108401

MAR 14 1984

Subject: Evaluate the need for a third year of sampling of Bolero (4 lb ai/A) in aquatic areas adjacent to rice fields.

The peer group has been asked to give an opinion on whether EEB has ample justification for insisting that Chevron complete the third year of Bolero (thiobecarb) monitoring field study on rice. This study was initially requestd by Ann Stavola 9/19/80 after expressing concern over thiobencarb acute and chronic toxicity to aquatic organisms and uncertainity regarding exposure to bioaccumulate. These considerations were presented to the peer group and outlined as follows:

1. Bolero is to be applied to rice fields that drain into coastal esturine areas that serve as major nursery grounds for commercially important shirmp, crab and fish species.

2. Acute effects to fish are in the high toxicity range as noted from the sheepshead minnow 96-hour LC_{50} = 0.9 ppm (0.7 -1.2 ppm).

3. Chronic fish toxicity is apparent from an embryo-larvae (intermittent flow) sheepshead minnow study where hatching success decreased at 20.6 ppm. The MATC was calculated at <0.15 ppm.

4. Acute toxicity to aquatic invertebrates was noted with 96 hour white shirmp LC_{50} = 0.264 ppm, the 48-hour Eastern oyster EC_{50} = 0.56 ppm and the 48-hour Daphnia LC_{50} = 0.10 ppm.

5. Chronic invertebrate toxicity was evident from a Daphnia flow-through study, that produced a MATC $\geq$ 1 ppb and < 2 ppb.

6. Bioaccumulation is expected in aquatic invertebrates as follows: Daphnia 83 x in 3-D; marine diatom 150 x 7-D.

The peer group reviewed the 1979 (EUP) and 1983 field data collected from bayou and canals adjacent to rice fields, where Bolero was applied. Values from the 1979 study suggest that significant levels of Bolero were found at 11-12 days, postapplication (Halls Bayou Area III 0.14 - 0.164 ppm) and 1 - 2 day postapplication (0.41-0.40 ppm). Residues from the 1983 study indicate that Bolero was found at relatively low levels (< 0.5 to 6.8 ppb) and one high level (18.2 - 21.8 ppb 6/1/83 station 2). However, both sets of results tend to pose more questions than they resolve, especially concerning water flow rates, flushing frequently, drainage area and drift. Data from the 1983 study, regarding population estimates on fish and aquatic invertebrates (Chironimidae and Oligochaeta), is inconclusive and does not address the effect of natural population fluctuations.

The peer group concludes that the data presented by Chevron, from the 1979 and 1983 studies, are incomplete. A third year of sampling should be conducted with consideration to EEB's suggestions.

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The following list includes the changes, deletions and continuations we think would be required to get a good picture of the effects of Bolero under typical but less than favorable conditions:

1- Discontinue multiplate sampling;

2- Continue sweep net sampling for invertebrates;

3- Continue sampling for fish;

~~4-~~ Continue counting gravid shrimp (Palaemontes pugio);

5- Initiate water and sediment sampling for residues right after Bolero is applied to any of the fields that drain into the test bayou;

~~6-~~ Intentionally release the equivalent of 6 inches of water from the Mike Ottis field 24 hours after Bolero treatment. Take daily water samples beginning at time of treatment and continuing for 2 weeks;

~~7-~~ Measure outflow through the gates from the Mike Ottis field and record the volume daily for the first two weeks after treatment, and then at the same time water and sediment samples are taken; and

~~8-~~ Since there were high residues in the water immediately following application and these were attributed to drift, we require the placement of drift cards around the perimeter of the test fields to a distance of 400 feet. These cards will help determine if the residues are caused by drift or runoff. Chevron must illustrate to us by diagram where these cards will be placed and we must approve the locations before the study is continued this year.

9. Also, before this year's study commences, Chevron must show us which fields will be treated and how many acres. This must include all the fields in the biological study area.

If there are any questions, contact Dan Rieder or Ann Stavola of EEB.

The crossed out ones won't be done by Chevron as per 3/14/84 meeting with Clayton, Dick Mantfort and Dan Rieder

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