

US EPA ARCHIVE DOCUMENT

Environmental Chemistry Review for difenzoquat methyl sulphate
(1,2-dimethyl-3,5-diphenyl-1 H-pyrazolium methyl sulfate) (Avenge)

Permit No. 241-EXP-46G
PP No. 4G-1453 (Amendment to)
American Cyanamid
1/7/75

1/21/75

I. RECOMMENDATIONS

A. R. L. Temporary permit for use on barley

The following comments are made on the data submitted:

1. The environmental chemistry studies support only one application per growing season. This limitation must be clearly expressed in the directions for use on the label.
2. The soil metabolism and dissipation study; Fate on Soil under Field Conditions (Report C-540) is incomplete in that the loss of activity from the treated soil is not adequately explained. Additional studies including material balance data and chemical identification or characterization of soil degradation products are needed. If volatile products are suspected a study is needed to trap volatile products and identify them.
3. Concerning the study: Fate on Soil under Field Conditions (C-540). The summary of this report states that the rapid initial loss is consistent with known routes of photodegradation. According to the photodegradation studies submitted the routes of photodegradation would not involve any loss of radioactivity. Please elucidate how this loss was consistent with the photodegradation studies (Notebook numbers AC-2191, 2306, and 2392).
4. Soil characteristics (CEC, pH, % O.M., Sand, Silt, and Clay) will be needed for the study "Determination of CL 84,777 Residues in Wheat and Barley In Soil Treated the Previous Year with Avenge" (Report C-574).

5. For the reports: "Avenge - Determination of CL 84777 Residues in Soil," reports #C-555 ✓ (California), C-556 ✓ (California), C-557 (Oregon), C-560 (Minnesota), and C-561 (Minnesota) we need the following data:
 - a. Organic content
 - b. Cation exchange capacity
 - c. pH
 - d. Field Moisture capacity
 - e. Percent: sand, silt, clay
 - f. Nitrate-nitrite level
 6. Concerning the report: "Soil Leaching Studies of CL 84,777" (Section H-5, notebook number AC-2266) we must know the position of the radiolabel and the rate of application of Avenge.
 7. The following information concerning the report; "Avenge, The Gas Chromatographic Determination of 1,2 dimethyl 3,5 diphenyl pyrazolium methyl sulfate in soil (Report C-462) is needed:
 - a. Position of the carbon-14 label
 - b. Soil - characteristics of soil need (i.e. C.E.C., pH, % O.M., Sand, Silt, Clay)
- B. Completion of the following studies will be needed before final registration can be considered.
1. An anaerobic metabolism test. See enclosure. (P.M. - enclose V-22 of second draft guidelines.)
 2. Rotational and/or subsequent crop residue studies (radiolabel study):
 - a. For crops rotated immediately after harvest of a crop in the treated area, the pesticide is to be aged in a sandy loam soil under aerobic conditions for about 120 days, then the soil planted to a root crop, small grain, and a vegetable. The root crop is required; however, crops in two other crop groupings may be substituted for the small grain and vegetable.

- b. For crops rotated the following year after treatment, the pesticide is to be aged in the soil for one year prior to planting. - Crops should be as above.
- c. If significant residues are found, then actual field studies using non-labeled pesticide will be required. Such data must be obtained under actual agricultural practice.
- d. If residues are found in rotational and/or subsequent crops in the field, then a labeling restriction will be needed. This restriction will take the form of a time interval from application to planting of rotational crops such that illegal residues will not occur in the rotational crop. A restriction longer than 18 months is not acceptable.
- e. Cover crops can be rotated if label restrictions are such that the cover crop is plowed under and not grazed.
- f. If the agricultural practice is such that a treated crop area is rotated with another crop that will result in another treatment of the pesticide to the same area, residue data will not be required on the second crop. The rotational crop is to be grown under actual use conditions.

NOTE: All radiolabeled studies should be supported with the following information:

- a. Sample calculations;
 - b. Counting efficiency;
 - c. Counting time;
 - d. Background levels;
 - e. Probable error with scintillation techniques.
- C. Data will be needed to support each tank mixture combination. The time allowed to complete these studies may extend beyond registration if necessary. Studies should be carried out according to the following outline.
- 1. Laboratory study using cold chemicals applied to two soils as recommended in the proposed use. A light and heavy soil will be adequate.

2. Analysis through two half-lives of each pesticide applied as a mixture and separately. The same soil types are to be used for the comparison of the mixture vs individually applied chemicals. Sampling depth should be bottom of container (pot) or 6 inches.

Even if all of the required studies are completed, this would not guarantee registration. Only after all the data have been reviewed can this be determined. If other uses of difenzoquat are proposed, additional environmental chemistry data may be required.

II. INTRODUCTION

A. Avenge - 2A-S Wild Oat Herbicide CL-84,777

B. Applicant is proposing following amendment and label changes:

An increase in tolerances from 0.5 to 20 PPM^a and from 0.05 to 0.2 PPM in barley grain, an extension of the temporary permit for 1 year and for label changes to provide for tank mixes with bromoxynil and MCPA.

*on barley straw
(S.F.H. 10/10/75)*

C. See environmental reviews 12/6/74, 2/15/74 and 1/21/75.

D. One quart contained 0.5 lb. difenzoquat cation.

III. DIRECTIONS FOR USE

A. Applications should be made when the majority of wild oat plants are in the 3-5 leaf stage. Application rate was 0.625 - 1.0 lb ai/A based on extent of infestation of wild oats.

Do not apply Avenge when plants are heavy with dew or rain, if rain is predicted within 6 hours, and in winds over 15 m.p.h.

Do not allow livestock to graze on fields until after harvest of crop.

Do not plant subsequent crops for 18 months, except barley.

B. Tank Mixes

1. MCPA - Select proper Avenge rate based on wild oat infestation. Use either an amine or ester formation at 0.25 - 1.0 lb/A MCPA acid equivalent in accordance with the label recommendations for the particular formation.
2. Bromoxynil - Select proper Avenge rate based on wild oat infestation. Bromoxynil at 0.375 - 0.5 lb. ai/A.
3. MCPA plus bromoxynil - Select proper Avenge rate based on wild oat infestation. MCPA as butomxyethanol ester or isooctyl ester at 0.25 - 0.5 lb/A of MCPA acid equivalent plus bromoxynil at 0.25 - 0.5 lb ai/A.

IV. DISCUSSION OF DATA

No new environmental chemistry data submitted.

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