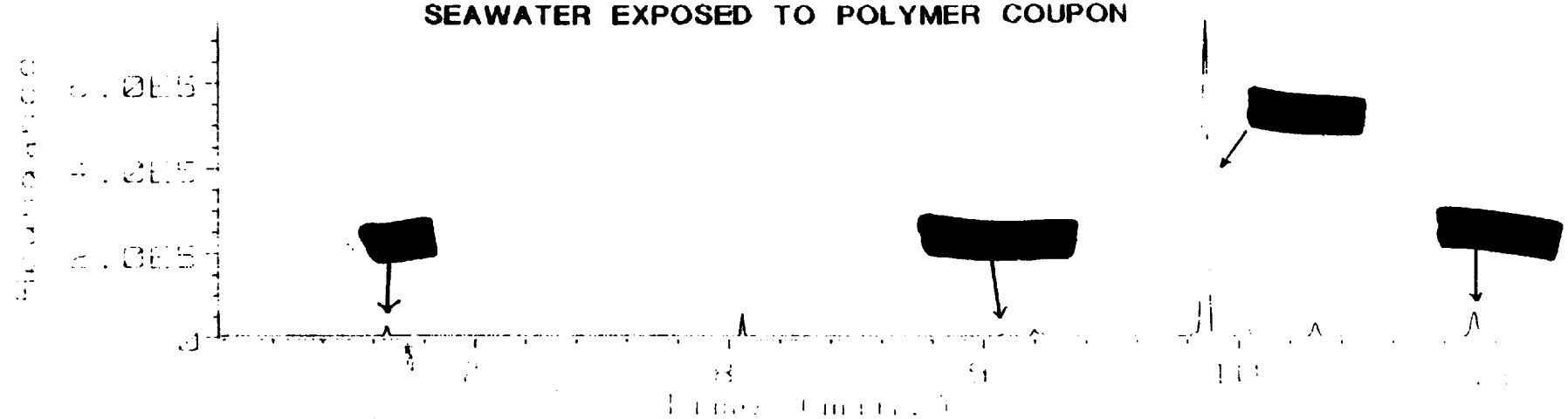
GAS CHROMATOGRAPHY - MASS SPEC DATA

BEST COPY AVAILABLE

HEXANE EXTRACTION OF POLYMER



SEAWATER EXPOSED TO POLYMER COUPON

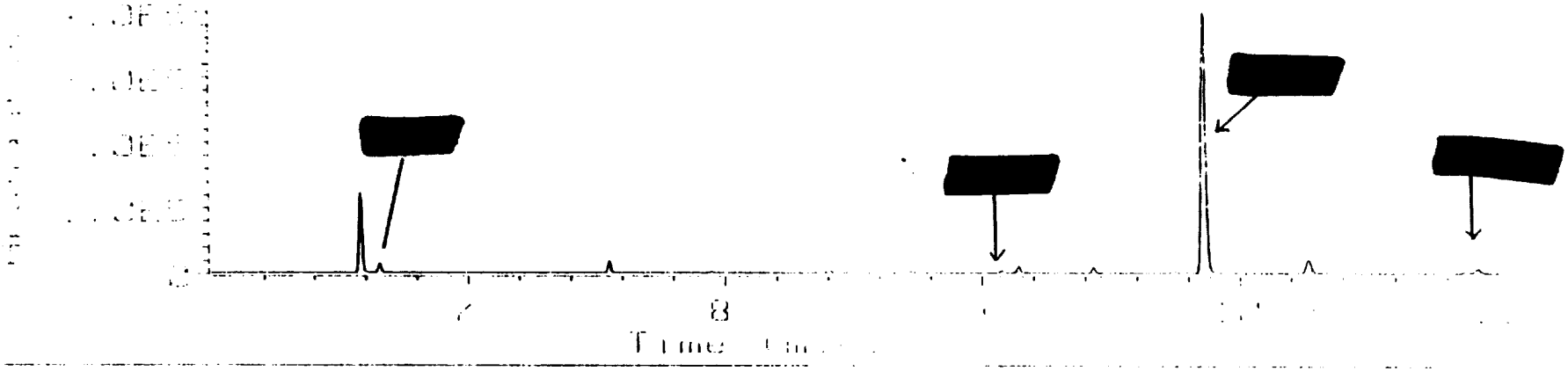


[redacted]

