



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

REC 5 1087
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Memorandum

PESTICIDE OFFICE OF
AND TOXIC SUBSTANCES

Subject: 87-AZ-03. Section 18 Request for Use of Fenoxycarb
(Logic®, EPA Reg. No. 35977-4) on Citrus, Pastures
and Dairy Feed Lots.
No Accession Number
RCB #1862

From: Michael S. Metzger, Chemist
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

Thru: Edward Zager, Section Head, SRS 2
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

To: Emergency Response and Minor Use Section
Registration Division (TS-767C)

and

Toxicology Branch
Hazard Evaluation Division (TS-769)

The Arizona Commission of Agriculture and Horticulture requests
a Section 18 Quarantine Exemption authorizing the use of
Logic® (1% fenoxycarb (a.i.))

to control fire ants. The pesticide would be
applied by air to the following sites:

Citrus	650 acres
Pastures and Rangeland	120 acres
Dairy Feed Lots	60 acres

No tolerances currently exist for residues of fenoxycarb
[ethyl[2-(4-phenoxyphenoxy)ethyl]carbamate]. An exemption
from the requirement of a tolerance was proposed for residues
of fenoxycarb on grass and grass hay with PP#3F2941 (Acc. No.
71778). This exemption was not considered appropriate (see M.
Kovacs, 9/20/84), and temporary tolerances were proposed with
PP#5G3233 (Acc. No. 071849) of 0.05 ppm for grass hay and 0.2
ppm for grass. A Registration Standard has not been completed
for fenoxycarb.

INERT INGREDIENT INFORMATION IS NOT INCLUDED

The proposed use includes 1 aerial application at a rate of 1.5 lbs. product (0.015 lbs.a.i.)/A to the sites listed above in the city of Mesa, AZ. Pre-harvest, pre-grazing and/or pre-feeding intervals are not proposed.

Plant and animal metabolism have been discussed previously (M. Kovacs, 1/25/84, 9/20/84 and 3/13/85; and J. Worthington, 7/17/85). These data are summarized in figure 1 (taken from J. Worthington, 7/17/85). If Toxicology Branch can conclude that for the purposes of this Section 18 only, fenoxycarb, per se, is the residue of concern, the metabolism of fenoxycarb in plants and animals can be considered adequately delineated. However, for the purposes of a permanent tolerance (on grass and grass hay), unresolved deficiencies related to metabolism discussed in M. Kovacs' memo of 1/29/85 must be resolved.

