

8-28-92



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
and D181036) WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

AUG 28 1992

MEMORANDUM

Subject: Review and Recommendations on the Proposed Chevron
Chemical Co. Bolero 8EC - 84% a.i.- (Chem. Code 108401)
Aquatic Monitoring Study Protocol (DP 176910 and
D181036)

From: Douglas J. Urban, Acting Chief
Ecological Effects Branch (EEB)
Environmental Fate and Effects Division (H7507C) *Douglas J. Urban* 8/28/92

To: Christine Rice, PM 52
Special Review and Reregistration Division (H7508W)

In the early 1980s, EEB requested that Chevron Chemical Co. conduct a biological and residue monitoring field study for Bolero 8EC on rice because based on available data Bolero "would pose an unreasonable adverse acute and chronic effect on aquatic/estuarine organisms." The wildlife toxicological data available showed Bolero (active ingredient thiobencarb 84%) to be from moderately toxic to highly toxic to fish and from highly to very highly toxic to aquatic invertebrates (including marine).

On June, 1985 an EEB peer review panel of four biologists evaluated a three-year (1982 through 1984) biological and residue monitoring field study of Bolero which had been reviewed by one of EEB's biologist. The peer group rated the study only as supplemental because, in their opinion, the objectives of the study were only partially attained (for more details refer to EEB's file 108401).

The Valent Corporation of Walnut Creek, CA is sponsoring a thiobencarb aquatic residue monitoring study for Bolero 8EC in aquatic habitats associated with rice production. To this end, five rice fields will be selected in the southern United States in areas where rice is normally grown. The study sites are said to be linked to aquatic habitats where Bolero residues will also be monitored. One site is to be located in the southern Louisiana coast, two other sites in the delta region of eastern and southern Arkansas and two other sites in south-central Texas. The test fields will be between 100 and 200 acres in size. The study is to be conducted by Springborn Labs. of Wareham, MA.

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EEB has evaluated the proposed protocol. This study blueprint appears to be fairly well thought out and likely to produce the data being sought. However, once the specific study areas have been selected and prior to its initiation, EEB makes the following recommendations:

1. Establish baseline values for rice pesticides that may have been used previously (emphasis on Bolero) in those specific areas. The same sampling areas for soil, hydrosol and water samples used for the baseline samples are to be used for the actual study.

2. After the specific study areas have been selected EEB would like to see site-specific action plans which would include:

(a) Topographic map locations of the soil, hydrosol, water sampling stations and drift cards (see below).

(b) Location of meteorological stations together with a listing of instruments and parameters to be measured.

(c) Quantitative aerial drift determination plan that would include the strategic placement of cards prior to pesticide application(s). The cards should be collected and analyzed as quickly as possible. Drift cards should be positioned such that drift can be detected in any direction that it may occur. It is recommended that a minimum of 16 drift cards be used at each site, placed in a radiating pattern at two distances in 8 directions from the field to help determine which direction drift occurred at the time of treatment. It should be noted that while it is assumed that drift will be in the direction of wind, that wind direction could vary from the time drift cards are set up to the time application occurs. The registrant should use additional drift cards "down wind" to help establish the amount of bolero that was deposited off the treatment site, and how far it drifted.

(d) A sampling scheme such that samples taken for analysis are collected in duplicate, sample "A" and "B". These samples must be shipped separately, with samples "A" shipped first and "B" samples held until "A" samples have safely arrived. Then, "B" samples should be shipped and held in storage until "A" samples have been analyzed. If analysis of "A" samples is completed in a scientifically sound manner, with no problems encountered, "B" samples need not be analyzed and should be held until EEB has completed their review

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of the study or as long as the registrant chooses, which ever time is longer.

*Three flushes or 3
rain events (or 3
mo.) which ever
occurs first.*

(e) A sampling plan for water, soil and sediment timed as follows: sampling on days -1 (before treatment), day 0 (immediately after treatment), and days 1, 2, 3, 5, 7 and 14 after treatment. Further, samples must be collected as soon as possible after discharge from treated rice fields (whether from inadvertent unscheduled flushes due to rainfall, or from scheduled discharges) on days 1, 2, 3, 5, 7 and 14 after each such discharge. This sampling scheme must continue for at least 2 months at each site after the last treatment of bolero at that site. This schedule is needed to determine the dissipation curve of bolero in an aquatic habitat.

(f) Calibration of spray equipment which is recommended before each treatment.

(g) The use of flowmeters to be required in each and all discharge ditches flowing out of each field. This procedure must quantify the out flow for the season beginning immediately before (approximately 1-week) scheduled applications and continuing at least 2 months past the last treatment. Flowmeters, for each field, must be checked (flow recorded) each day of sampling (for that field).

(h) Rainfall measurements at each of the 5 treatment sites. Wind speed and direction at each site at the time of each application must also be determined. Other meteorological information may be gathered at the nearest weather station.

(i) Testing for storage stability of spiked samples. These tests must show the effect of storage and shipment of all the various types of media collected during this study.

(j) Clarification and discussion on the use of plastic containers for the collection of samples leaves open the question of pesticide adsorption to said containers. This issue needs to be discussed. Will solvents be used in the removal of adsorbed materials? Also, should plain ice or dry ice be used in the temporary preservation of samples? What is the best temperature for adequate sample preservation?

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(k) A list of the formats to be used for collecting data in the field/laboratory and facsimiles thereof are to be included.

3. The written results should be formatted in the following way to allow easier comparisons over specific time periods and/or by treatment site.

EXAMPLES:

TABLE 1. Time Profile of Bolero residues (ppm) in water, 1993, Study Site 1

Sample Station	Pre-Appl.	Post-Application						
	Day -1	Day 0	Day 1	Day 2	Day 3	Day 5	Day 7	Day 10
1A	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
1B	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
1C etc								

TABLE 2. Time Profile of Bolero residues (ppm) in sediment, 1993, Study Site 1

Sample Station	Pre-Appl.	Post-Application						
	Day -1	Day 0	Day 1	Day 2	Day 3	Day 5	Day 7	Day 10
1A	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
1B	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
1C etc.								

TABLE 3. Time Profile of Bolero residues (ppm) in sediment, 1993, Study Site 2

Sample Station	Pre-Appl.	Post-Application						
	Day -1	Day 0	Day 1	Day 2	Day 3	Day 5	Day 7	Day 10
2A	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
2B	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
2C etc.								

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TABLE 4. Summary of all 5 Study Sites, Time Profile of Bolero Residues (ppm) in water, 1993

Sample Station	Pre-Appl.	Post-Application						
	Day -1	Day 0	Day 1	Day 2	Day 3	Day 5	Day 7	Day 10
A mean	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
S.D.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
max.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
min.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
% (samples with residues)								
B mean	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
S.D.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
max.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
min.	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
% (samples with residues)								
C mean etc.							

4. The results of the monitoring study which should be provided in 3.5" computer discs. Data points and results should follow ASCII format to allow faster analysis.

5. A full description of the analytical methods used/developed during the monitoring phase. A detailed description of these methods must be in the final study report. Also, in order to allow evaluation of the methods used, chromatograms from representative trials in which these analytical methods were used must be provided. Further, the detection limits of the analytical methods/instruments to be used must be stated and recovery testing of the method for each type of sample collected must be performed.

For further information on this matter please contact Alvaro Yamhure of the EEB staff at (703) 305-6179.

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