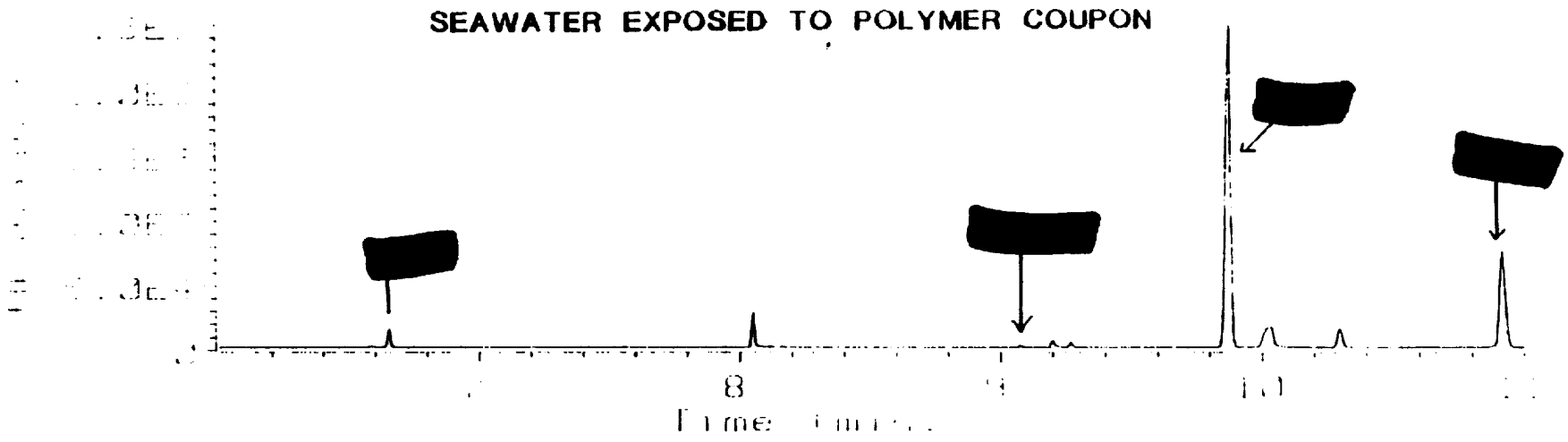
GAS CHROMATOGRAPHY - MASS SPEC DATA

BEST COPY AVAILABLE

HEXANE EXTRACTION OF POLYMER



SEAWATER EXPOSED TO POLYMER COUPON



[redacted]

GAS CHROMATOGRAPY - MASS SPEC DATA

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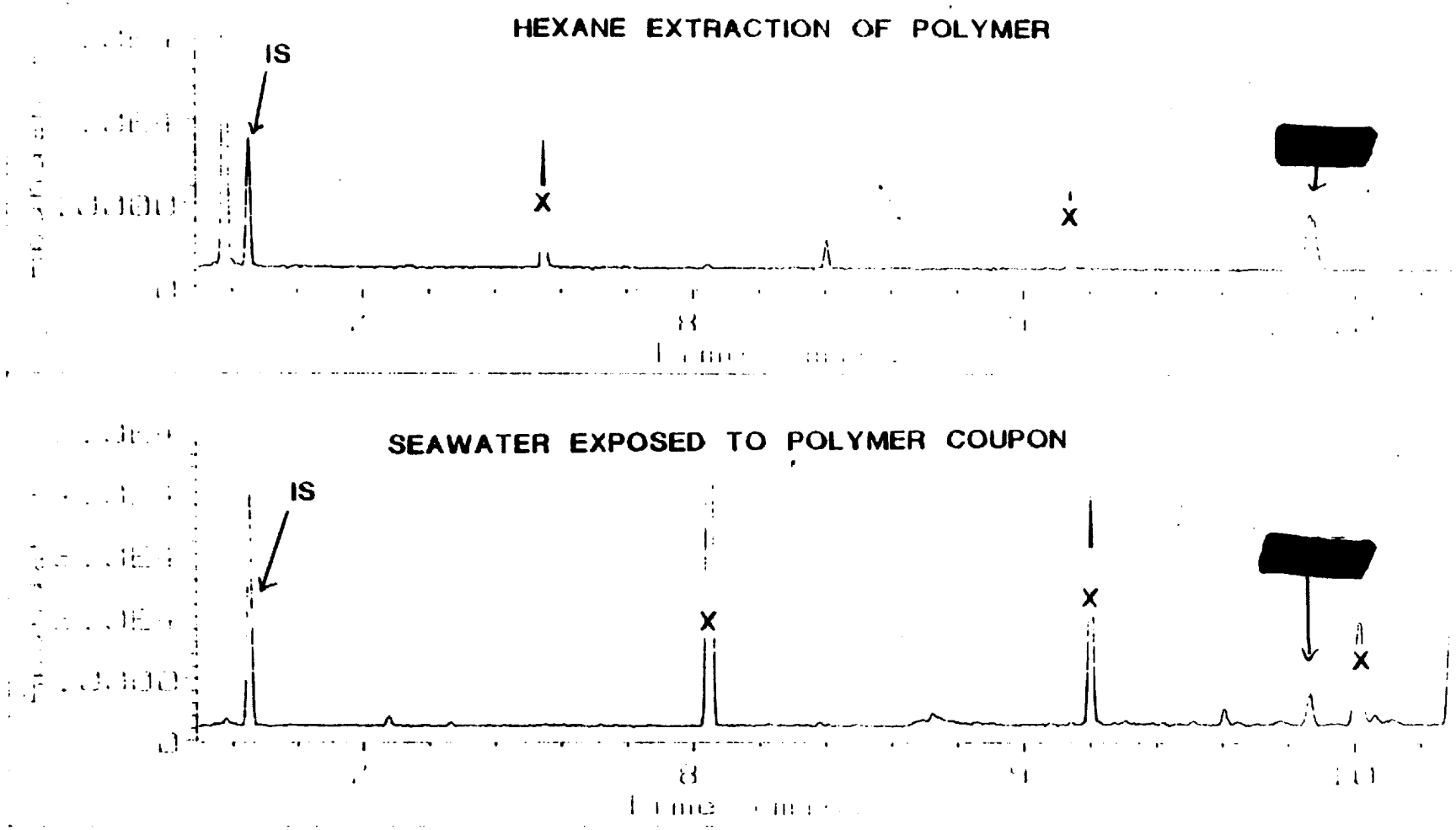

