UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Metolachlor Evaluation

DATE: February 23, 1978

FROM: Ecologist, Ecological Effects Branch

TO: Mr. James Skaptason,
Metolachlor Team Leader

Attached are the data evaluations and effect topics on avian wildlife for technical metolachlor. Harry Craven and I will soon hand a consolidated list of registration data gaps.

John S. Leitzke

Attachment

cc:Clayton Bushong
Dr. William G. Phillips

## PHYTOTOXICITY

No data was provide on the phytotoxic effects of metolachlor on common grasses, herbs and shrubs.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence of such data, and in the absence primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to plant life cover, and food sources for granivorous and herbivorous avian and mammalian wildlife.

Avian Single-Dose Oral $LD_{50}$ ( Section 162.71-1 )

The minimum data requirement for avian acute oral testing is testing on one avian species, either a wild waterfowl ( preferably the mallard) or an upland game bird ( preferably the bobwhite or other native quail ), or the ring-necked pheasant. The species shall be the same as one of the species selected for avian dietary $LC_{50}$ testing.

Data on the single dose oral toxicity of metolachlor to avian wildlife is limited to the work reported by Truslow Farms Inc. (1976); the acute oral $LD_{50}$ for mallards (Anas platyrhynchos) was recalculated from given cumulative mortality data to be 4640 (3000-7200) mg/kg.

A review of the study revealed deviations of test procedures from generally accepted guidelines, gross errors in the original statistical analysis and discrepancies in body weights and efficiency of feed utilization. Deviations of test procedures included: use of ducklings that were too young; test duration was too short; no pre-test fasting period; average body weights of ducklings differing markedly across test groups.

The study gives data that can be regarded as only supplemental about the acute oral toxicity to avian wildlife and does not meet the registration requirement for this toxicity data.

## AVIAN - Single Dose Oral $LD_{50}$

Data on the single dose oral toxicity of metolachlor to avian wildlife is limited to the work reported by Truslow Farms Inc. (1976); the acute oral $LD_{50}$ for mallards (Anas platyrhynchos) was recalculated from given cumulative mortality data to be 4640 (3000-7200) mg/kg.

A review of the study revealed deviations of test procedures from generally accepted guidelines, gross errors in the original statistical analysis and discrepancies in body weights and efficiency of feed utilization. Deviations of test procedures included: use of ducklings that were too young; test duration was too short; no pre-test fasting period; average body weights of ducklings differing markedly across test groups. The acute oral $LD_{50}$ was originally give as 1750 (1337 - 2289) mg/kg with a Chi-Square value of 2.023 ($p < .05$); an examination of the original mortality data, however gave a recalculated value of 177.1; the $LD_{50}$ was recalculated as 4640 (3000 - 7200) mg/kg with a Chi-Square value of 0.29 ($P > .05$). Initial body weights of the metolachlor, dieldrin (positive control) and negative control (corn oil only) test groups were all considerably higher than expected for ducklings of the reported 14-day age; efficiency of feed utilization in the negative controls was rather on the high side as well.

The study gives data that can be regarded as only supplemental about the acute oral toxicity to avian wildlife and does not meet the registration requirement for this toxicity data. Such data on either mallards, bobwhite quail (Colinus virginianus) or ring-necked pheasants (Phasianus colchicus) is required for registration. It is recommended that registration be suspended temporarily until this data is provided.

In the absence of such acceptable data, it can only be assumed that metolachlor is acutely hazardous to avian wildlife.

## AVIAN - Dietary $LC_{50}$

Data on the dietary toxicity of metolachlor to avain wildlife is limited to the work reported by Truslow Farms Inc. (1974 a and b); the 5 (+3)-day dietary $LC_{50}$'s for both mallards (Anas platyrhynchos and bobwhite quail (Colinus virginianus) are greater than 10,000 ppm.

There are some deviations from normally expected figures, however, in body weights and efficiency of feed utilization. Initial and final body weights of the mallard ducklings in this study (about 180 and 375, respectively) were considerably higher than normally expected weights (about 150 and 200g). Also efficiency of feed utilization was rather on the high side in the mallard study. Initial and final body weights of the bobwhite quail chicks in this study (about 25 and 40, respectively) were considerably lower than normally exptected weights (about 100 and 150,). These discrepancies, while not enough to totally invalidate the studies, do cast some doubt on the accuracy of the reports.

The data is generally acceptable to indicate that metolachlor might have little dietary toxicity to avian wildlife and generally meets the requirement for avian wildlife dieatry $LC_{50}$ data.

An additional dietary test from another laboratory on either one of the two species already tested or on ring-necked (Phasianus colchicus) is requested to established the avian wildlife dietary toxicity of metachlor.

## AVIAN-Passerines & Raptors

No data was provided on the effects of metolachlor on passerines and raptors (including owls).

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence os such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to passerines and raptors (including owls).

## AVIAN-Reproduction

No data was provided on the effects of metolachlor on reproduction in avian wildlife.

