

2/14/87

Shaughnessy No.: 032201

Date Out of EAB: MAY 18 1987

To: Dick Mountfort  
Product Manager 23  
Registration Division (TS-767)

From: Emil Regelman, Supervisory Chemist  
Review Section #3  
Exposure Assessment Branch  
Hazard Evaluation Division (TS-769C)

Attached, please find the EAB review of...

Reg./File # : 239-1663  
Chemical Name: Diquat dibromide  
Type Product : Herbicide  
Product Name : Diquat Water Weed Killer  
Company Name : Chevron Chemical Co.  
Purpose : Review request for modification of the leaching study for the Diquat Registration Standard.

Action Code: 630 EAB #(s) : 70090  
Date Received: 1/6/87 TAIS Code: 201  
Date Completed: 5/12/87 Total Reviewing Time: 2.5 days

Deferrals to: \_\_\_\_\_ Ecological Effects Branch  
\_\_\_\_\_ Residue Chemistry Branch  
\_\_\_\_\_ Toxicology Branch

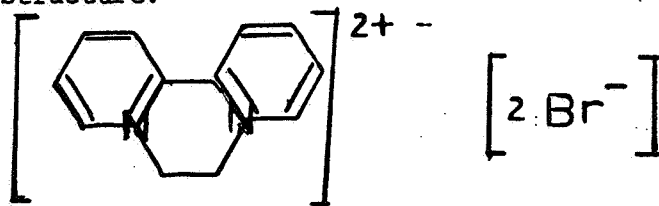
1. CHEMICAL: Common Name: Diquat dibromide

Chemical Name: 1,1'-Ethylene-2,2'-bipyridylum

Trade Name: Diquat Water Weed Killer

Company: Chevron Chemical Co.

Structure:



2. TEST MATERIAL: N/A

3. STUDY /ACTION TYPE: Response to Registration Standard requirement for leaching study.

4. STUDY IDENTIFICATION:

1. Helling, C.F. 1971. Pesticide mobility in soils I. Parameters of thin-layer chromatography. Soil Sci. Soc. Amer. Proc. 35: 732-737.
2. Helling, C.F. 1971. Pesticide mobility in soils II. Application of soil thin-layer chromatography. Soil Sci. Soc. Amer. Proc. 35: 737-743.
3. Helling, C.F. 1971. Pesticide mobility in soils III. Influence of soil properties. Soil Sci. Soc. Amer. Proc. 35:743-748.
4. Tucker, B.V. 1970. Diquat leaching in soil. Chevron Chemical Co. Report File No. 721.2.
5. Riley, D. R.P. Gratton and W. Wilkinson. 1972. Diquat: Physico-chemical behaviour and herbicidal activity of residual in soil. ICI Plant Protection Division Report No. AR 2372A. (MRID 00121315)
6. Riley, D. and R.P. Gratton. 1974. Unavailability to plants of Diquat residues in soils. 10th Intern. Congress Soil Sci. 3: 193-202.
7. Hebden, J.M.C. and D. Riley. 1972. Paraquat and Diquat: Bioassay with wheat seedlings and its application for determining the strong adsorption capacities (SAC-WB) of soils. ICI Plant Protection Div. Report No. AR 2358A.

8. Tucker, B.V., D.E. Pack and J.N. Ospenson. 1967. Adsorption of bipyridilium herbicides in soil. J. Agric. Food Chem. 15: 1005-1008.
9. Prashad, S. and S.E. Newby. 1976. Diquat: Leaching of Diquat plus its photoproducts in soil. ICI Plant Protection Div. Report No. AR 2691B.
10. Balwin, B.C. and R.E. Grigg. 1972. Bipyridilium herbicides: The fate of carbon-14 labelled Diquat in soil under field conditions. ICI Plant Protection Div. Report No. AR 2336B.

5. REVIEWED BY:

Paul Mastradone  
Chemist  
EAB/HED/OPP

Signature: Paul J. Mastradone  
Date: MAY 15 1987

6. APPROVED BY:

Emil Regelman,  
Supervisory Chemist  
ECRS#3  
EAB/HED/OPP

Signature: Emil Regelman  
Date: MAY 18 1987

7. CONCLUSIONS:

- A. The bioassay procedures used (plant survivability) in the study cited in the appendix to the submission and reviewed for the Registration Standard Science Chapter (Section 4, Study 7 this document) are not chemical specific and therefore are not acceptable under Subdivision N guidelines. The registrant should be informed that studies employing non-chemical specific procedures are not accepted in support of registration. References to other unreviewed studies also indicates that the registrant either does not have or has not read the Subdivision N guidelines as they apply in each case.
- B. Citations in the registrants rebuttal (Section 4, Studies 1-3) are explanations of the soil thin-layer technique. These citations were reported in Subdivision N as guidance for the thin-layer technique not for the detection or analytical methodologies. Valid analytical methodology will be necessary for Diquat and any degradate formed.
- C. Several of the remaining studies reported in this response appear as though they may provide useful information on the leaching and adsorption characteristics of Diquat. As may be noted in Section 4, with a single exception no MRID numbers were provided. If these data were previously submitted to EPA for review they were not included on the bibliography of studies reported to EAB as available for review for the Science Chapter.

D. Based on this submittal EAB concludes that additional data using chemical analytical techniques may be available to the registrant and should be submitted to the Agency for review.

E. Queries of EAB by EEB indicate that good adsorption/desorption data are necessary for aquatic impact assessment. If acceptable data indicating that residues of Diquat dibromide are as tightly bound to soils and sediments, as this submission suggests, the entire assessment of aquatic impact of diquat may be changed.

8. RECOMMENDATIONS:

A. Based on the limited information presented in this submission the registrant should provide data, acceptable under Subdivision N guidelines, to support the contention that Diquat dibromide is tightly bound to soils. That data should be done according to guideline specifications and should be analyzed by specific chemical procedures. It should be emphasized that bioassay (plant survivability) data are nonspecific procedures and are not acceptable for registration purposes.

9. BACKGROUND

A. This submission was in response to the Registration Standard and requirements imposed under this standard.

10. DISCUSSION OF INDIVIDUAL TESTS AND STUDIES: N/A

11. COMPLETION OF ONE-LINER: N/A

12. CBI APPENDIX: N/A