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To: Product Manager Garner (23)
TS-767

Through: Dr.Gunter Zweig, Chief
Environmental Fate Branch

From: Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 100-ANU

Chemical: metolachlor[2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide] and propazine[2-chloro-4,6-bis (isopropylamino)-s-triazine]

Type Product: Herbicides

Product Name: Milocep

Company Name: CIBA-GEigy

Submission Purpose: New product

ZBB Code: Sec. 3(c)(7) Conditional Registrtion

Date in: April 3, 1979

Date Completed: May 4, 1979

Deferrals To:

Ecological Effects Branch

Residue Chemistry Branch

Toxicology Branch

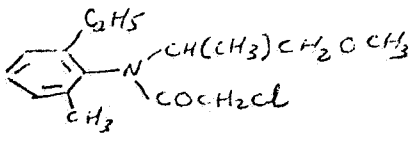
1.0 Introduction

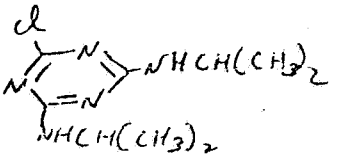
1.1 This submission is for conditional registration of MILOCEP herbicide for use on milo and sweet sorghum to control weed.

1.2 MILOCEP's active ingredients (5 lbs ai/gal) are: 36.3% (3.33 lbs ai/gal) metolachlor = 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide, and

18.7% (1-67 lbs ai/gal) propazine =2-chloro-4,6-bis (isopropyl-amino-s-triazine)

1.3 Chemical structure





Metolachlor (Dual) Propazine (Melogarde)

1.4 Refer to past reviews of MILOCEP dated January 19, 1979, EPA File No. 100-EUP-62.

A host of environmental chemistry data reviews of metolachlor are on file for other field-veg crop uses including sorghum. Also on file is a favorable review of propazine for NR use on sorghum grain; review dated January 30, 1968.

2.0 Directions for Use

2.1 Apply MILOCEP in water or in fluid fertilizer in a minimum of 15 gallons of spray mixture per acre using conventional ground spray equipment. Rinse sprayer thoroughly with clean water immediately after use.

2.2 Apply MILOCEP only when the sorghum seed has been treated by the seed company with Concep at 8 ozs. per 100 lbs. of seed.

2.3 Apply MILOCEP to soil either: 1) preplant incorporated within 14 days before planting and incorporate into the soil top 2 inches, or 2) pre-emergence at planting, or after planting but before weeds or sorghum emerge, at the appropriate following rate.

Soil Texture		Broadcast rate per-acre
Coarse:	Sand, Loamy Sand	Do not use
	Sandy loam	3-3.5 pts.
Medium:	Loam, silt,	3.5-4.5 pts.
	Silt loam	"

Fine:	Silty clay loam	4.5-5 pts.
	Sandy clay loam	4.5-5 pts.
	Clay loam	4.5-5 pts.
	Sandy clay	4.5-5 pts.
	Silty clay	4.5-5 pts.
	Clay	4.5-5 pts.

Precaution: Application on highly alkaline soils or on eroded areas where calcareous subsoils are exposed may cause crop injury.

2.4 Rotational Crops: a) emergency replant = if sorghum treated with MILOCEP is lost, sorghum may be replanted immediately using Concep-treated seed. Do not make a second broadcast application of MILOCEP. b) Corn, sorghum, or soybeans may be planted the following year. All other crops may be planted 18 months after application.

2.5 Precautionary Statements:

- Keep out of any body of water
- Do not apply where runoff is likely to occur.
- Do not apply when weather conditions favor drift from areas treated.
- Do not contaminate water, food, or feed by storage or disposal.
- Do not reuse empty containers. Open dumping is prohibited.

3.0 Discussion of Data

3.1 Metolachlor Plus Propazine Tank Mix Soil Dissipation (report #ABR-78037) Vol. 8 of 8, EPA File No. 100-ANU.
L. G. Ballantine and M. M. Herman, April 27, 1978.

Procedure:

Field studies were conducted on small plots of sandy loam soils in California and Alabama. Soil characteristics are:

Calif. sandy loam: pH=6.4, OM=0.8%, sand=75.2%, clay=6.4% silt=18.4%, CEC=3.8, Bulk density=1.54g/cm

Alab. sandy loam: pH=6.4, OM=1.4%, CEC=6.1, sand=67.2%, silt=22.8%, clay=10.0%, Bulk density=1.50g/cm

The herbicide's active ingredients were applied individually and as a tank mix to plots at maximum label specified rates of 2.0 lbs ai/A, and 1.6 lbs. ai/A, and for metolachlor and propazine, respectively. Soil samples collected from 0-6" depth at 0,1,2, and 4 months intervals at both locations.

Analytical Methodology:

The analysis for metolachlor and propazine was conducted according to the following methods.

(a) Analysis for Metolachlor : Method Nc. AG-303.
"Gas Chromatographic Residue Determination of CGA-24705 (metolachlor) in Soil."
S. Miyazaki, 10/15/76

Metolachlor residues in soil were extracted by refluxing for 2 hrs. with 10% water in methanol. After filtration, an aliquot of the methanol extract was diluted with water and partitioned with hexane. The hexane phase evaporate is cleaned up by a deactivated alumina column. After rinsing, metolachlor is elutriated with hexane-ethyl ether (2:1) and evaporated to dryness.

For GC analysis, sample residues are dissolved in methanol and CGA-24705 (or metolachlor) residues are detected by GC in the halide specific mode. The limit of detection of this method is 0.05ppm.

(b) Analysis for Propazine : Report No. GAAC-69014.
"Quantitative Determination of Triazine Herbicides in Soils by Chemical Analysis"
R.T. Murphy March 18, 1969

Soil samples were extracted by refluxing for 1 hr. with 10% water-acetonitrile. After filtration, an aliquot of the methylene chloride extract was partitioned and cleaned-up by use of an alumina column. Determination of the triazine was done by GC using a chloride sensitive titration cell.

Results

California sandy loam soil : Preplant incorporated application

Compound applied	Rate (lb/A)	Intervals(days)	Residue ppm metolachlor	Propazine
Metolachlor	2.0	0	0.54	-
		31,64,125	<0.05	
Propazine	1.6	0		0.72
		31		0.15
		64,125		<0.05
Metolachlor+ Propazine	2.0+1.6	0	0.88	0.36
		31	0.21	0.10
		64,125	<0.05	<0.05

Alabama sandy loam : Pre-broadcast application.

Compound	Rate (lb/A)	Intervals(days)	Residue ppm metochlor	Propazine
Metolachlor	2.0	2	0.39	
		31	0.17	
		62	0.12	
		119	0.08	
Propazine	1.6	3		0.66
		31		0.15
		62		0.06
		119		<0.05
Metolachlor+	2.0+	3	0.60	0.74
Propazine	1.6	31	0.24	0.18
		62	0.31	0.10
		119	0.08	0.06

Conclusion

Combination of metolachlor and propazine dissipates to below detectable limits (<0.05ppm) within 2 months in California sandy loam soil, and within 4 months in Alabama sandy loam soil. The mixture does not change dissipation.

4.0 Conclusion

4.1 There is no evidence of increased risk or persistence of metolachlor or propazine when used in prepackaged combination.

5.0 Recommendation

5.1 The proposed use of prepackaged formulation of metolachlor (Dual) and propazine (milogarde) would not increase the risk of unreasonable adverse effects on the environment provided that specified label conditions are followed for rotational crops.

5.2 There is sufficient environmental chemistry data on file to support conditional registration of this product.

Madeline Nawar
Rev. Sec. I
Madeline Nawar 6/7/79