

US EPA ARCHIVE DOCUMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Phosmet
2188

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SUBJECT: PP# 9F2188 and FAP# 9H5211. (Imidan in/on Cottonseed and refined cottonseed oil.

FROM: P. V. Errico, Chemist, Residue Chemistry Branch, HED (TS-769)

TO: Insecticide-Rodenticide Branch (T. Gardner) (TS-767) & TOX (TS-769)

Thru: Acting Chief, Residue Chemistry Branch, HED (TS-769)

Stauffer Chemical Company has proposed a tolerance of 0.1 ppm tolerance in/on cottonseed and a 0.2 ppm food additive tolerance in refined cottonseed oil for the combined residues of the insecticide Imidan [N-(mercaptomethyl)phthalimide S-(O,O-dimethylphosphorodithioate), and its oxygen analog, N-(mercaptomethyl)phthalimide S-(O,O-dimethylphosphorothioate) (Imidoxon).

A number of tolerances have already been established for Imidan and its oxygen analog, Imidoxon in/on many r.a.c.'s. Nuts, many fruits, some forages and hays, and several vegetables have tolerances ranging from 0.1 ppm to 40 ppm.

Conclusions

1. There are adequate analytical methods available for the enforcement of the proposed tolerance.
2. The residues of concern are the parent, Imidan, and its oxygen analog, N-(mercaptomethyl)phthalimide S-(O,O-dimethyl phosphorothioate).
3. The submitted data will support the proposed residue tolerance for residues of Imidan and its oxygen analog, Imidoxon, at 0.1 ppm in/on cottonseed and 0.2 ppm in refined cottonseed oil.
4. Included on the label is the restriction, "do not graze or feed forage to livestock." No tolerance is needed for forage.
5. Residues in/on cottonseed hulls, meal, or soapstock will not exceed the proposed tolerance on cottonseed. A food additive tolerance is not needed.
6. The proposed use falls into category 3 of Sec 180.6(a) with respect to meat, milk, poultry and eggs.

TOX and EEE considerations permitting, we recommend for the proposed tolerance of 0.1 ppm in/on cottonseed and 0.2 ppm in refined cottonseed oil.

Detailed Considerations

Proposed Use

For control of over-wintering generations of Boll Weevil, make 2 applications of 0.25 to 0.5 lb a.i./acre. The first application should be made at the 1/2 grown square stage and the second application 5-7 days later. Use the higher rate for heavy infestations. Do not graze or feed forage to livestock.

Formulation

The product to be used is Imidan 50-WP. The inert ingredients are cleared for use under Sec. 180.1001.

Nature of the Residue

There is no metabolism study submitted with this petition. Metabolism studies submitted with previous petitions have indicated Imidan is absorbed and translocated in plants. (A. Smith, PT# 3E1328). The parent compound is partially oxidized to its oxygen analog, (Imidoxon), and both compounds are hydrolyzed, in a stepwise process, to hydroxymethylphthalimide, phthalimide, phthalamic acid and phthalic acid. Benzoic acid, p-hydroxybenzoic acid and benzimide may also occur with subsequent decarboxylation. Presently, TOX has expressed no concern for these metabolic products.

The phytoxic metabolism of Imidan is understood adequately to translate previously submitted data for Imidan metabolism to cottonseed. Residues of concern are Imidan and its oxygen analog, Imidoxon.

Analytical Method

The analytical method described in this petition is the same as the enforcement method in PAM II (Stauffer's method no. WRC 73-43, 6/19/73). A representative sample is blended with benzene for 5 minutes at moderate speed, then an aliquot representing 5 to 20g of crop is adjusted to 40 ml, 20 ml of chloroform, 1 drop of water and 1.1g of acid-washed Fuller's earth are added. Using a 0.45 micron millipore filter, the suspension is washed 6 times with 2 ml portions of chloroform. The washings are taken to dryness, resuspended in 0.5 to 2.0 ml of acetone, subjected to acetonitrile-hexane partitioning, and, after the solution is taken to dryness, the residue is taken up in 0.5 to 2.0 ml of acetone. Analysis of the sample is performed using gas chromatography and the parent and its oxygen analog are quantified using a flame ionization detector. Adequate methodology is available to enforce the proposed tolerance.

Residue Data

Residue data for Imidan and its oxygen analog Imidoxon in cottonseed, cottonseed hulls, crude oil, refined oil, refined bleached oil, refined bleached hydrogenated oil, refined bleached hydrogenated deodorized oil, meal, and soapstock have been submitted with this petition. Thirteen studies from Texas, Mississippi, and Louisiana were included. The cottonseed processing study was performed on samples from Texas. All applications on cotton, except an air application in one Texas study, were performed using ground equipment.

Data with application rates of 0.25, 0.5 and 1.0 lb a.i./A, using 1 to 10 treatments with an 18 to 128 day PHI were submitted. This is reflective of the proposed use. Except for one study reporting 0.05 ppm Imidan, no detectible residues (<0.05 ppm) were reported for the parent compound and its oxygen analog. Thus, the data will support the requested tolerance of 0.1 ppm in/on cottonseed.

In the processing study, cottonseed samples were treated with 8 applications of 0.5 lb a.i./acre using ground equipment. Residues of pesticide from the cottonseed processing study are as follows:

<u>Samples</u>	<u>Imidan</u>	<u>O-Analog</u>
Hulls	<.05	<0.05
Crude Oil	0.50	<0.05
Refined Oil	0.16	<0.05
Refined, Bleached oil	<0.05	<0.05
Refined, Bleached, Hydrogenated oil	<0.05	<0.05
Refined, Bleached, Hydrogenated deodorized oil	<0.05	<0.05
Meal	<0.05	<0.05
Soapstock	<0.05	<0.05

From the above data, only refined oil showed a concentration of residues near the level in the seed. The food additive tolerance requested by the petitioner for refined oil is 0.2 ppm. It is our opinion that the data will support the 0.2 ppm requested tolerance for refined cottonseed oil.

Meat, Milk, Poultry and Eggs

Poultry and dairy animal feeding studies have been reviewed previously by H. R. Gittes (PP# 0699, 5/7/68), E. S. Quick (PP# 770523, 10/4/65), and J. Wolff (PP# 660455, 10/4/65).

In summary, poultry were fed a diet containing 0, 50 and 250 ppm of Imidan for 30 days. For fat, muscle and eggs, no residues of Imidan or Imidoxon were detected at days 14 and 30 from feeding at the 50 ppm level. Trace residues were found at the 250 ppm feeding level.

Lactating cows fed a diet containing up to 200 ppm Imidan showed no residues (<0.03 ppm) of Imidan and Imidoxon in the milk. Cattle fed Imidan at dietary levels of 20 (later changed to 200 ppm for the last 13 days of experiment), 45 and 100 ppm showed no residues (<0.05 ppm) in tissue.

Cattle and Poultry feeding studies summarized above indicate that the requested tolerance in/on cottonseed would give no reasonable expectations of residues in meat, milk, poultry or eggs. Thus, this is a Sec. 180.6(a) (3) use.

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