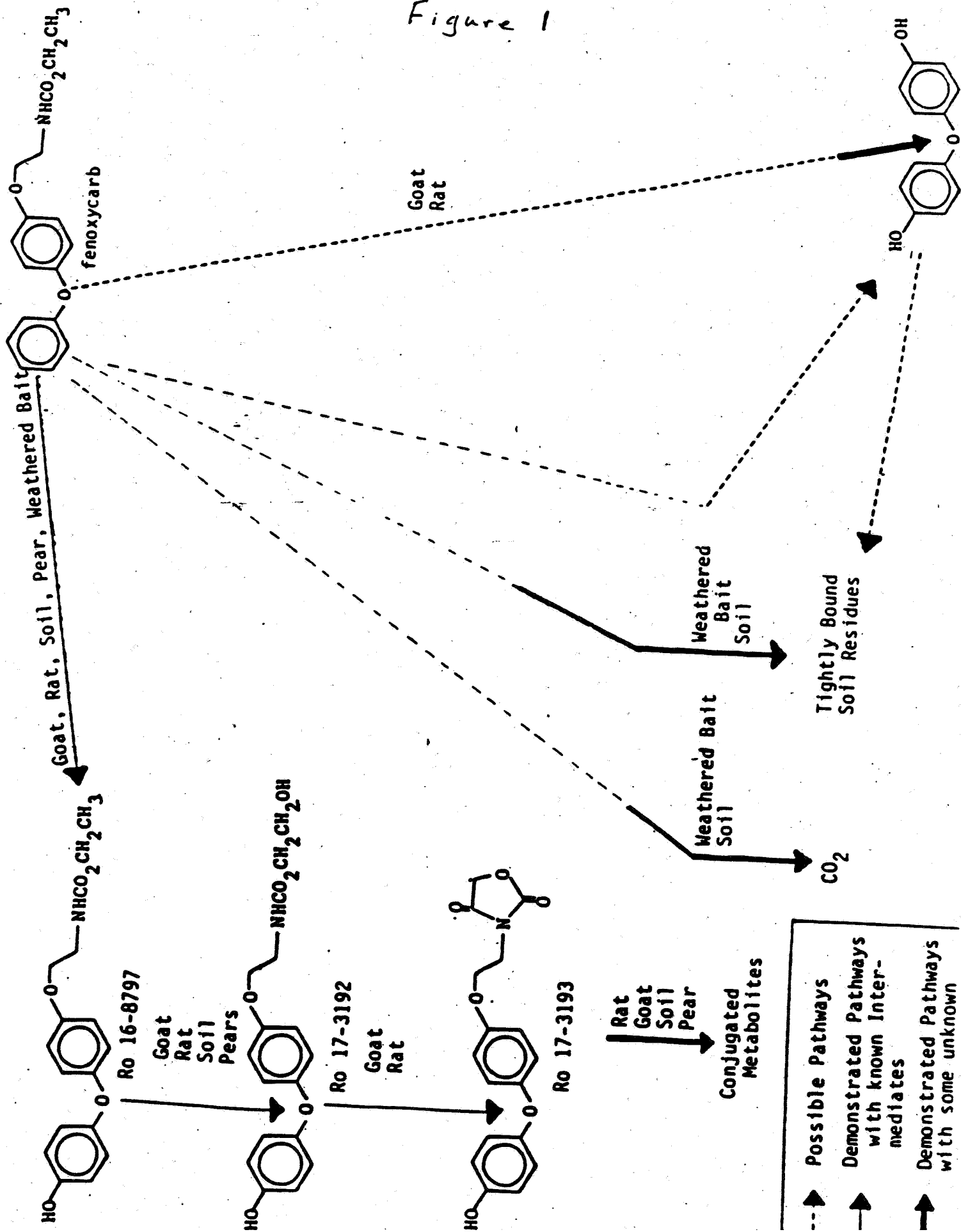
An analytical method for determination of fenoxycarb, per se, in grasses was received previously (see J. Worthington, 7/17/85). If Toxicology Branch can conclude that for the purposes of this Section 18 only, fenoxycarb, per se, is the residue of concern, then RCB can conclude that for the purposes of this Section 18 only, this method is adequate for enforcement purposes. Briefly, the RAC is extracted with acetone, and the extract is partitioned against hexane. Following clean-up utilizing silica gel, florisil and a Sep Pak C-18 cartridge, analysis is accomplished by reverse phase HPLC equipped with UV detection. The reported limit of detection is 0.05 ppm. Recoveries from foliage and grass were 92% and 95% at fortification levels of 0.066 ppm and 0.12 ppm respectively.

Analytical methodology for determination of fenoxycarb residues in animal tissues is not available. An analytical method for determination of fenoxycarb and one of its metabolites (Ro 16-8797) in milk has been submitted. This method has been validated only for residue levels of less than approximately 0.1 ppm (see M. Kovacs, 1/25/84).

Residue data for application of fenoxycarb to grass (pasture and rangeland) have previously been submitted and reviewed (M. Kovacs, 1/25/84). In separate studies, Bahia grass was treated with either 1.34 kg a.i./ha (79X) or 10.4 and 11.5 g a.i./ha (0.61 and 0.67X) using ground equipment. Residues are summarized in the Table on the next page.

Based on these data, we concur with the previous conclusion (M. Kovacs, 1/25/84) that fenoxycarb residues in grass could range from 0.2-0.3 ppm within 1 hour following application, 0.1-0.2 ppm at one day following application and would be <0.05 ppm for periods 3 days or greater following application. Residues in grass hay are expected to be <0.05 ppm as a result of the proposed use.

Figure 1



Fenoxycarb Residues in Grass

<u>Application Rate</u>	<u>PHI</u>	<u>Residue (ppm) (Parent only)</u>
1.34 kg a.i./ha (79X)	2 hours	1.27
	1 day	0.67
	2 days	0.47
	7 "	0.31
	14 "	0.20
	21 "	0.09
	28 "	<0.05
11.5 (or 10.4) g a.i./ha	1 hour	0.16
(0.67 or 0.61X)	1 day	0.09
	3 days	<0.05
	7 "	<0.05

Residue data are not available for applications of fenoxycarb to citrus or to dairy feed lots.

