UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

19 APR 1984

MEMORANDUM

To: Clayton Bushong

Thru: Dave Coppage Dave Coppage

Subject: File Documentation Briefing for Terbufos.

As you requested in our meeting of April 18th, the following should bring you up to date on the Branch's review of terbufos. I have reviewed the file and selected the attached documentation as the most pertinent with respect to the terrestrial non-target field study we discussed. The following is a chronological synopsis of the material I selected.

Sept. 20th, 1982 - Counter 15G label is accepted - it is granular terbufos (15% a.i.) for use on corn, sugar beets and sorghum; American Cyanamid is the registrant.

Dec. 16th, 1982 - EEB issues Topical Discussions, Disciplinary Review and Data Evaluation Records for Phase II of the registration standard review (Felkel and Craven). Pages 2-4 of the Disciplinary Review contains an interim hazard assessment for terrestrial species. The reviewer discusses laboratory and field data which indicate that terbufos is very highly toxic to birds, but that passerine species are apparently much more sensitive to the granules than upland game birds, which were not subtantially affected in simulated pen studies. However, pheasants were killed when exposed to "simulated spills" of the granules. Passerine species were estimated to have an approx. LD50 of > 5 < 10 granules. It was suggested that terbufos may be as much as 17.9 times more toxic to mammals than to birds, based on acute laboratory studies under review in the Tox. Branch/ HED. The data requested by this review included a field study of birds and mammals which would be and "actual" field study in corn (footnote 5 of the generic data gap table). This document apparently only reviewed soil incorporated applications of terbufos.

March 23, 1983 - EEB (Felkel) reviewed a pending conditional registration to add aerial broadcast as a method of applying the second application of granules to corn. These would remain unincorporated. The reviewer indicated that this would increase the exposure of terrestrial organisms to the granules, and reiterated his concern for smaller birds, alluding to the re-registration review which indicated that passerine species were more sensitive to terbufos.

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The registrant apparently argued that with the aerial broadcast application to maturing corn plants...."most of the material is trapped by the corn foliage and not available to birds that may be foraging in the fields....". This view may have some validity but was not supported by data. The reviewer asked for data demonstrating this. None was submitted. Their argument actually supports EEB's position on asking that the passerine hazard be evaluated in the field because we are not so much concerned with upland game species likely to be foraging in fields as we are with the smaller bird and mammal species which are likely to frequent field borders, adjacent woodlots, or fallow areas . (N.B. - this is the rationale behind asking for carcass searches in 8-10 twenty-acre fields, rather than studying penned bobwhite in a single thirty-acre field - i.e., there will be more edge exposure in relation to "dead space" in the maturing corn fields - see "April 13th" below).

June, 1983 - RD issued the "guidance package" for re-registration of terbufos. Page 7, section 5 calls for an "actual" field study of terrestrial non-target organisms. Other data requirements were listed in Table A of this document.

Nov. 28th, 1983 - American Cyanamid responded to the re-registration guidance issued in June, 1983. EEB (Bascietto) reviewed their positions on the various data requirements imposed by the standard. EEB reaffirmed the requirements for submission of raw pen data on a previously reviewed avian reproduction study, and for performing aquatic testing of marine/estuarine species in acute exposure. We agreed with Cyanamid's decision to go ahead with aquatic testing of freshwater species in chronic exposures and suggested that field study protocols be submitted to us prior to commencing work in the field.

Jan. 30, 1984 - American Cyanamid submitted a generalized proposal for an actual field study which would have incorporated work on environmental fate, avian and aquatic field monitoring into one study. EEB (Bascietto) reviewed the proposal and rejected the proposal as much too general and for lacking the scope of work we would expect in an actual field study. Two (2) idealized actual field study protocols were given to the company.

March 30, 1984 - EEB decided that aquatic organism field testing requirements should be reevaluated in light of the results of pending acute and chronic aquatic organism laboratory studies of terbufos.

April 13, 1984 - EEB (Bascietto) reviewed the most recent submission by American Cyanamid / Wildlife International, which had changed their proposal to do an actual open field study (see Jan. 30 above) to a penned bobwhite quail "simulated" field study on a single 30-acre corn field. EEB rejected this proposal because it did not address our concerns in terms of the

appropriate sensitive terrestrial species, approrpriate exposure scenario (edge exposure) and because "simulated" avian field studies had already been reviewed by this Branch and accepted as fulfilling guidelines requirements for that kind of a study. Suggestions for improving the protocol to meet our requirements were made. After consulting with Branch staff avian biologists the reviewer called for an "actual" field study, as originally specified by the re-registration guidance, which could incorporate the registrant's proposals for penned bobwhite, but only for purposes of cholinesterase work. Hazard to passerine and mammal species would be studied by carcass search type studies on 8-10 twenty-acre corn fields to maximize expected real-world exposure. EEB concluded that no substantial effects were likely to be seen in a pen study of bobwhite quail, and that the company would simply be repeating work already done if they chose to act on the Wildlife International proposal.

This is the current status of EEB's review of terbufos.

John Bascietto

John Bascietto

Attachments - copies of all reports summarized herein.