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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

Subject: NM-870006. 24(C) Special Local Needs Registration for Trifluralin (Treflan® TR-10, EPA Reg. No. 1471-143) on Alfalfa.
No Acc. Number / No MRID Number
RCB #2460

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The New Mexico Department of Agriculture recently (4/21/87) issued a 24(C) Special Local Needs Registration authorizing an additional application of the herbicide trifluralin (Treflan® TR-10, 10% a.i. granular formulation) to alfalfa to control various weeds. Treflan is produced by Elanco Products Company, a Division of Eli Lilly and Company.

Tolerances are established for residues of the herbicide and plant growth regulator trifluralin (alpha, alpha, alpha-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine) in or on numerous commodities ranging from 0.05(N) ppm for root crop vegetables and wheat straw to 2 ppm for mung bean sprouts, and include 0.2(N) ppm for alfalfa hay. A Registration Standard has been completed for trifluralin (Residue Chemistry Chapter, 7/3/85).

Treflan® TR-10 is currently registered for application to established alfalfa stands at a broadcast rate of 7 1/2 lbs. product (0.75 lbs.a.i.)/A on coarse soils and 10 lbs. product (1.0 lbs.a.i.)/A on fine soils. Incorporation equipment should be used which will ensure thorough soil mixing with minimal

damage to the established alfalfa. Application should be made only in areas receiving less than 20 inches average annual rainfall.

The proposed use includes 2 applications to established alfalfa at 20 lbs. product (2.0 lbs.a.i.)/A for all soil types (2-2.6 times the current application rate plus an additional application at 2-2.6 times the current rate). The first application can be made during dormancy or throughout the growing season immediately after cutting, and the second application would be made after at least 2 cutting cycles or 60 days of active alfalfa growth. Treflan® TR-10 can be activated by rainfall, overhead sprinkler irrigation, flood irrigation or mechanical incorporation.

Residue data submitted with this 24(C) were generated using Method AM-AA-CA-RO23-AA-755. This method is similar to PAM II, Method II. A 25 gram sample of the raw agricultural commodity is extracted with methanol, and the extract is mixed with saline solution and partitioned with dichloromethane. The organic layer is then dried over anhydrous sodium sulfate and evaporated to dryness. Following florisil column chromatography, analysis is accomplished by GLC using an electron capture detector. The limit of detection for this method is 0.01 ppm. Recoveries from alfalfa hay at 0.04 ppm fortification levels ranged from 77-87% (average = 83%).

Residue data are summarized below. Alfalfa fields were treated twice with Treflan® TR-10, once at dormancy and a second time after the first cutting (for 2 lbs.a.i./A application rates) or after the second cutting (for 3 lbs.a.i./A application rates). Applications were made in coarse, medium and fine soils. The method of application (aerial vs. ground) was not specified, nor were the total volumes applied per acre provided. A total of 5 samples were obtained, all from California. Actual values are shown together with values corrected for 10% and 20% moisture contents. Alfalfa hay used for feed generally contains 8-16% moisture.

Application Rate (lbs.a.i./A)	Percent Moisture	PHI (days)	Residue, corrected (ppm)			
			Actual	10%	20%	Control
3 + 3	16.1	54	0.087	0.083	0.093	0.022
2 + 2	6.9	28	0.036	0.031	0.035	0.018
2 + 2	6.7	25	0.074	0.063	0.071	0.015
2 + 2	9.2	30	0.125	0.110	0.124	0.019
2 + 2	18.8	37	0.046	0.045	0.051	0.016

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The Trifluralin Registration Standard makes the following statements regarding the adequacy of the residue data for applications of trifluralin to alfalfa at the current lower registered application rates (Residue Chemistry Chapter, p.178).

> The available data are insufficient to determine the maximum level of residues in or on alfalfa hay or in or on alfalfa forage (as a member of the now-obsolete forage legumes crop group) that could result from registered uses. Therefore, the following are required:
>
> > Residues in or on alfalfa forage and alfalfa hay (dried to 10% water content) following a single postemergence application to established alfalfa with a G and an EC formulation (in separate tests) at 1 lb.a.i./A. Samples must be obtained on the day of treatment and at regular intervals thereafter to elucidate the pattern of residue decline (this information is needed to determine the necessity of a PHI or pregrazing interval).
> >
> > Data reflecting residues in or on seed processed from alfalfa hay bearing measurable, weathered residues (use exaggerated rates, if necessary, to obtain measurable residues). If the concentration of residues in alfalfa seed is higher than in hay, an appropriate feed additive tolerance must be proposed.

The Registration Standard also concludes that the metabolism of trifluralin in plants is not adequately understood because residues have not been adequately characterized in plant folliage following soil application, and because no submitted metabolism study employed direct foliar application.

Additionally, the metabolism of trifluralin in poultry (including eggs) and ruminants (including milk) is not adequately understood (Trifluralin Registration Standard, Residue Chemistry Chapter, p. 17). Alfalfa forage and seed can comprise a large part of the diets of animals including poultry and ruminants.

The data required in the Registration Standard regarding plant and animal metabolism and field trials for application of trifluralin to alfalfa have not been provided.

Conclusions

(1) The metabolism of trifluralin in plants is not adequately understood because residues have not been adequately characterized in plant foliage following soil application, and because no submitted metabolism study employed direct foliar applications.

(2) The metabolism of trifluralin in animals is not adequately understood. Alfalfa forage and seed are major feed items for many animals including poultry and ruminants.

(3) The submitted residue data are not adequate to show that the 0.2 ppm tolerance for residues of trifluralin in alfalfa hay will not be exceeded as a result of the proposed use for the following reasons.

(a) An inadequate number of samples were taken to show the possible range of residues which might be expected from the proposed use.

(b) Samples were not taken at a range of PHIs which would elucidate the pattern of residue decline (as described in the Registration Standard). No pattern of residue decline with PHI can be determined from the submitted data.

(c) Analysis of the submitted data indicate that residue levels in alfalfa could approach or exceed the established tolerance of 0.2 ppm as a result of the proposed use. Additional residue data would have to be submitted (preferably from New Mexico) to show that the tolerance would not be exceeded.

(d) The proposed use calls for the second application to be made after at least 2 cutting cycles or 60 days of active alfalfa growth. Only 1 sample submitted reflects this application pattern (but at an exaggerated rate of 3 + 3 lbs.a.i./A). Data should be submitted which reflect this use or which show a pattern of residue decline indicating that residues in or on alfalfa hay will not exceed the 0.2 ppm tolerance under the proposed use conditions.

(e) The proposed use includes aerial applications. No data were submitted for aerial applications of Treflan® TR-10 to alfalfa.

(f) The adequacy of the residue data can not be determined until the required metabolism studies are submitted delineating the residue of concern in plants.

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(4) No data have been presented for the raw agricultural commodities alfalfa seed and alfalfa forage, both of which are used extensively as animal feed.

Recommendations

RCB recommends against this 24(C) Special Local Needs Registration for the reasons discussed in (1) - (4) above.

cc: Trifluralin (Treflan®) S.F., R.F., Reg. Std. S.F., Circu, M. Metzger, PMSD/ISB
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