

US EPA ARCHIVE DOCUMENT

059901

FAMPHUR

INSECTICIDE

SI CLASS IV

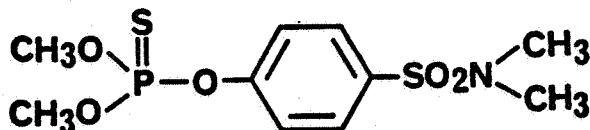
CFR References: 40 CFR 180.233, 180.3(a) and (e)5; 21 CFR 524.900, 558.254.

Chemical Name: O,O-Dimethyl O-[p-(dimethylsulfamoyl)phenyl] phosphorothioate (CAS No. 52-85-7).⁽¹⁾

Trade Names: Bash[®], Bo-Ana[®], Cyflee[®], Dovip[®], Famfos[®], Famophos[®], Warbex[®].^(2,3)

Common Name: famphur.⁽²⁾

C₁₀H₁₆NO₅PS₂



Molecular Weight: 325.36⁽⁴⁾

Physical State: White crystalline powder.^(3,4)

Melting Point: 52.5-53.5°C.⁽⁴⁾

I. Exposure and Use Factors

A. Production/Usage Volume: Estimated U.S. production of famphur in 1979-80 was between 365,000 and 450,000 lbs./yr. No imports were reported. Some unquantified exports did not significantly affect the estimated totals so 365,000-450,000 lbs/yr. was available for domestic usage.⁽⁵⁾ American Cyanamid Co. is the only basic producer listed.⁽²⁾

B. Chemistry

1. Solubility: Insoluble in water and hexane. Soluble in toluene.⁽⁶⁾
2. Stability: No data.⁽⁶⁾
3. Manufacturing Process/Impurities: Produced by the reaction of N,N-dimethyl-1-phenyl-4-sulfonamide with O,O-dimethyl phosphorochloridothioate.⁽⁶⁾
4. Degradation: Famphur metabolizes in animals primarily through hydrolysis of the P-O-phenyl bond, forming the phenol which then conjugates with glucose. Another important mechanism involves a series of hydrolysis steps, beginning with one of the P-O-methyl bonds, to form an

ring-labeled ^3H -famphur had 6 ppm famphur in its blood 72 hours after injection and 0.3 ppm in kidney and liver, 0.7 ppm in muscle and 0.02 ppm in fat 96 hours after injection. A ewe intramuscularly injected with 55.1 mg/kg b.w. of similarly labeled famphur had 85 ppm in blood plasma, 8.0 ppm in kidney, 2.3 ppm in liver, 0.7 ppm in muscle, and 5.0 ppm in fat 72 hours after injection. (6)

Calves treated with a single pour-on application of 16.7% famphur applied (25 mg a.i./lb. b.w.) along the backline had <0.05 - 0.37 ppm famphur in muscle from beneath pour-on site, <0.05 - 0.14 ppm in gluteal muscle, and no detectable (<0.05 ppm) residue in liver, kidney, or fat 28 days after treatment. No detectable (<0.05 ppm) residues of famphur or its oxygen analog were found in any of these tissues 35 days after treatment. The milk of cows treated identically to the calves had a maximum residue of about 0.1 ppm 2 days after treatment and no detectable (<0.01 ppm) residue 4 days after treatment. However, cows that received a 16 mg a.i./lb. b.w. treatment had residues of 0.0034-0.0096 ppm in their milk 6 days after treatment but no detectable (limit of detection not given) residue 7 days after treatment. (6)

7. Soil Mobility: No data.
8. Systemic Plant Activity: No known plant use, hence no data. (6)
9. Significant Terminal Residues: Famphur and its oxygen analog [0,0-dimethyl O-p-(dimethylsulfamoyl)phenyl phosphate] are named in the tolerances.
10. Related Pesticides/Common Metabolites: Famphur is one of a large number of phosphorothioate pesticides that are available. Of those which are currently used in significant quantities in the U.S., fenthion and fensulfothion are the most similar in chemical structure. (7)

C. Uses and Potential Exposure

1. Registered Uses: Famphur is registered for use as an insecticide to control cattle grubs and lice on beef cattle and non-lactating dairy cattle. A pour-on application is used or a feed premix is added to the feed. The use on beef cattle requires a pre-slaughter interval of 35 days after the pour-on treatment or 4 days after the feed use. For dairy cattle, both uses require an interval of 21 days between treatment and freshening. The data indicate that, with these intervals after treatment, detectable residues will not be found in milk and they will not exceed 0.1 ppm in meat, fat, or meat byproducts.

EPA estimates that 99% of the famphur is used to treat

2/19

cholinesterase inhibitor.(4) No other data.(9)

- F. ADI (EPA): Not established.
- G. ADI (FAO-WHO): Not established.
- H. RPAR Status: None issued.

III. Overall Appraisal: Famphur is highly toxic on an acute basis and is reported to be a cholinesterase inhibitor. There are data gaps in the oncogenicity, mutagenicity, teratogenicity, reproductive effects, and chronic effects studies.

Under 500,000 lbs. of famphur are used per year to control cattle grubs and lice almost exclusively in beef cattle. Famphur is rapidly metabolized and excreted by cattle. A number of the metabolites are conjugated with glucose. When the required pre-slaughter intervals are observed, no residues exceeding 0.1 ppm are expected in meat. The registered uses do not permit treatment of lactating dairy cattle so detectable residues would not be expected in milk.

IV. Surveillance Index Classification: Class IV. "Sufficiently low hazard potential from the toxicological and/or exposure standpoint justifies only intelligence-related monitoring efforts."

Justification: Famphur is a single-purpose insecticide used to control grubs and lice on cattle. Cattle rapidly metabolize and excrete the residues, frequently as conjugates with glucose. Provided that the labeled uses are observed, detectable residues would not be expected in milk, and residues in meat, if detectable, would be within tolerance.

V. Necessary Action: Monitoring should be based on indications of misuse, e.g., use on lactating dairy cattle or, for USDA monitoring of meat, non-observance of preslaughter intervals.

Since famphur is not recovered through PAM I, 211.1, recovery would not be expected through 212.1. The commodities of interest are meat and milk and therefore testing through 232.3 or 232.4 would not be appropriate.

References

1. EPA, Acceptable Common Names for the Ingredient Statement on Pesticide Labels, 4th ed., EPA 540/9-77-017 (December, 1979) p. 126.
2. Berg, G.L. (Ed.), Farm Chemicals Handbook, Meister Publishing Co., Willoughby, OH (1984) p. C 99.
3. Thomson, W.T., Agricultural Chemicals, Book I, Insecticides, Thomson Publications, Fresno, CA (1982-83 Rev.) p. 174.

B 20