Assuming that all of the fenoxycarb applied to citrus groves (0.015 lbs.a.i./A) were to concentrate in the fruit (ca. 12.5 tons average or 25,100 lbs. fruit/A), the maximum residues likely to be found in fruit would be approximately 0.6 ppm. However, because of the rapid breakdown of fenoxycarb in plants, and considering the low maximum likely residue of 0.6 ppm and the small likelihood that the entire applied pesticide would concentrate in fruit, for the purposes of this Section 18 only, we conclude that it is unlikely that detectable residues (0.05 ppm LOD) will be found in citrus or citrus processed commodities as a result of the proposed use.

Regarding applications of fenoxycarb to dairy feed lots, Bob Gronowski of the Arizona Department of Agriculture was contacted by RCB (telecon with M. Metzger, 2/4/87). Mr. Gronowski stated that approximately 200-300 cows are present on the 59.8 acre site to be sprayed. The animal feed is kept in covered (top) sheds which are open only at the ends. RCB cannot estimate potential residues in animal feed which might result from this use because residue data are not available. However, it is likely that most of the applied fenoxycarb will not contaminate the animal feed since the feed is kept in covered sheds. Furthermore, we conclude that it is likely that residues in cattle diets resulting from applications to dairy feed lots will not exceed dietary residues resulting from cattle's consumption of grass from grazing treated pastures.

Meat, Milk, Poultry and Eggs

Dairy cattle feeding studies are not available. A lactating goat metabolism study was submitted as an amendment to PP#3F2941 (Acc. Nos. 072870, 072990) and reviewed by M. Kovacs (1/29/85). Two goats were repeatedly (5X) dosed by oral gavage at 0.8 mg/kg body weight with ^{14}C -labelled fenoxycarb (approximately 10 ppm times 5 doses = 50 ppm total). The highest residue (total ^{14}C activity) found in the goats milk following 5 doses was 2.17 ppm. Based on this study, and assuming maximum dietary intake of fenoxycarb residues, per se, of 0.5 ppm (0.2 ppm from consumption of grass from treated pastures and 0.3 ppm from residues from feed in feed lots), the maximum residue likely to occur in milk is 0.02 ppm. We, therefore, conclude that phenoxycarb residues in milk will not exceed the validated limit of detection for the analytical method of 0.1 ppm as a result of the proposed use.

Total residues (^{14}C activity) in the aggregate of all goat tissues resulting from the metabolism study discussed above were 6.39 ppm at 8 hours following the last of 5 (10 ppm) doses and 0.25 ppm at 4 days following the last dose. Translating this data to cattle, and assuming that beef cattle would graze only (i.e. would not consume food from treated feed lots), the maximum residues likely to be found in (aggregate) cattle tissues (including organs) are 0.026 ppm and <0.002 ppm at 8 hours and 4 days respectively after the final feeding. Considering the low initial residues found and the rapid depuration, we conclude that residues of fenoxycarb, per se, are not likely to be found in the meat, fat and meat by-products of cattle, goats, hogs, horses and sheep as a result of the proposed use.

Conclusions

- (1) If Toxicology Branch can conclude that for the purposes of this Section 18 only, fenoxycarb, per se, is the residue of concern, then the metabolism of fenoxycarb in plants and animals can be considered adequately delineated.
- (2) If Toxicology Branch can conclude that for the purposes of this Section 18 only, fenoxycarb, per se, is the residue of concern, then RCB can conclude that for the purposes of this Section 18 only, adequate analytical methodology for measuring residues of fenoxycarb in grass and milk is available for enforcement purposes (see PP#3F2941, Acc. Nos. 071844, 072870 and 072990).

- (3) Maximum residues of fenoxycarb likely to be found as a result of the proposed use are:

grass (pasture and rangeland)	0.3 ppm	
grass hay	<0.05 ppm	
citrus and citrus processed commodities	<0.05 ppm	
Milk	<0.1 ppm	0.02

- (4) Fenoxycarb residues are not likely to be found in the meat, fat and meat by-products of cattle, goats, hogs, horses and sheep as a result of the proposed use.
- (5) Analytical Reference Standards are available from the Pesticides and Industrial Chemicals Repository.

Recommendations.

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

cc: Fenoxycarb (Logic®) S.F., R.F., Section 18 S.F., Circu,
M.Metzger, PMSD/ISB
RDI;E.Zager:EZ:2/6/87:RDS:2/6/87
TS-769:RCB:M.Metzger:MM:Rm803a:CM#2:2/6/87