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

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: EPA Reg. No./File Symbol 9779-293
Phorate 20 G

FROM: Lucy D. Markarian 6/7/90 E 6/13/90
Precautionary Review Section
Registration Support Branch
Registration Division (H75-05C)

TO: W. Miller (PM 16)
Insecticide Rodenticide
Registration Division (H75-05C)

APPLICANT: Riverside/Terra Corp.
Terra Centre,
600 Fourth Street
Sioux City, Iowa 51101

FORMULATION FROM LABEL:

Active Ingredient(s):	% by wt.
Phorate (O,O-diethyl S-[(ethylthio) methyl] - Phosphorothioate	20.0
Inert Ingredient(s):	80.0
Total	100.0%

1 38

BACKGROUND:

The Riverside/Terra Corporation has submitted a new acute inhalation study in support of their product Phorate 20G under Epa 9779-293 This was in lieu of a study That had been found to have deficiencies.

RECOMMENDATION: The present cat support in Inhalation Toxicity is graded core minimum because the chamber concentrations were not monitored all through the exposure periods. It would have been supplimentary had the Test material been less toxic. 4/5 males died at 0.012 mg/L level That puts the LC_{50} at less Than That amount consequently the Test material is in catagory 1. The Test is acceptable as such.

Labeling

The signal word is "Danger" with The word Poison must appear in red on background of distinctly contrasting color with skull and crossbones in the immediate vicinity.

Precautionary Label must read:

Fatal if swallowed, inhaled or absorbed Through skin. Donot breath dust (vapor or spray mist) Wear respiratory protective device approved by NIOSH and MSHA. Do not get in eyes. skin or clothing, wear protective clothing and rubber gloves. Wash Thoroughly with Soap and water after handling. Remove contaminated clothing and wash before reuse.

Statement of Practical treatment must Read:

If swallowed: Call physician or Poison central center. Drink 1 or 2 glasses of water and induce vomiting by Touching back of Throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

If on skin: Wash with plenty of soap and water. Get medical attention

If inhaled: Remove Victim To fresh air. If not breathing give artificial respiration, preferably mouth to mouth. Get medical attention

if in eyes: Hold eyelids open and flush with steady gentle stream of water for 15 minutes - Get medical attention

Note to physician: Probable mucosal damage, may contraindicate gastric lavage.

Restricted use pesticide

DATA REVIEW FOR ACUTE INHALATION TOXICITY TESTING (§81-3)

Product Manager: (16)
MRID No.: 414199-0
Testing Laboratory: Stillmeadow, Inc Huntertexas
Author(s): Mark S. Heibert
Species: Rat Harlan Sprague Dawley (SD) BR
Sex : 15 ♂ + 15 ♀ Weight: ♂ 235-302g ♀ 204-235g
Source: Harlan Sprague Dawley, Inc. Huslen Texas
Test Material: Terra International Phorate 20G micronized Batch #FD-IA-2511
Quality Assurance (40 CFR §160.12): included

Reviewer: Lucy D. Markarian
Report Date: 4/17/90
Report No. 6662-89

Summary:

1. LC_{50} (mg/kg): Males = _____; Females = _____; Combined = _____
2. The estimated LC_{50} is ♂ less than 0.012 mg/L, ♀ less than 0.04 mg/L
3. Mean Concentration: 0.012, 0.040, 0.060, 0.222
4. Tox. Category : I . Classification: Core minimum

Procedure (Deviations From §81-2): Exposure was at four levels with each of the sexes exposed to three levels. Maximum of 10 animals were exposed per level. Exposure was in 500L N.Y. University design Stainless Steel Dynamic flow inhalation chamber.

Results:

Reported Mortality

Exposure Concentration (mg/L)	(NUMBER KILLED/NUMBER TESTED) Males	Females	Combined
0.012	4/5		4/5
0.040		5/5	5/5
0.060	5/5	5/5	10/10
0.222	5/5	5/5	10/10

The aerosol was generated with Gem T Treat AirMill coupled with a motor driven revolving disc delivery system, and was diluted with filtered air and drawn into the exposure chamber. Airflow at the chamber was maintained using a calibrated critical orifice. Concentrations of Test Material were measured gravimetrically

Anderson Cascade impactor was used to determin particle sizes,

Gravimetric

Mean chamber concentration →	mg/L 0.012	mg/L 0.040	mg/L 0.060	mg/L 0.272
@ 1hr ↓	0.012	0.040	0.107	0.675
@ 2hr	—	—	0.013	0.090
@ 3hr	—	—	—	0.080
Average	0.012	0.040	0.060	0.272
Nominal concentration	0.110	0.063	0.174	1.74
Air flow LPM	133.1	145.0	112.6	106.8
Mass Median aerodynamic diameter µm	2.711	—	2.064	1.917
% of particles 3 µm	30.96	—	20.22	17.91

Deaths at the Three high levels occured either during exposure or shortly Thereafter. The 4 males at the 0.012 mg/L concentration died within Two days after exposure. One male survived the 14day observation period

Signs of Toxicity among the animals That succumbed to Treatment showed signs of Toxicity That included decreased activity, nasal discharge, Tremors, ataxia, constriction of pupils, Salivation, Polyuria, lacrimation, exophthalmos, muscle Tremors, Swollen neck, chromodacryorrhea, and withdrawn testes in males. These symptoms were manifested earlier and To more marked degree at the higher levels of exposure prior to death. The only surviving male showed piloerection and decreased activity. Piloerection lasted for 7 days

Necropsy of the animals that died within 2.5 hrs into Treatment revealed dark red lungs. The signs of gross abnormal pathology in the animals that died between 4.5 hrs and Two days included dark red or swollen lungs, some gastrointestinal distress as mucoid or clear liquid in the intestines, brown slurry in ceacum and staining at the anal area indicative of mucoid discharge. Additionally The Testes of the males were drawn into the abdominal cavity.

The survivor at 0.013 mg/L showed no abnormalities.

It is not at all clear why the chamber concentrations were not sampled at 2 and 3 hrs. for the two lower levels. If the 0.012 mg/L or 0.040 mg/L was maintained or not is not known. It is not known why the initial concentrations at 0.060 mg/L and 0.222 mg/L level group dropped dramatically to less than 56 & 42 % of the initial output at 2hrs. Whether this was intended or not is not clear. The fact remains that the animals were initially exposed to 1.8 and 2.4 times, respectively, the Target exposure level and succumbed to treatment However, even if the concentration at the lowest level had dropped to half of 0.012 mg/L it would not change the death ratio nor the Toxicity catagory. The study is accepted as core minimum and rated Catagory 1.