9-30-86

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

SEP 30 1986

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#6F3358 and Reg. No. 464-552. Chlorpyrifos (Lorsban 50W) on Pears. Evaluation of Analytical Methods and Residue Data. Accession #261146. RCB #'s 497 & 498.

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and

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Hazard Evaluation Division (TS-769)

THRU : Charles L. Trichilo, Ph.D., Chief
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Dow Chemical Company is proposing to raise the permanent tolerance for the combined residues of the insecticide chlorpyrifos [O,O-diethyl O-(3,5,6-trichloro-2-pyridyl phosphorothioate] and its metabolite 3,5,6,trichloro-2-pyridinol in or on the raw agricultrual commodity, pears, from 0.05 ppm, to 1.0 ppm (of which no more than 0.5 ppm is chlorpyrifos, per se).

Permanent tolerances are currently established for the combined residues of the pesticide chlorpyrifos and TCP in or on several raw agricultural commodities at levels from 0.05 to 15 ppm including pears at 0.05 ppm; and apples at 1.5; milk fat (reflecting 0.02 ppm in whole milk) at 0.5 ppm; eggs at 0.1 ppm; the meat, fat and meat byproducts of cattle at 2.0 ppm; the meat, fat and meat byproducts of goats, horses and sheep at 1.0 ppm; and the meat, fat and

meat byproducts of hogs and poultry (including turkey) at 0.5 ppm (40CFR§ 180.342). A feed additive tolerance for residues of chlorpyrifos is currently established at 12 ppm in/on dried apple pomace (21CFR§561.98).

Conclusions

1(a). The residues of concern for this use is chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol. For future uses on other than fruit crops, metabolism studies on those crops may be needed. The plant metabolism studies are requested in connection with the Chlorpyrifos Registration Standard (1/25/84).

1(b). The nature of chlorpyrifos residues in animals is not adequately understood. Additional animal metabolism studies in ruminants and poultry were requested in connection with the Chlorpyrifos Registration Standard (1/25/84). However, for the purpose of the proposed tolerance and because cull pears constitute a minor feed item, we are not raising questions as to the need for animal metabolism studies.

2(a). Adequate analytical methods are available for the determination of chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol in plant and animal commodities including pears. Additional methodologies, however, may be needed for any future plant metabolites of toxicological significance.

2(b). Dow Chemical's method No. 26015C (QA No. 1568) is suitable for determination of chlorpyrifos per se in technical chlorpyrifos, whereas method No. ML-AM-82-43 (QA No. 1941) is suitable for determination of chlorpyrifos, per se, in an end use product, Lorsban 50W.

3. From the available residue data, we conclude that the combined residues of chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol will exceed the proposed tolerance of 1.0 ppm in or on pears (of which no more than 0.5 ppm is chlorpyrifos, per se). An appropriate tolerance for residues of chlorpyrifos in/on pears should be proposed at 2.0 ppm (of which no more than 1.5 ppm is chlorpyrifos, per se).

4. The petitioner is advised to express the rates for full coverage sprays in terms of lb act/100 gallons sprayed to runoff. For concentrate or aerial applications, an equivalent amount of product per acre should be proposed.

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5. The current tolerances for residues of chlorpyrifos in/on the meat, milk, poultry and eggs will not be exceeded as a result of the proposed uses and current uses for which tolerances are established.

6. A Codex Residue Limit of 0.5 ppm is currently established for chlorpyrifos, per se, in/on pears. Also, a Mexican tolerance of 0.05 ppm is currently established for chlorpyrifos, per se, in/on pears. When a final assessment is made as to the magnitude of real residues in/on pears, it is our judgement that compatibility between US and International tolerances will not be achieved since the level of chlorpyrifos residues in/on pears is expected to range up to 2.0 ppm (of which no more than 1.5 ppm chlorpyrifos, per se) as a result of the proposed use. Furthermore, the Codex MRL does not include TCP.

Recommendations

Because of Conclusions 3 and 4, we recommend against the proposed tolerance for residues of chlorpyrifos in/on pears at 1.0 ppm (of which no more than 0.5 ppm chlorpyrifos per se).

