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DEC. 16 1980

~~PROPRIETAR~~

To: Henry Craven, Chief
Review Section 4, EEB

Thru: Chief, Ecological Effects Branch
Hazard Evaluation Division

Thru: Chief, Review Section No.1 SMC
Environmental Fate Branch, HED

From: Review Section No. 1
Environmental Fate Branch, HED JCR

Attached find environmental fate information and/or EEC(s) requested for:

Chemical: metolachlor

Product Name: Dual 8E

Use Pattern for EEC Calculations: corn/soybeans

Date in: 12/5/80

Date out: DEC. 16 1980

EEC/EPP#: 42

cc: Lionel Richardson, Chief
Review Section 3, EFB

The area choosen for this calculation was Watershed #1 in Treynor, Iowa where severe runoff events are known to occur. The drainage basin is 74.5A in size, and corn or soybeans are grown on 60% of the area at any given time. Dual is currently used in this watershed at an application rate of 3 lb ai/A.

For calculation purposes, we have placed in this watershed a pond of 1 A surface area and an average depth of 2.5 ft. The following assumptions were made:

1) The herbicide was surface applied, and a severe runoff event occurred soon after application.

2) Maximum "edge of field" surface runoff (defined as water plus associated eroded soil) was one inch, removing 5% of the metolachlor applied to areas immediately adjacent to the pond.

3) For the entire watershed, the average amount of runoff and the percent of applied chemical which reaches the pond were assumed to be equal to $CA^{-0.2}$, where C is a constant and A is the basin area. This is the sediment delivery ratio equation (1), which relates the amount of runoff sediment reaching a given point to the area of the drainage basin where the runoff event occurs. While not directly applicable to chemical movement for relatively water soluble pesticides like metolachlor, there is evidence (2) that, even for completely soluble compounds, the percent of applied chemical removed from treated fields via runoff is inversly proportional to field size. C was assumed to be the maximum, "edge of field" values: 5% for metolachlor runoff and one inch for the runoff itself. Using the above equation, we calculate that for the entire watershed, 2.11% of the metolachlor applied will reach the pond in a severe, worst case, runoff event which produces an average of 0.422 inches of runoff from the total drainage basin.

4) The pond hydrosoil contains 2.5% organic matter, the average value for the soil in this watershed. The Kd value for this hydrosoil was estimated from the water solubility (530 ppm) according to Chiou (3).

5) Calculations were performed with the HR259 program (an updated version of the HR59EEC program described in Addendum I). A summary printout is attached.

Results. The maximum EEC in the pondwater under the conditions delineated above is 0.2 ppm. The depth of the pond after the severe runoff event is slightly over 5 ft.

References

1) Control of Water Pollution from Cropland, Vol. II, ORD-EPA/ARS-USDA, June, 1976.

2) Trichell, D.W., et al. Weed Sci.16: 447 (1968).

3) Chiou, C.T., et al. Science 206: 831 (1979).

Reinert

ENTER	SOL
530.	SOL
ENTER	MW
283.	MW
ENTER	%OM
2.5	%OM
3.675749659	KD*
3.	LB/A
44.7	A TR
2.11	% RO
0.	D LD
74.5	B SZ
0.422	R/D
1.	H2OA
2.5	DPTH
3.675749659	KD*
3.	LB/A
44.7	A TR
2.11	% RO
0.	D LD
74.5	B SZ
0.422	R/D
1.	H2OA
2.5	DPTH
2.317333163	WC-W
.5121768373	WC-H
.6111895433	EECH
.1662761613	EECW
5.123769485	DPTH