101201

(11)

EEE BRANCH REVIEW

DATE: IN 9/29/78 OUT 8/23/79 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 3125-280

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED _____

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCTS(S): (I,) D, H, F, N, R, S _____

DATA ACCESSION NO(S). (8F2116, 097312)

PRODUCT MGR. NO. 16

PRODUCT NAME(S) Monitor

COMPANY NAME Mobay Chemical Corp; Chemagro Agric. Div.

SUBMISSION PURPOSE Avian Reproduction Studies Validation;
Incremental Risk Assessment

CHEMICAL & FORMULATION Monitor^{R} 4 Liquid Concentrate
o,s-Dimethyl phosphoramidothioate...40%
Inerts.....60%

4 lbs a.i./gal

Environmental Safety Review

100 Product Name

Monitor^{R}

100.1 Purpose of Submission

Submission of avian reproduction studies and request for amended registration (incremental risk) for use of Monitor 4L (3125-280) on sugar beets and peppers.

100.2 Formulation Information

Monitor^{R} 4 Liquid Insecticide

0,S-Dimethyl phosphoramidothioate...40%

Inerts 60%

4 lbs a.i./gallon

100.3 Application Methods, Directions, Rates

For the amended registration and the additional uses, sugar beets (California and Arizona) and peppers, application rates of 1/2 to 2 pints (0.25 - 1.0 lbs a.i.) per acre are indicated.

Allow a spray interval of 14 and 7 to 10 days for sugar beets and peppers, respectively. For sugar beets, do not make more than 6 applications per season and not within 30 days of harvest. For peppers, do not apply more than 3 to 10 times, depending upon state or type of pepper. Do not make applications to peppers during November thru February.

101-102 See previous reviews

103.0 Toxicological Properties

103.1 Mammals - Taken from N. Cook Review. (9/7/78)

Rat $AOLD_{50}$ = 13 mg/kg

103.2 Birds

Bobwhite'	$AOLD_{50}$ = 8.0 mg/kg	Supplemental
	LC_{50} = 57 ppm	"
	LC_{50} = 47 ppm	"
Mallard'	$AOLD_{50}$ = 29.5 mg/kg	"
	LC_{50} = ≈1000 ppm	"

Dark-eyed[2] Junco	$AOLD_{50}$ = 8.0 mg/kg	
Bobwhite[3]	-	Reproductive impairment occurs at 5 ppm and higher. No effect level is between 3 and 5 ppm
Mallard[3]	-	No reproductive impairment up to and including 15 ppm technical Monitor[R].

103.3 Fish / Aquatic Invertebrates

Rainbow Trout[1]	96-hr LC_{50} =	51 ppm Supplemental
Rainbow Trout[4]	"	1.28 ppm
Bluegill[1]	96-hr LC_{50} =	46 ppm Supplemental
Bluegill[4]	48-hr LC_{50} =	27 ppb Invalid

1. Data Evaluation Records with a discussion of procedures and validation rationale are available in N. Cook's review of 8/30/78, EEB.

2. From D. McLane's review of 2/9/79

3. Data Evaluation Records with a discussion of procedures and validation rationale are available in R. Stevens's review of 8/23/79, EEB.

4. Monitor 75.3%; J. McCann, ABL, Beltsville, 1977.

104.0 Hazard Assessment

104.1 Discussion

Monitor[R] 4 is a liquid insecticide for multiple application to cotton, broccoli, brussel sprouts, cabbage, cauliflower, and potatoes. A request for an amended registration to include application to sugar beets in California and Arizona and to peppers is submitted. Application rates vary from 1/2 to 2 pints (0.25 to 1.0 lbs a.i.) per acre depending upon pest. Immediately upon application, the residue profile in

certain areas is expected to be:

		Monitor Residues (ppm)					
lbs/A	Soil Surface	Water 6"	Water 10'	Water Runoff	Weeds Seeds	Short Grasses	Long Grasses
0.25	5.5	.184	.009	$\leq$ .009	14.5	60	27.5
0.5	11.0	.367	.020	$\leq$ .020	29.0	120	55
1.0	22.0	.734	.037	$\leq$ .036	58.0	240	110

The above estimated residues are based on a single application of Monitor. Relative to repeated applications, accumulated residues in or on feed items are not expected to be much more than those reported above for single applications (ie. 1.0 #a.i./A every 7-14 days, 6X, with a 1/2 life of approx. 3.5 days and an initial expected residue of 10 ppm = 10-13 ppm for mult-application vs. 10 ppm for single application).

104.2. Likelihood of Exposure to Non-Target Organisms

See previous reviews for concerns regarding the likelihood of exposure and adverse effects of Monitor^R to non-target organisms. Some concerns resulting from the use of Monitor^R as requested in the present submission, from the standpoint of incremental risk, are reported here.

The proposed uses provide for potentially serious hazards to various avian species found in the areas to be treated (pheasant, doves, sparrows, swallows, and songbirds). Although all of the avian studies, reproduction excluded, submitted thus far are unacceptable for registration, they are adquate for hazard assessment and do lend themselves to the following discussion.

Available data indicate that the LC_{50} for bobwhite quail is approximately 47 to 58 ppm and that the LD_{50} for bobwhite and mallard is 8 and 30 mg/kg, respectively. Reproductive impairment occurred in bobwhite at 5ppm and higher. Using the residue assumptions discussed above potentially serious acute, subacute, and chronic hazards exist.

Average residue values for avian feed items at all rates of application can approach or exceed the LD_{50} or LC_{50} values for some avian species, particularly smaller avian species (robins, doves, sparrows, wrens), and definitely exceeds the classification/ hazard criterion of 1/5th the LC_{50} for all avian species reported. The levels at which reproductive impairment in bobwhite occurred, 5 ppm and up, are also exceeded by average expected residues anticipated on various avian feed items (pods, seeds and insects).

The potential hazard to aquatic non-target organisms is difficult to assess because conflicting data puts the rainbow trout 96-hour LC_{50} values at 1.28 ppm in one study (screening study) and 51 ppm in another (supplemental). Also, no acceptable aquatic invertebrate study was found. Further research is required to better determine the potential hazards to non-target aquatic organisms. Initially, the acute bioassays need to be clarified via further testing (bluegill and rainbow 96-hour LC_{50}, and daphnia 48-hour LC_{50}) and/or additional information on previously submitted data. Secondly, residue analysis of and/or further non-target organisms testing may be required.

Consequently, at present the Ecological Effects Branch anticipates that birds, primarily, will be exposed to average residues likely to cause acute and/or reproductive effects during a significant part of these crops' treatment periods.

105.0 Conclusions

The Ecological Effects Branch (EEB) has completed its review of the proposed addition of two uses, sugar beets and peppers, for Monitor^R 4. EEB concludes that conditional registration actions for these new uses provide for a significant increase in unreasonable adverse effects to non-target avian species. With the addition of new data (reproduction submitted here-with) we specifically feel these additional uses provide for significant increase in exposure and risks to non-target populations that are already at risk from current Monitor^R use.

Therefore, EEB recommends against contitional registration actions for the two new uses, sugarbeets and peppers, for Monitor^R 4.

The reproduction studies (103 above) have been reviewed and are considered acceptable for registration. They are on file under pesticide petition 8F2116 (097312). Data Evaluation Records are available upon request to EEB.

Richard R. Stevens
Biologist, Section III
EEB/HED

August 23, 1979

David L. Coppage
Head, Section III
EEB/HED

9/24/79

Clayton Bushong
Chief, Ecological Effects Branch
Hazard Evaluation Division

9/28/79