DETAILED CONSIDERATIONS

Manufacturing Processes

The manufacturing processes of chlorpyrifos are described in Appendix A of the Chlorpyrifos Registration Standard, dated 1/25/84 and in a follow-up memo by G. Makhijani on 7/30/85, entitled "Response to Data Gaps in Product Chemistry for Chlorpyrifos (Dursban F), I. D. No. 464-404". Included in this petition is information on the physical and chemical properties of technical chlorpyrifos. This information is identical to that reviewed in connection with the aforementioned memo on 7/30/85. The technical product is a minimum 94% pure. We do not foresee any residue problems in the subject crops with respect to impurities in the formulation.

Formulation

The formulation recommended for use pears is Lorsban 50W (EPA Reg. No. 464-552), a wettable powder insecticide containing 50% chlorpyrifos. All inerts are cleared under 40CFR§180.1001 (see PP#4F3062).

Proposed Use

For control of various insects infesting pears, chlorpyrifos (Lorsban 50W) is to be applied foliarly, as needed, as a dilute or concentrate spray using conventional spray application equipment. The proposed rate is 1.5 lb act/A/application to be mixed in sufficient water to ensure thorough and complete coverage of the foliage. A maximum of 8 applications are permitted per season. There is a 28 day PHI. Livestock are prohibited to graze in treated orchards.

The petitioner is advised to express the rates for full coverage sprays in terms of lb act/100 gallons sprayed to runoff. For concentrate or aerial applications, an equivalent amount of product per acre should be proposed.

Nature of Residues

Plant Metabolism

The metabolism of chlorpyrifos in plants has been discussed in several petitions from which we have concluded that the residues of concern in plants consist of the parent compound, chlorpyrifos, and its metabolite 3,5,6-trichloro-2-pyridinol or TCP as expressed in 40CFR§180.342 (see PP#'s 6F1777, 1F2620, 3F2778, 4F2999, 4F3008, and 4F3062).

The metabolism study conducted on apples is discussed in connection with PP#OF2281 (memo of E. Leovey, 7/7/81) and the Chlorpyrifos registration standard (1/25/84). In this study, unlabeled chlorpyrifos (Lorsban 50W) was applied seven times to a mature apple tree at the rate of 0.5 lb act/100 gallons of water to runoff; this was followed by two applications of labeled chlorpyrifos at the same rate. Mature apples were harvested 14 days after last application. Residues were extracted and analyzed by radioassay, GC-MS, and HPLC. Most of the radioactivity (95%) was in the peel (0.6 to 1.9 ppm). Residues in other fractions were: flesh 0.001 to 0.005 ppm; seed, 0.001 to 0.005 ppm; and whole apples 0.09 to 0.14 ppm. Only residues in the peel were characterized. About 35% of the total radioactivity was identified as chlorpyrifos, per se, and 5.1 to 5.6% were identified as 3,5,6-trichloro-2-pyridinol. In this study, 60% of the residues were not identified.

A statement appears in PP#1F2620/FAP#2H5331 (memo of K. Arne, 3/24/82) to the effect that TOX has judged that unidentified metabolites uncovered in the apple and soybean studies are not of toxicological significance. References were made to memos by Drs. W. Dykstra in connection with PP#OF2281, dated 10/21/81 and A. Mafouz in connection with Section 18 for chlorpyrifos on soybeans, dated 8/11/81.

In addition to chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol (TCP), plant metabolism studies on corn, soybeans and beans have uncovered three additional plant metabolites tentatively identified as: 3,5,6-trichloro-2-pyridyl phosphate, O-ethyl O-(3,5,6-trichloro-2-pyridyl) phosphate, and O-ethyl O-(3,5,6-trichloro-2-pyridyl)phosphorothioate (Chlorpyrifos Registration Standard, 1/25/84). Metabolite 3,5,6-trichloro-2-pyridyl phosphate was quantitated at 2% of the total radioactivity in corn leaves, 19% in bean leaves, 11% in bean roots and up to 23% in bean tops. Metabolite O-ethyl O-(3,5,6-trichloro-2-pyridyl) phosphate was quantitated at 6% of the total radioactivity in corn leaves, 38% in bean leaves, trace amounts in bean roots and up to 62 % in bean tops. Trace amounts of metabolite O-ethyl O-(3,5,6-trichloro-2-pyridyl)phosphorothioate were uncovered in bean roots.

Since the proposed analytical method, ACR84.4, hydrolyzes any chlorpyrifos present to 3,5,6-trichloro-2-pyridinol so that the analysis is for total TCP (see under Analytical Methods), it is most likely that the three tentatively identified plant metabolites are determined by the enforcement method.

