

US EPA ARCHIVE DOCUMENT

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MEMORANDUM

Subject: Oxyfluorofen Contamination of Orthomite  
Insecticidal Soap (EPA Reg. No. 239-2564).  
Estimation of Maximum Likely Residues.  
No Accession Number / No MRID Number  
No CB Number

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Chevron Chemical Company has reported to Registration Division that 2 batches of their product Orthomite Insecticidal Soap (EPA Reg. No. 239-2564) have been contaminated with oxyfluorofen (Goal, 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl) benzene) at levels of 30-40 ppm (FAX from Chevron Chemical Company to Anne Lindsay, 7/1/91). Orthomite Insecticidal Soap contains potassium salts of fatty acids as the active ingredient. CBRS has been asked to determine likely residues of oxyfluorofen so that dietary exposure may be estimated.

Orthomite Insecticidal Soap is used to control various insects on the following crops: beans, broccoli, brussels sprouts, cabbage, cauliflower, cucumbers, egg plants, lettuce, melons, okra, peas, peppers, potatoes, pumpkins, radishes, summer squash (also butternut and zucchini) and tomatoes. It is sold in a pump spray bottle for use primarily in home gardens. Use directions call for applications to wet all infested plant surfaces. Applications may be made as needed up to the day of harvest.

Oxyfluorofen is an herbicide which is used to control a wide spectrum of annual broadleaf weeds and grasses in many agricultural commodities. Tolerances are established for residues of oxyfluorofen and its metabolites containing the diphenyl ether linkage in numerous commodities. All tolerances are 0.05 ppm except almond hulls (0.1 ppm) and mint hay (0.1 ppm) (40 CFR 180.381). Metabolism studies suggest that oxyfluorofen is only very slightly systemic.

The registrant submitted a dietary exposure assessment to show exposure likely to result from use of this contaminated product. In order to estimate residues likely to result, studies were performed to determine the total amount of the contaminated product likely to remain on commodities sprayed with the pesticide. Commodities (broccoli, cucumber, cabbage, leaf lettuce, spinach, summer squash, tomatoes, and zucchini) were sprayed with the pesticide and the amount of the liquid product remaining on the commodities was determined. Using this information together with the weight of the commodity, and assuming 40 ppm contamination of the product, calculations of pesticide residue (in ppm) were determined. Additional calculations of the amount of residue likely to be consumed were made using consumption rates the registrant states were obtained from the **EPA Exposure Factors Handbook**. Using this information together with toxicological data, estimations of risk were made.

The following assumptions were made when performing the dietary exposure analysis:

- (1) all residues result from only the final pesticide application;
- (2) residues in the human diet will not result from applications to plants whose edible parts are underground (potatoes, radishes);
- (3) residues in the human diet will not result from applications to plants which have rinds or shells which are discarded (egg plant, melons, peas, pumpkins);
- (4) residue loss or degradation are not considered (e.g. from chemical degradation, from removal of residues by rain, from washing or cooking).
- (5) commodities will be consumed at these residue levels for only 5 days due in part to the phytotoxicity of the herbicide contaminant.

Considering the non-systemic nature of this pesticide, these assumptions will likely result in overestimation of residues. Table 1 lists the commodities in which residues are likely to result and the likely residue levels. We defer to DRES regarding

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the appropriateness of the dietary exposure analysis presented by Chevron. We defer to TOX regarding the hazard evaluation presented by the company.

Table 1: Commodities Likely to Contain Oxyfluorofen Residues Resulting from Application of Contaminated Orthomite Insecticidal Soap.

Commodity	Oxyfluorofen Residue (ppm)
Broccoli	2.1
Cabbage	0.2
Cucumber	0.12
Leaf lettuce	2.1
Squash	0.2
Tomato	0.08
Zucchini	0.18
String beans <sup>1</sup>	2.0
Spinach <sup>2</sup>	2.0
Mixed vegetables <sup>1</sup>	2.0

<sup>1</sup>Residue value estimated assuming pesticide product is 5% of produce weight. Not included in experiments determining the actual percentage of pesticide product/produce weight.

<sup>2</sup>Not on label but included in registrant's residue estimations.

#### Conclusions and Recommendations

CBRS concludes that the commodities listed in Table 1 above are those which are likely to contain oxyfluorofen residues as a result of use of contaminated batches of Orthomite Insecticidal Soap. The residue values provided are likely to overestimate actual residues consumed.

We recommend that this information be provided to TOX and DRES for assessment of risk.

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