No information on the toxicity of metolachlor to laboratory animals and livestock, either acute, subacute, chronic or reproductive, has been forthcoming.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

Tests on the reproductive effects on avian wildlife are not normally required and would be only after considering avian wildlife acute oral and dietary toxicity, laboratory animal toxicity, environmental chemistry and registration and use data. Since only avian wildlife dietary data has been provide and no other information has been provided or forthcoming, no definite requirement for an avian wildlife repoduction test can be made at this time. However, such a test may be required of metolachlor in the future.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor might be hazardous to the reproductive success of avian wildlife and endanger the survival of local populations.

## AVIAN - Simulated and Actual Field Condition Testing for Birds

No data was provided on the effects of metolachlor on avian wildlife under simulated or actual field conditions.

No information on the toxicity of metolachlor to laboratory animals and livestock, either acute, subacute, chronic or reproductive, has been forthcoming.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

Simulated and actual field tests for avian wildlife are not normally required and would be only after considering avian wildlife toxicity, laboratory animal and livestock toxicity, environmental chemistry and registration and use data. Since only avian wildlife dietary toxicity data has been provided and no other information has been provided or forthcoming, no definite requirement for simulated and actual field tests can be made at this time. However, such tests may be required of metolachlor in the future.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor might be hazardous to local populations of avian wildlife.

## MAMMALIAN - Acute Toxicity

No data was provided on the effects of metolachlor on mammalian wildlife

No information on the toxicity of metolachlor to laboratory animals and livestock, either acute, subacute, chronic or reproductive, has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

Tests on the effects on mammalian wildlife are not normally required and would be only after considering information on laboratory animal and livestock toxicity and registration and use data. Since no such information has been forthcoming, no definite requirement for mammalian wildlife toxicity tests can be made at this time. However, such tests may be required of metolachlor in the future.

In the absence of such data and in the absence of primary information for consideration on registration and use data, it can only be assumed that metolachlor is acutely hazardous to wildlife.

## MAMMALIAN - Simulated and Acutal Field Condition Testing for Mammals

No data was provided on the effects of metolachlor on mammalian wildlife under simulated or actual field conditions.

No data was provided on the effects of metolachlor on mammalian wildlife.

No information on the toxicity of metolachlor to laboratory animals and livestock, either acute, subacute, chronic or reproductive, has been forthcoming.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

Simulated and actual field tests, for mammalian wildlife are not normally required and would be only after considering avian wildlife toxicity, mammalian wildlife toxicity, laboratory animal and livestock toxicity, environmental chemistry and registration and use data. Since only avian wildlife dietary toxicity data has been provided, and no other information has been provided or forthcoming, no definite requirement for simulated and actual field tests can be made at this time. However, such tests may be required of metolachlor in the future.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor might be hazardous to local populations of mammalian wildlife.

## INVERTEBRATES - Earthworms

No data has been provided on the effects of metolachlor on earthworms.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to earthworms.

## INVERTEBRATES - Pollinating Insects

No data has been provided on the effects of metolachlor on pollinating insects.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to pollinating insects.

## INVERTEBRATES - Predators and Parasites

No data has been provided on the effects of metolachlor on predatory and parasitic invertebrates.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to predatory and parasitic invertebrates.

## INVERTEBRATES - SOIL INVERTEBRATES

No data has been provided on the effects of metolachlor on soil invertebrates.

No information on the environmental chemistry of metolachlor indicating its fate, degradation, persistence and movement has been forthcoming.

No information on the registration and use of metolachlor indicating its formulations and use patterns, application rates, timing and techniques and usage involving poundage, acreage and regional use has been forthcoming.

In the absence of such data and in the absence of primary information for consideration on environmental chemistry and registration and use data, it can only be assumed that metolachlor is hazardous to soil invertebrates.

## General Discussion of Effects on Non-Target Organisms

(Nothing can be discussed at this time until primary information for consideration on environmental chemistry and registration and use data is forthcoming.)

## Bibliography of Effects on Non-Target Organisms

Truslow Farms Incorporated (1974a) Eight-Day Dietary $LC_{50}$-- Mallard Ducks Technical CGA-24705: Project No. 108-111. Received Sept. 26, 1974 under 5G1553 (Unpublished report prepared for GIBA-GEIGY Corp., Greensboro, N.C.; CDL:112840-0).

Truslow Farms Incorporated (1974b) Eight-Day Dietary $LC_{50}$-- Bobwhite Quail Technical CGA-24705: Project No. 108-110. Received Sept. 26, 1974 under 5G1553. (Unpublished report prepared for CIBA-GEIGY Corp., Greensboro, N.C.; CDL:112840-P).

Truslow Farms Incorporated (1976). Acute Oral $LD_{50}$-- Mallard Ducks, CGA-24705 Technical, Final Report: Project No. 108-117. Received No. 23, 1976 under Application for New Registration. (Unpublished report prepared for CIBA-GEIGY Corp., Greensboro, N.C.; CDL226955.