The combined residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol (TCP), were quantitated at 13% of the total radioactivity in corn leaves, 16% in bean leaves and tops and up to 76% in bean roots. In the corn and apple metabolism studies, 76% and 60% of the total radioactivity, respectively, were unidentified. In soybean forage, 39% of the total radioactivity were polar metabolites and insoluble materials, whereas chlorpyrifos, per se, constituted 36% of the activity and TCP constituted 25% of the activity (5% free and 20% liberated (following alkaline hydrolysis).

The three additional plant metabolites discussed above were uncovered in corn and beans by the use of paper chromatography developed in one solvent system consisting of acetone/NH_4OH/water80:2:18. This technique is inadequate for residue characterization. Consequently, additional plant metabolism studies were requested in connection with the Chlorpyrifos Registration Standard as follows: "Studies concerning the metabolism of ring-labeled [^{14}C]chlorpyrifos by corn and a representative legume and root crop. Plants must be treated foliarly and, in separate experiments, plants must be planted in treated soil. Mature grain, pods plus seeds, and roots, as the case may be, must be analyzed as well as the foliage. Radioactive residues must be chracterized by a method such as GC or HPLC and verified by MS. Residues tentatively identified using a single TLC solvent system in the studies contained in the Chlorpyrifos Registration Standard must be sought as must be the identities of the uncharacterized plant residues discussed in the Standard".

Since TOX has judged that unidentified metabolites uncovered in the apple and soybean studies are not of toxicological significance and since additional plant metabolism studies on corn, legume, and root crops were requested in connection with the Chlorpyrifos Registration Standard (1/25/84), RCB will not raise an issue on additional plant metabolism on pears. Therefore, for the purpose of the proposed tolerance for residues of chlorpyrifos in/on pears, we consider that our conclusions for the apple metabolism study may be extended to pears. The residues of concern for this use is chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol. For future uses on other than fruit crops, metabolism studies on those crops may be needed. The plant metabolism studies are requested in connection with the Chlorpyrifos Registration Standard (1/25/84).

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Animal Metabolism

The metabolism of chlorpyrifos in animals has been discussed in connection with several petitions from which we have concluded that the residues of concern in animals consist of the parent compound, chlorpyrifos, and its metabolite 3,5,6-trichloro-2-pyridinol, or TCP as expressed in 40CFR§180.342 (see PP#'s 3F1306, 9F2270, OF2281).

Animal metabolism studies were conducted in fish, rats, and ruminants. In ruminants, TCP was identified as the major metabolite of chlorpyrifos accounting for 19 to 23% of the total radioactivity in the fat and up to 82 to 85% in the liver and similar activity in the kideny. Chlorpyrifos per se accounted for 74 to 79% of the total radioactivity in the fat and only 0.2 to 3.5% in the liver and similar levels in the kidney. In the kidney and liver 2 to 9.6% of the radioactivity were unidentified and 4 to 5% were non extractable components. The available studies did not identify residues in ruminant's milk or muscle tissues, in poultry tissues and eggs, nor were any studies reflecting direct animal treatments to beef cattle or sheep (Chlorpyrifos Registration Standard, 1/25/84).

Consequently, additional animal metabolism studies were requested in connection with the Chlorpyrifos Registration Standard (1/25/84) as follows:

1. Metabolism studies utilizing ruminants. Residues must be characterized and quantitated in muscle, fat, kidney and liver of beef cattle 14 days after an animal dip treatment with ring labeled [^{14}C]chlorpyrifos at a rate equivalent to 0.5 ppm of the 23.7% EC product/300 gallons water.

2. Metabolism studies utilizing poultry. Animals must be dosed with ring labeled [^{14}C]chlorpyrifos at 5.5 ppm in the diet for 3 days. Eggs must be sampled twice daily throughout the dosing period. Animals must be sacrificed within 24 hours of the final dose and residues characterized and quantitated in eggs, muscle, fat, gizzard, heart, liver, and skin.

If animal metabolites (exocons) are found to be different than plant metabolites (exocons), then animal metabolism studies with these metabolites may be needed.