[redacted]

GAS CHROMATOGRAPHY- MASS SPEC DATA

Coating Comparisons
for 100% Coupons (29 cm^2)

COATING	DBT (ug/L)	LC50 (mysids)	LC50 (fish)
[redacted]	187	55%	153%
[redacted]	299	67%	>300%
[redacted]	88	200-264%	
[redacted]	248	117%	200%
[redacted]	0.20	NONE	NONE

Toxicity Conclusions

- [redacted] was the most toxic of all [redacted] coatings; LC50's observed for both shrimp and fish
- [redacted] was the least toxic of all coatings; no LC50's observed for shrimp or fish
- [redacted] all had mean concentrations of 190-300 ug/L DBT measured in seawater following a 24-hour soak for 100% solution

Toxicity Conclusions (continued)

- [redacted] had a mean concentration of 90 ug/L [redacted] measured in seawater following a 24-hour soak. [redacted] was the least toxic of the coatings where LC50's were observed
- On a weight basis, [redacted] had similar [redacted] loads ([redacted] - Hexane extract) from a single (100% concentration) coupon
- [redacted] has twice the [redacted] load as those above while [redacted] has only 100 ppm [redacted]

Toxicity Conclusions (continued)

- Low levels of [redacted] were measured in water samples relative to [redacted] levels (less than 1%)
- [redacted] measurements (GCMS) in coupons and in seawater should be interpreted with caution due to contamination, calibration differences, and operator interpretation
- [redacted] is minimal with respect to measured [redacted]

Toxicity Conclusions (continued)

- Shrimp Relative Toxicity

  [redacted]

  (55%) (67%) (117%) (200%) (264%)

- Fish Relative Toxicity

  [redacted]

  (157%) (200%) (300%)

Triage of 8(e) Submissions

Date sent to triage: JAN 11 1995

NON-CAP CAP

Submission number: 13204 A

TSCA Inventory: Y N D

Study type (circle appropriate):

Group 1 - Dick Clements (1 copy total)

ECO AQUATO

Group 2 - Ernie Falke (1 copy total)

ATOX SBTOX SEN w/NEUR

Group 3 - Elizabeth Margosches (1 copy each)

STOX CTOX EPI RTOX GTOX

STOX/ONCO CTOX/ONCO IMMUNO CYTO NEUR

Other (FATE, EXPO, MET, etc.): _____

Notes:

THIS IS THE ORIGINAL 8(e) SUBMISSION; PLEASE REFILE AFTER TRIAGE DATABASE ENTRY

Comments not found
Please evaluate

For Contractor Use Only

entire document: 0 1 2 **pages** 1, 2 **pages** 1, 2

Notes:

Contractor reviewer : NEB **Date:** 11/14/94

CECATS\TRIAGE TRACKING DBASE ENTRY FORM

CECATS DATA:
Submission # 8EHQ-0994 - 13204 (3) SEQ. A

TYPE: (INT) SUPP FLWP

SUBMITTER NAME: Confidential

INFORMATION REQUESTED: FLWP DATE:
0501 NO INFO REQUESTED
0502 INFO REQUESTED (TECH)
0503 INFO REQUESTED (VOL ACTIONS)
0504 INFO REQUESTED (REPORTING RATIONALE)

