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

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MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: 88-OR-19. Section 18 Exemption. Chlorpyrifos on Hops.
No MRID #. DEB # 4276.

FROM: Leung Cheng, Chemist *L. Cheng*
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THRU: Edward Zager, Section Head *EZ*
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TO: Rob Forrest, PM Team 41
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The Oregon Department of Agriculture has issued a crisis exemption for the use of Lorsban 4E on hops. The active ingredient is O,O-diethyl O-(3,5,6-trichloro-2-pyridyl)-phosphorothioate or chlorpyrifos.

Tolerances are established for residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol in or on a variety of raw agricultural commodities ranging from 0.05 ppm (such as pears and peaches) to 15 ppm (such as alfalfa hay and soybean straw). No tolerance is established on hops [40 CFR 180.342].

The Product/Residue Chemistry chapters (Chlorpyrifos Registration Standard) were issued 1/25/84.

The proposed use would allow single broadcast sprays at rates of 1-2 pints (0.5-1.0 lb ai) in 150-200 gallons spray volume per acre. A PHI of 10 days is imposed.

The metabolism study of carbon-14 chlorpyrifos in soybeans treated at 1 lb ai/A was submitted in PP#OF2281 and discussed in the Chlorpyrifos Registration Standard. Fourteen days following application, samples of forage were collected. Forage samples contained 5.09 ppm activity. Identification of the residues in forage samples showed that ca 36% (1.9 ppm) of the activity was parent, 6% (0.17 ppm) was free 3,5,6-trichloro-2-pyridinol (TCP), and 18% (0.92 ppm) was conjugated TCP.

For this Section 18, residues to be regulated include chlorpyrifos and its metabolite TCP.

A slightly modified PAM II method was used for measuring chlorpyrifos residues in hops (1972, Pest Reg Sec 180.342, p 5-8). This is a GC/NPD method with a sensitivity of 0.05 ppm. Recoveries ranged from 99.4% to 100.2% for green hops and from 97.6% to 105.2% for dry hops when fortified at 0.05 ppm, 0.10 ppm, or 0.25 ppm chlorpyrifos.

Results on hops trials conducted in Oregon in 1986 were attached in this submission. Following single applications of 1 lb ai/A, a residue level of 0.90 ppm was found on green hops (PHI of 5 days). Residues on dry hops were 21.3 ppm (PHI of 1 day), 40.6 ppm (3 days), 8.4 ppm (5 days), and 3.85 ppm (10 days). Untreated checks had <0.05 ppm chlorpyrifos. Analysis of TCP was not conducted.

On the basis of the soybean metabolism study, DEB estimates that combined residues of chlorpyrifos and its metabolite TCP are not likely to exceed 2 ppm on green hops and 10 ppm on dry hops as a result of the proposed use.

While spent hops is a cattle feed item, the dietary contribution from spent hops (5% in cattle diet x 10 ppm maximum residue = 0.05 ppm chlorpyrifos combined residue) is relatively not significant when compared to that from alfalfa hay (30% x 15 ppm = 0.45 ppm). Thus, the established meat and milk tolerances are adequate to cover chlorpyrifos residues resulting from the proposed use.

Spent hops are not a poultry feed item. There will be no transfer of secondary chlorpyrifos residues to poultry and eggs from the proposed use.

CONCLUSIONS AND RECOMMENDATION

1. For the purposes of this Section 18 exemption, the residues to be regulated are the parent compound and its metabolite 3,5,6-trichloro-2-pyridinol.
2. Methods are available in PAM II for determining chlorpyrifos and its metabolite (TCP) residues in hops.
3. Residues of chlorpyrifos are not likely to exceed 2 ppm in green hops and not likely to exceed 10 ppm in dry hops as a result of the proposed use.
4. The established tolerances on meat, milk, poultry, and eggs are adequate to cover chlorpyrifos residues resulting from

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the proposed use.

5. Reference standards of chlorpyrifos are available at the Pesticides and Industrial Chemicals Repository at RTP, NC.

TOX considerations permitting, DEB has no objection to this Section 18 exemption. An agreement should be made with FDA regarding the legal status of the treated commodities in commerce.

cc:Circ, RF, Section 18 F, Stanton (TAS), Cheng, PMSD/ISB
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TS-769:RCB:CM#2:Rm810:Cheng:8/29/88:1:8/30/88