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

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM September 27, 1989

SUBJECT: Avermectin Section 18's

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The Ecological Effects Branch has reviewed numerous Section 18's for use of Avermectin on various crops. The following reviews are in the Branch File:

REG NO	CROP / SITE	REVIEW DATE
89-FL-20	Strawberries	9-11-89
89-TX-22	Celery	8-24-89
89-AZ-05	Head lettuce	8-10-89
89-CA-10	Strawberries	2-14-89
89-ID-07	Pears	5-17-89
88-CA-20	Pears	5-17-88
88-WA-10	Pears	3-30-88
88-OR-06	Pears	2-25-88
88-FL-05	Tomatoes	3-08-88
84-FL-14	Ornamentals	7-16-84

Other Section 18 reviews are currently underway.

Avermectin is considered hazardous to mammals and aquatic invertebrates when used as prescribed under these Section 18's. However, in most of these reviews, these hazards have not been considered unacceptable because they represent limited exposure and of short duration (i.e. few states and few crops and only one or two years). It is EEB's position that for these

aforementioned Section 18's (those completed and those in EEB now), the risks are generally considered acceptable[1].

However, with regard to future Section 18's, there are several factors that require consideration:

1. Since the full registration of Avermectin on fire ants and ornamentals (both considered to represent minimal risk because of various mitigating factors) and then citrus and cotton, the number of Section 18's have been increasing steadily. What were once a few uses in a few States are now several uses involving numerous States. This represents a substantial increase in potential exposure and is reaching the point of being an unacceptable hazard to nontarget organisms (mammals and aquatic invertebrates);

2. These emergency exemption uses also represent a substantially greater exposure potential because they typically allow multiple treatments per year (10) at short between treatment intervals (7 days). This is especially critical for Avermectin, because one of its mitigating characteristics has been its short half-life. With only one treatment every few months (as with the fire ant use) to 3 treatments every 21 days (as is suggested for citrus and cotton), the potential for long-term exposure has been limited. The EEB takes this into consideration in their risk assessment. However, the repeated exposure to Avermectin, anticipated from use under these Section 18's, represents greater exposure potential and is expected to result in serious adverse effects to mammals and aquatic invertebrates.

3. Since the first Section 18's, in 1984 and early 1988, the EEB has steadily built a greater database of information showing that Avermectin is more toxic to certain organisms than originally thought. This information includes:

A. A shrimp LC50 of 0.022 ppb showing Avermectin to be much more acutely toxic to shrimp, and possibly other aquatic or estuarine invertebrates, than previously thought.

B. A shrimp life cycle test showing a NOEL of 0.0035 and a LEL of 0.0093 ppb; and

C. Studies with mammals showing mortality to mice at extremely low levels (e.g. 0.075 mg/kg/day after 3-4 days of dosing).

4. While registrations for fire ants, ornamentals, citrus and

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[1] Because of the extreme toxicity of avermectin, the EEB is recommending buffer zones for all water bodies to protect aquatic and estuarine invertebrates.

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cotton have been granted, EEB has only concluded safety for fire ants and ornamentals. The citrus and cotton registrations were considered hazardous to mammals and aquatic invertebrates. These registrations were only granted on the conditions that the registrant perform field testing to address these concerns and show that Avermectin can be used safely. The registrant has continued to challenge these requirements, and has, along with their disagreement with EEB's use of data, proposed that they may alter their citrus and cotton labels in the following ways:

A. Limit treatment of cotton to areas West of the Mississippi River, thus presumably limiting potential transport via runoff;

B. Specify on the label for both cotton and citrus that the maximum number of treatments be limited to 3, with a minimum "between treatment" interval of 21 days; and

C. Include a requirement for a 100 yard buffer from all bodies of water.

The EEB has not yet determined the effect of these proposed label changes on the need for testing, since they have not been formally submitted. Although, reducing the number of treatments per season and specifying the minimum interval of 21 days certainly will reduce the potential for chronic or repeated acute exposure to both mammals and aquatic invertebrates.

If field testing requirements are waived based entirely on label limitations that reduce exposure potential, EEB will not have the information necessary to evaluate increased numbers of treatment and frequency of treatment as per the Section 18 uses.

Conclusion

For Section 18's previously reviewed (see list above) and those currently in the Branch, EEB concludes that risk to nontarget organism is acceptable, provided certain use restrictions are included on the label (aquatic buffer zones).

However, based on the following information, the EEB is prepared to assume a more rigid position concerning future Section 18's with Avermectin.

1. The Section 18's being requested typically entail many treatments per season (10) and short between treatment intervals (7 days);

2. The Section 18's are beginning to represent a substantial increase in exposure when compared to the currently registered uses of Avermectin; and

3. The Section 18's represent exposure to many different habitats across the country compared to the current Section 3 registrations.

The EEB concludes from existing data that the use of Avermectin more than 3 times per season and at intervals of 14 days or less is likely to result in unacceptable risk to nontarget organisms including mammals and aquatic invertebrates. This includes both Section 3 and Section 18 registrations.

If you have any questions, please call Dan Rieder.