DISPOSITION:
(0639) REFER TO CHEMICAL SCREENING
0678 CAP NOTICE

VOLUNTARY ACTIONS:
(0401) NO ACTION REPORTED
0402 STUDIES PLANNED/UNDERWAY
0403 NOTIFICATION OF WORKERS/OTHERS
0404 LABEL/MSDS CHANGES
0405 PROCESS/HANDLING CHANGES
0406 APP./USE DISCONTINUED
0407 PRODUCTION DISCONTINUED
0408 CONFIDENTIAL

SUB. DATE: 09/12/94 OTS DATE: 09/20/94 CSRAD DATE: 10/11/94

CHEMICAL NAME:

CAS#
~~Confidential~~
77-58-7

INFORMATION TYPE:		P F C
0201	ONCO (HUMAN)	01 02 04
0202	ONCO (ANIMAL)	01 02 04
0203	CELL TRANS (IN VITRO)	01 02 04
0204	MUTA (IN VITRO)	01 02 04
0205	MUTA (IN VIVO)	01 02 04
0206	REPRO/TERATO (HUMAN)	01 02 04
0207	REPRO/TERATO (ANIMAL)	01 02 04
0208	NEURO (HUMAN)	01 02 04
0209	NEURO (ANIMAL)	01 02 04
0210	ACUTE TOX. (HUMAN)	01 02 04
0211	CHR. TOX. (HUMAN)	01 02 04
0212	ACUTE TOX. (ANIMAL)	01 02 04
0213	SUB ACUTE TOX (ANIMAL)	01 02 04
0214	SUB CHRONIC TOX (ANIMAL)	01 02 04
0215	CHRONIC TOX (ANIMAL)	01 02 04

INFORMATION TYPE:		P F C
0216	EPI/CLIN	01 02 04
0217	HUMAN EXPOS (PROD CONTAM)	01 02 04
0218	HUMAN EXPOS (ACCIDENTAL)	01 02 04
0219	HUMAN EXPOS (MONITORING)	01 02 04
(0220)	ECO/AQUA TOX	01 02 04
0221	ENV. OCCC/REL/FATE	01 02 04
0222	EMER INCI OF ENV CONTAM	01 02 04
0223	RESPONSE REQEST DELAY	01 02 04
0224	PROD/COMP/CHEM ID	01 02 04
0225	REPORTING RATIONALE	01 02 04
0226	CONFIDENTIAL	01 02 04
0227	ALLERG (HUMAN)	01 02 04
0228	ALLERG (ANIMAL)	01 02 04
0239	METAB/PHARMACO (ANIMAL)	01 02 04
0240	METAB/PHARMACO (HUMAN)	01 02 04

INFORMATION TYPE:		P F C
0241	IMMUNO (ANIMAL)	01 02 04
0242	IMMUNO (HUMAN)	01 02 04
0243	CHEM/PHYS PROP	01 02 04
0244	CLASTO (IN VITRO)	01 02 04
0245	CLASTO (ANIMAL)	01 02 04
0246	CLASTO (HUMAN)	01 02 04
0247	DNA DAM/REPAIR	01 02 04
(0248)	PROD/USE/PROC	01 02 04
0251	MSDS	01 02 04
0299	OTHER	01 02 04

TRIAGE DATA:

NON-CBI INVENTORY	ONGOING REVIEW	SPECIES	TOXICOLOGICAL CONCERN:
YES	YES (DROP/REFER)	Fish	LOW
CAS SR NO	NO (CONTINUE)	Shrimp	MED
DETERMINE	REFER:		HIGH

USE: Coatings, sealants

PRODUCTION:

COMMENTS: Non-Cap

ENTRY FORM

CAPNUM	LTR	DATE	CBI	CASNO	CONCERN	AI	SOLUBILITY
13204	a	0994	s	77587	LOW	NS	NS

CHEMNAME

Organotin compound

PHYSTATE

NS

MELTINGPT

NS

ORGANISM	DURATION	ENDPOINT	CODE	TOXVALUE	UNITS
Mysidopsis bahia	4d	LC50		4	g/l

COMMENTS

CAPNUM	LTR	DATE	CBI	CASNO	CONCERN	AI
13204	a	0994	s	77587	LOW	NS

CHEMNAME
Organotin compound

ORGANISM	DURATION	ENDPOINT	CODE	TOXVALUE	UNITS
Menidia beryllina	4d	LC50	>	6	g/l