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SHAUGHNESSEY NO.

REVIEW NO

EEB BRANCH REVIEW

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TYPE PRODUCT(S): I, D, H, F, N, R, S Insecticide

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. Dennis Edwards (12)

PRODUCT NAME(S) Aldicarb

COMPANY NAME Union Carbide Agricultural Products Co., Inc.

SUBMISSION PURPOSE Submission of final wildlife field monitoring protocol for review.

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.

Environmental Safety Review

Fish and Wildlife

100.0 Submission Purpose

Review wildlife field monitoring protocol submitted by Union Carbide Agricultural Products Company, Inc.

104.0 Discussion

The Ecological Effects Branch (EEB), in particular the Terrestrial Field Studies Committee, has reviewed the "final" protocol for the aldicarb wildlife field monitoring study. The cover letter (December 16, 1986, J.S. Lovell) indicates that all suggestions made by EEB in previous protocol reviews have been incorporated into the protocol, except trapping of live birds to determine the presence of aldicarb residues which is reserved for further testing, if required, pending results of the 1987 study.

It seems that some of the recommended modifications made by EEB were not completely understood or that some of our concerns may arise due to incomplete description of certain details as to how the study is to be done. For example, the protocol still indicates that four study plots will be used; three will be 15-40 acres and the fourth greater than 40, if possible. In our last comments we indicated that four replicates may not be adequate and that the size of study plots must be based on methods used, the sensitivity required and the density and diversity of species and their range. Based on the The Guidance Document on Terrestrial Field Studies, we recommend that 7 or 8 site replicates are needed to conclude at a 0.05 level of significance that impacts are occurring below levels of concern. If at all possible, we recommend increasing future sites (those treated April through June) to seven. If only four replicates are used, we will tend to be more conservative in our analysis of the data. That is, we may be more likely to require a more definitive level study if mortality seems to be occurring.

Regarding size of the study plots, the protocol implies that the design was modified, as suggested by EEB, to be able to detect, at a minimum, a 20% mortality rate in exposed species. The protocol then indicates (page 6) that "if calculated search area turns out to be greater than 40 acres (using the formula on page 5, which is in error, see footnote[1]) for plots less than 40 acres in size, the entire plot will be searched." What good is this if greater that 40 acres is needed to detect a 20% mortality rate? What needs to be done is either increase the plot size, if available (by using a neighboring field planted in the same crop), or select another study plot. The study plot size should be large enough to ensure that birds in the search area are potentially exposed to aldicarb.

The protocol still suggests the use of analysis of variance for analyzing some of the data collected without discussing detection level or the power of the test as recommended or even what is being analyzed against what. Possibly these points have been accounted for, however, the protocol has not been modified to reflect these points.

Other comments/modifications to the protocol are suggested as follows:

1. Instead of calculating search areas daily (pg. 5), EEB prefers that the size of the search area be determined in pre-treatment trials and that they remain constant throughout the study and be done in accordance with the draft Terrestrial Field Study Guidance Document.

   In addition, only searching the perimeter and one diagonal (as indicated in the protocol, pg. 6) for a 40 acre field will result in only approximately 1.5 acres being searched, given a 12 foot search swath. In general, depending on the sensitivity of the search method relative to the habitat involved, corridors or plots should be selected and these areas searched systematically walking transects, moving back and forth across the area.

1/ The formula on page 5, for evaluating search area, is in error. "Removal rate" should be changed to read non-removal rate, and figures adjusted accordingly.

2. Regarding estimating efficiency of carcass searches, EEB refers Union Carbide to the recommendations in the draft Terrestrial Field Study Guidance Document. Briefly, some of these recommendations are as follows:

   a. efficiency trials should be conducted periodically (minimum 3 times per study site) during the study;

   b. carcasses should be placed where the species would be most likely to die;

   c. searchers should not be aware that simulated mortalities have been placed;

   d. number of carcasses placed should be approximately 20% of the estimated density of species on the search area; and

   e. mark placed carcasses to distinguish them from actual kills and map their location so those not found can be recovered following completion of the day's search activities.

3. Bird and mammal surveys should not be run concurrently (page 8). In addition, the applicability of line transect surveys to mammals may be of limited value. Other methods such as mark-recapture, may be more appropriate. By using the transect line around the perimeter of the crop area only biasses the result, and will give an over estimation of bird density. EEB suggests two or three transects across the crop area in addition to the perimeter.

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