Analytical Methods

The petitioner has submitted two analytical methods for determination of chlorpyrifos, per se, in technical chlorpyrifos, Dursban F (Reg. No. 464-404), and in an end use product,

Lorsban 50W (Reg. No. 464-552). Method No. 26015C (QA No. 1568) determines chlorpyrifos, per se, in Dursban F and method No. ML-AM-82-43 (QA No. 1941) determines chlorpyrifos, per se, in Lorsban 50W. Method, No. 26015C (QA No. 1568) is the same as that discussed in connection with Reg. No. 464-404 for Chlorpyrifos (Dursban F), Product Chemistry Data Gaps (memo of G. P. Makhijani, 7/30/85).

In both methods, an acetonitrile solution of the formulation, together with an internal standard, is injected into a liquid chromatograph. Separation is made on reversed-phase column and monitored with an ultraviolet detector. Analyses of a series of synthetic mixtures of technical chlorpyrifos gave recoveries in the range of 99.5-100.7%, averaging 100.2%. Analyses of a series of synthetic mixture containing 29.3-68.8% chlorpyrifos gave recoveries in the range of 96.7 to 101.2%, averaging 99.9%.

We conclude that Dow Chemical's method No. 26015C (QA No. 1568) is suitable for determination of chlorpyrifos, per se, in technical chlorpyrifos, whereas method No. ML-AM-82-43 (QA No. 1941) is suitable for determination of chlorpyrifos per se in an end use product, Lorsban 50W.

Methods for Plant Commodities

The petitioner submitted an analytical method, Dow's method ACR84.4, entitled "Determination of Chlorpyrifos and 3,5,6-Trichloro-2-Pyridinol in Stone Fruits by Gas Chromatography". The method is the same as that discussed in connection with PP#4F3062 for residue analysis in stone fruits. It is also similar to that in PAM II, Method II for peaches.

Method sensitivity is reported at 0.05 ppm for TCP and 0.01 for chlorpyrifos, per se.

Briefly, ACR84.4 involves acetone extraction, acetone evaporation, dissolution of residues in water, clean-up using a C_{18} Sep-pak cartridge, methanol or acetonitrile elution, dilution of column effulent with water, partitioning into hexane and finally, quantitation of chlorpyrifos, per se, by the use of gas chromatography equipped with flame photometric detector.

The TCP determination as reported in ACR84.4 is also discussed in connection with PP#4F3062. Briefly, the fruit is heated and extracted in methanolic sodium hydroxide. Any chlorpyrifos present is hydrolyzed to 3,5,6-trichloro-2-pyridinol so that the analysis is for total TCP. The alcohol is evaporated out of an aliquot, the water acidified and cleaned-up using the C_{18} Sep-pak cartridge, eluted with methanol into benzene, and partitioned with sodium bicarbonate. The bicarbonate is then acidified, and the residue is partitioned back into

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benzene. An aliquot is treated with N,O-bis (trimethylsilyl)-acetamide to form the pyridinol trimethylsilyl derivative which is quantitated using GLC with electron capture detection. Because this determination quantifies TCP as well as hydrloyzed chlorpyrifos, a separate determination for chlorpyrifos is necessary so that the TCP concentration can be calculated by difference. the analysis is for total TCP.

Recovery from pears fortified with chlorpyrifos, per se, at levels from 0.01 to 2.0 ppm were reported in the range of 80 to 100%, averaging 90%. When pear samples were fortified with TCP at levels from 0.05 to 2.0 ppm, recoveries were reported in the range of 80 to 107%, averaging 93%.

Methods for Animal Commodities

In this petition, the petitioner did not submit a method for determination of chlorpyrifos residues in animal commodities. Several methods are described in PAM II for residue determination of chlorpyrifos, per se, and its metabolite, TCP in or on animal commodities.

Adequate analytical methods are available for residue determination of chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol (Chlorpyrifos Registration Standard, 1/25/86). The GC method discussed in the Chlorpyrifos Registration Standard was judged adequate for enforcement of the chlorpyrifos tolerances in/on plant and animal commodities. Additional methodologies, however, may be needed for quantitative determination of any plant metabolites of toxicological significance.

Storage Stability Studies

Storage stability studies for residues of chlorpyrifos in/on several plant and animal commodities are discussed in connection with the Chlorpyrifos Registration Standard (1/25/84). RCB had previously concluded that residues of chlorpyrifos and TCP are stable in plant and animal samples for periods of up to 23 months when stored at subfreezing temperature (-20°C).

