FORMULATION:			IA	IB	T	FW	EC	R		
% a.i.	SC#	CHEMICAL NAME	Validator: R. Balcomb			Date: Oct. 17, 1977				
Technical		Ambush (TM) Permethrin (PP557)	Test Type: Acute (96-hr) LC_{50} for Pacific Oyster and Acute 48-hr. developmental bioassay with oyster larvae							
			Test ID # ES-GG							

CITATION: Thompson, R.S., Hill, R.W., and Cornish, S.K. Investigation of the Acute Toxicity of PP557 to the Pacific Oyster (Crassostrea gigas) ICI Brixham Laboratory Report No. BL/B/1796 (May, 1977).

VALIDATION CATEGORY: Supplemental

RESULTS:

A. 96-Hour LC_{50} for Juvenile Pacific Oysters

Technical grade permethrin (dissolved in dimethyl sulphoxide) was tested for its 96-hour LC_{50} to Pacific oysters. A continuous flow-through bioassay system was used with unfiltered seawater at 17°C. The test concentrations used in the study were:

Series I: (48 mg/l. Solvent) Control, 0.1, 0.22, 0.48 mg/L PP557
Series II: (480 mg/L Solvent) Control, 1.0, 2.2, 4.8 mg/L PP557

After 24 and 48 hours each oyster was examined for its ability to perform active shell closure movements, if necessary by gently touching the shell with a glass rod. After 96 hours the oysters were removed from the test solutions and portions of gill tissue were excised and examined for presence or absence of gill ciliary activity which was used as the final criterion of acute lethal toxicity.

There were no mortalities of PP557 at any of the concentrations tested after 96 hours. The highest concentration tested, 4.8 mg/L PP557, was considered the no-effect level.

The LC_{50} was not calculated as the highest level tested was non-lethal.

B. Acute developmental bioassay with oyster larvae

Pacific oyster larvae were obtained and examined for normal 48-hour development following the procedure of Woelke (967). The static test chambers maintained filtered seawater at 20°C. The test concentrations used were as follows: Control, solvent-control (480 mg/L), 0.48, 1.0, 2.2, 4.8 mg/L PP557. Duplicates were run on each test concentration.

There was no significant reduction in the percentage of normally developed larvae at any of the concentrations tested compared to the control or solvent-control groups:

Larvae Development

Concentration PP557 mg/L	Control	Solvent Control	0.48	1.0	2.2	4.8
Mean % Normal Development	97.5	97.9	97.1	98.0	97.1	97.5

The highest concentration of PP557 tested, 4.8 mg/L was considered the no-effect level.

1 C.E. Woelke, "Measurement of Water Quality with the Pacific Oyster Embryo Bioassay," Water Quality Criteria, ASTM STP 4/6, Am. Soc. Testing Mats, 1967, p. 112.

VALIDATION CATEGORY/RATIONALE: This study was determined supplemental as sufficient concentrations of PP557 were not used to adequately assess mortality. The level of toxicity should have been found (unless > 100 ppm) and a logarithmic series of concentrations determined for intensive testing.

CATEGORY REPAIRABILITY/RATIONALE: Not repairable. See above.