Memorandum

Date: 28 August 1981

Subject: EPA File Symbol: 464-LTR DURSBAN XP-4 INSECTICIDE
Caswell #219AA

From: B. T. Backus
IRB/TSS

To: Mr. Jay Ellenberger
Product Manager 12

Applicant: Dow Chemical U.S.A.
Agricultural Products Department
P.O. Box 1706
Midland, MI 48640

Active Ingredients (label declaration):
Chlorpyrifos.....42.0%
Xylene range aromatic solvent.....10.8%
Inert Ingredients:.....47.2%

Background:

Product is to be applied only by or under the supervision of pest control operators, public health organizations and other trained personnel. Proposed product uses include application, as a 0.25 or 0.5% active ingredient spray, for spot treatment for cockroach control in food handling establishments, as a coarse spray or "paint-on" in residential buildings and nonfood areas of other buildings etc. Among additional uses proposed is that as a fine-particle broadcast spray at 0.25% active ingredient, at an application rate of one gallon of diluted material (which would contain about 9.1 g of the active). This material would be sprayed over 1600 square feet (or 0.0057 g/ft^2 = 5.7 mg/ft^2). This particular use has not been previously accepted, to this reviewer's knowledge, for this particular active.

Comments and Recommendations:

1. The submitted acute toxicity studies are adequate and acceptable in defining the potential hazard of this product by oral, dermal, and ocular exposure.

2. The study by Miehle adequately demonstrates that the TLV limit of 0.2 mg/m^3 is not exceeded in the proposed use of this product at a dilution containing 0.25% active to control fleas in infested rugs, carpets, pet bedding and pet resting areas.

3. As noted in the study by Miehle, wipe testing of vinyl surfaces showed that at 1 hr after spraying considerably more chlorpyrifos could be

recovered from a vinyl surface than from a carpet. However, the label specifies application to infested rugs, carpets, pet bedding and pet resting areas rather than vinyl.

4. IRB/TSS would have no objections, on the basis of potential hazards to man and domestic animals, to the conditional registration of this product with the labeling as proposed.

Review:

The following studies were conducted on the product as proposed for registration. Studies were conducted at the Toxicology Research Laboratory, Health and Environmental Sciences, U.S.A., Midland, MI 48640. Studies are dated January 22, 1981, were received at EPA July 14, 1981, and are in Acc. 245808.

1. Acute Oral Toxicity - Rat.

Procedure: Groups of 6M, 6F rats were gavaged at 250, 500, 1000 and 2000 mg/kg of test material. Groups of 6F only were dosed at 130 and 3000 mg/kg. All subjects were subsequently observed for 14 days.

Results:

Dose mg/kg	Mortalities M	F
130	-	0/6
250	0/6	0/6
500	1/6	0/6
1000	6/6	5/6
2000	6/6	6/6
3000	-	6/6

Oral LD50 (M) = 599 (453-873) mg/kg.
Oral LD50 (F) = 834 (572-1103) mg/kg
Symptoms: lethargy, total body tremors, hypersensitivity, anorexia. Necropsies showed non-specific generalized toxicity, as well as toxicity affecting GI system, liver and lower respiratory tract.

Study Classification: Core Minimum Data

Product Classification: Tox. Cat. III

2. Eye Irritation - Rabbit

Procedure: 0.1 ml test material was instilled into the conjunctival sac of the right eye in each of 6 rabbits, with no subsequent wash. 0.1 ml was instilled into the conjunctival sac of the left eye of each of 3 rabbits; these eyes were washed for one minute starting 30 seconds after instillation; right eyes in these subjects were also washed.

Results: 6/6 unwashed, 0/3 washed eyes showed corneal opacity on day 1. 3/6 subjects (unwashed) still showed corneal opacity on day 7. Of these 3 subjects, one died before day 21 while the other two had eyes which cleared before day 21. One control wash eye showed opacity through day 14.

Study Classification: Core Guidelines Data

Product Classification: Tox. Cat. II

3. Skin Irritation - Rabbit

Procedure: 0.5 mls was applied at both an intact and abraded site on each of 6 rabbits, with 24-hr occluded dermal exposure.

Results: Hyperemia and edema at 24 hrs at all sites (scores 2-3); with slight improvement at 72 hrs (scores 1-3). Edema scores mostly 0's, with a few "1's". PDIS = 2.4 .

Study Classification: Core Guidelines Data

Product Classification: Tox. Cat. III

4. Acute Percutaneous Absorption - Rabbit

Procedure: Groups of 2M, 2F rabbits received a 24-hr occluded dermal exposure to dosages of 500, 1000, 2000 and 5000 mg/kg, with subsequent 4-week observation.

Results: 1/2M, 1/2F died at the 5000 mg/kg dosage level. All other subjects survived. Symptoms included lethargy (all subjects at all dosage levels). Animals took at least 2 weeks, even at lowest dosage levels received, to recover to pre-treatment weight.

Study Classification: Core Minimum Data

Product Classification: Tox. Cat. III

The following study is dated May 19, 1981, and was received at EPA July 14, 1981. It is in Acc. 245817.

5. Determination of Potential Dermal and Respiratory Exposure Levels Resulting from a Broadcast, Indoor Spray Application of Chlorpyrifos to Household Floor Covering in a Simulated Flea Control Treatment. Author: Bruce R. Miehle. Report No. GH-P 1088; Agricultural Products Department, the Dow Chemical Co.

Procedure:

Material Used	% Active at Use Dilution	Application Rate of Diluted Spray
M-4515 (product as proposed for registration).	0.25	1 gal/1600 ft^2
M-4515 (product as proposed for registration).	0.50 (2X label use).	1 gal/1600 ft^2
M-4328	0.25	1 gal/1600 ft^2
M-4531 (0.22% active)	0.22 (no dilution)	6 oz/65 ft^2

Results:

Air monitoring showed that in the M-4515 0.25% active use dilution, the air concentration of chlorpyrifos was 0.011 mg/m^3; at the 0.5% level (2X label recommended usage level) the concentration was 0.024 mg/m^3. TLV for chlorpyrifos is set 0.2 mg/m^3. These would be the levels a PCO would be exposed to.

"Worst case" (closed bedroom) air concentration obtained with the 0.5% active usage dilution was, 40 minutes after application, 0.035 mg/m^3. At 96 hrs this had dropped to 0.006 mg/m^3 for this site.

Wipe tests showed that an average of 43.3 ug of chlorpyrifos could be obtained from 100 cm^2 of vinyl following the 0.5% a.i. 2X use dilution spray. Amount that could be wiped from equivalent areas of other surfaces (plush rug, medium rug, short rug etc.) was considerably less (12.2-13.7 ug). Amount of chlorpyrifos that could be removed from these surfaces following the 0.25% a.i. use dilution spray was even less; 17.7 ug from the vinyl surface and 2.6-4.7 ug from the other surfaces.

Study Classification: Core Supplementary Data

Byron T Backus 9/30/84

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