Residue Data

Pears

Residue data submitted in this petition reflect 30 residue values from nine field trials in California, Michigan, New York, Oregon, Pennsylvania and Washington. In these trials, chlorpyrifos (Lorsban 50W) was applied foliarly to mature pear trees. Eight applications were made during the growing season as a dilute or concentrate full-coverage

spray at the rate of 1.5 lb act/A/application. Dilute and concentrate sprays were applied at the rate of 200-500 and 35-50 gallons, respectively.

Chlorpyrifos and TCP residues were reported separately at 14 and 28 day PHI's for the concentrate and dilute spray applications. Table 1 gives a summary of chlorpyrifos residues in/on pears.

Table 1. The Combined Chlorpyrifos and TCP Residues in/on Pears Resulting from Eight Applications at 1.5 Lb Act/A/Application, expressed in ppm [1]/:

	14-Day PHI		28-Day PHI	
	Concentrate Spray	Dilute Spray	Concentrate Spray	Dilute Spray
No. of residue values	7	8	7	8
Range of total residues (ppm)[2]/	0.34-2.54 (0.44-3.41)	0.23-1.25 (0.31-1.62)	0.09-1.72 (0.12-2.43)	0.09-0.57 (0.13-0.79)
Average residues (ppm)	0.98	0.59	0.68	0.32
Max. Chlorpyrifos (ppm)	2.0 (1.83)	0.79 (0.72)	1.5 (1.4)	0.57 (0.37)

	All Trials	
No. of residue values	15	15
Range of total residues (ppm)[2]/	0.23-2.54 (0.31-3.41)	0.09-1.72 (0.12-2.43)
Average residues (ppm)	0.77	0.49
Max. Chlorpyrifos (ppm)	2.0 (1.83)	1.5 (1.4)

1/ Values between parenthesis are not corrected for average control and recovery.

2/ Include residues of chlorpyrifos and TCP.

It can be seen from Table 1 that the concentrate spray applications resulted in higher residue levels than dilute spray applications. The petitioner considers the one residue value of 2.54 ppm containing 2.0 ppm chlorpyrifos, per se, as an outlier and wishes to delete it. This level reflects 14 day PHI. However, we note that the next highest residue value from the concentrate spray is 1.72 ppm including 1.5 ppm chlorpyrifos, per se, reflecting 28 day PHI.

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Furthermore, it can be seen that almost all of the residues are composed of chlorpyrifos, per se. Therefore, we do not consider the highest residue value an outlier. RCB evaluates all available residue data prior to recommending a tolerance level for a given commodity. As defined in 40CFR§180.34(a), a tolerance is a magnitude of pesticide residues that may remain under conditions most likely to result in high residues on the commodity.

From the available residue data, we conclude that the combined residues of chlorpyrifos, per se, and its metabolite 3,5,6-trichloro-2-pyridinol will exceed the proposed tolerance of 1.0 ppm in or on pears (of which no more than 0.5 ppm is chlorpyrifos, per se). An appropriate tolerance for residues of chlorpyrifos in/on pears should be proposed at 2.0 ppm (of which no more than 1.5 ppm chlorpyrifos per se).

Meat, Milk, Poultry and Eggs

No livestock (ruminant or poultry) feeding studies were submitted in this petition.

According to the Harris Guide, cull pears are a minor feed item and may constitute of up to 30% of beef cattle and sheep feed, 20% to hogs and horses, and up to 1.5% of poultry feed.

Cattle feeding studies were conducted at 3, 10, 30, and 100 ppm of chlorpyrifos in the diet (see K. Arne memo of 3/24/82, PP#1F2620/FAP#2H5331). Maximum residues at the 10 ppm level were 0.07, 0.52, 0.57, and 0.36 ppm for the muscle, liver, kidney and fat, respectively. At the 30 ppm level, the maximum residues were 0.09, 1.68, 1.06, and 1.23 ppm for muscle, liver, kidney and fat, respectively.

When considerations are given to the feed items for which there are tolerances as well as to cull pears involved in this petition, the maximum dietary intake for cattle was calculated at 9.965 ppm as follows:

Feed Items	Tolerance (ppm)	Percent in Diet	Maximum Dietary Intake (ppm)
Dried apple pomace	12	50	6.000
Alfalfa hay	15	25	3.750
Cull pears	2*	10	0.200
Corn grain	0.1	15	0.015
		Total	9.965

* Proposed tolerance.

We conclude that the current tolerance of 2.0 ppm for residues of chlorpyrifos in/on the meat, fat and meat byprodcts of cattle will not be exceeded as a result of current uses for which there are tolerances as well as the proposed use on pears.

Hog feeding studies were conducted at 1, 3, and 10 ppm chlorpyrifos in the diet (see K. Arne memo of 3/24/82, PP# 1F2620/FAP#2H5331). Maximum combined residues at the 10 ppm feeding level were shown to be 0.3 ppm, 0.33 ppm, 0.16 ppm, and 0.29 ppm for muscle, liver, kidney, and fat, respectively.

When considerations are given to the feed items for which there are tolerances as well as to cull pears involved in this petition, the maximum dietary intake for hogs was calculated at 3.82 ppm as follows:

Feed Items	Tolerance (ppm)	Percent in Diet	Maximum Dietary Intake (ppm)
Alfalfa hay	15	10	1.50
Sugar beet, dried pulp	5	15	0.75
Sugar beet, molasses	15	5	0.75
Grapes, dried pomace	2	20	0.40
Cull pears	2*	20	0.40
Corn grain	0.1	30	0.03
		Total	3.83

* Proposed tolerance.

We conclude that the current tolerance of 0.5 ppm for residues of chlorpyrifos in/on the meat, fat and meat byprodcts of hogs will not be exceeded as a result of current uses for which there are tolerances as well as the proposed use on pears.

For milk fat, the maximum dietary intake for a dairy cow was calculated at 7.18 ppm as follows:

Feed Items	Tolerance (ppm)	Percent in Diet	Maximum Dietary Intake (ppm)
Dried apple pomace	12	25	3.00
Alfalfa hay	15	25	3.75
Cull pears	2*	20	0.40
Corn grain	0.1	30	0.03
		Total	7.18

* Proposed tolerance.

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Dairy cow feeding studies were submitted with PP#3F1306. Dairy cow fed 30 ppm chlorpyrifos were found to have 0.03 ppm in whole milk. Therefore, cow fed 7.18 ppm would produce milk containing 0.02 ppm chlorpyrifos residues. This means that residues in milk fat (assuming that the milk contains 4% fat and that the residues partition to the fat), would be 0.5 ppm which is equivalent to the present tolerance.

We conclude that the current tolerance of 0.5 ppm for residues of chlorpyrifos in/on milk will not be exceeded as a result of current uses for which there are tolerances as well as the proposed use on pears.

Poultry and Eggs

Since cull pears constitute a minor feed item, we do not anticipate a problem with secondary residues in poultry and eggs.

Other Considerations

A Codex Residue Limit of 0.5 ppm is currently established for chlorpyrifos, per se, in/on pears. Also, a Mexican tolerance of 0.05 ppm is currently established for chlorpyrifos, per se, in/on pears. When a final assessment is made as to the magnitude of real residues in/on pears, it is our judgement that compatibility between US and Interational tolerances will not be achieved since the level of chlorpyrifos residues in/on pears is expected to range up to 2.0 ppm (of which no more than 1.5 ppm chlorpyrifos, per se) as a result of the proposed use. Furthermore, the Codex MRL does not include TCP.

Attachment 1. Codex sheet.

cc: RF, Circu, S.Malak, SF(chlorpyrifos or Lorsban 50W), PP#6F3358, TOX, EAB, EEB, FDA, Robert Thompson (RTP), RD (PM #12), and PMSD/ISB.
RDI: P.V.Errico:9/29/86:R.D.Schmitt:9/29/86
TS-769:RCB:CM#2:RM810:S.Malak:X557-7330:3/14/86

INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL Chlorpyrifos

PETITION NO PP# 6F3358

CCPR NO. 17

Sami Malats

Codex Status

☐ No Codex Proposal Step 6 or above

Residue (if Step 9):

Chlorpyrifos

Crop(s)	Limit (mg/kg)
pear	0.5

Proposed U. S. Tolerances

Chlorpyrifos: O O-diethyl O-(3,5,6-trichloro-2-pyridyl phosphorothioate and its metabolite 3,5,6-trichloro-2-pyridinol.

Residue:

Crop(s)	Tol. (ppm)
pears	1.0 of which no more than 0.5 ppm chlorpyrifos

CANADIAN LIMIT

Residue:

parent + TCP (in animal products)

Crop	Limit (ppm)
none (on pears)	

MEXICAN TOLERANCIA

Residue: presumably chlorpyrifos

Crop	Tolerancia (ppm)
pears	0.05

Notes: