DATA EVALUATION RECORD

STUDY 2

CHEM 109101 MEPIQUAT CHLORIDE §NA

STUDY ID 43468702 and 43785801

Burkey, J.D. and White, M.T. FREEZER STORAGE STABILITY OF BAS 083 W IN SOIL (25-MONTH INTERVAL) - INTERIM REPORT. Submitted and Sponsored by BASF Corporation, Research Triangle Park, NC; Performed by BASF Corporation Agricultural Research Center under Document No. 94/6155; Study Completed on 30 August 1994; Received by EPA 1 December 1994; MRID 43468702.

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CONCLUSIONS:

Storage Stability Data:

This is not a guideline study. However, these data are needed to validate the analytical data of the terrestrial field studies which were submitted to support reregistration of mepiquat chloride. These storage stability data are scientifically valid and acceptable to validate the terrestrial field data. Therefore, no further storage stability data for mepiquat chloride on the Texas test site are needed at this time.

Mepiquat chloride, when applied at a concentration of 1 ppm to a Texas sandy clay loam soil and stored in a freezer, appears to be stable for up to 40 months. The concentration of the fortified soil samples during the 40 month testing period ranged from 0.78 ppm at 0 time interval to 0.84 ppm at 40 month post-storage.

MATERIALS AND METHODS:

Test Material: 1.00 ppm mepiquat chloride standard solution. See Table III.

Reference Standards:	Mepiquat chloride with a chemical purity of 99.3% and/o 99.5%. Two different lot numbers were used for the studies.
Soil and Test sites:	Sandy loam/sandy clay loam from Idalou, TX.
Testing Conditions:	Freezer at -4°C
Sampling intervals:	0, 5, 14, 25, and 40 months.
Analytical Method:	Ion pair Chromatography
Testing Period:	40 months

METHODOLOGY:

Soil from an untreated plot in Idalou, Texas was collect from different soil depths. The Texas soil was combined and homogenized prior to form a composite . From the composite soil, 50 grams aliquots of the test soil were weighted and placed in separate test bags. Each aliquot was then treated with mepiquat chloride at an application rate equivalent to 1 lb a.i./A or 1 ppm. After treatment, the test soil samples were mixed and placed in a freezer at <-5°C. Untreated test soil samples (control) were placed in the freezer along with the treated test samples. To determine the stability of the analytical standard, standard solutions (in water) were stored at room temperature in sunlight and at 4°C in dark for later analysis, as well.

Samples were collected from the test and control samples at 0 (time of initiation of study), 5, 14, 25, and 40 months post-storage(See Table II). The analytical standard storage stability samples were collected at 0, 1, 5, 7, 14, 30, 59, and 119 days post-storage.

Test samples were analyzed using BASF Analytical Method Number A9105. Soil test samples were extracted by refluxing in 0.5N aqueous sodium hydroxide. The aqueous phase was then decanted from the soil phase. The soil phase was washed several times with the extracting solvent, centrifuged, and the supernatant liquid combined with previous extract. The extract test samples were acidified and the precipitated contaminants removed by filtration, and the extract test samples made basic. The mepiquat chloride residues were then isolated in the form of a dipycrylamine-complex, and the mepiquat chloride residue complex extracts partitioned into dichloromethane. In order to decomplex the mepiquat chloride residues, the dichloromethane extracts were extracted with an acidic solution. These extracts were purified and analyzed using an ion chromatography (See Figure 1).

Calculations were made based on VG Multichrom data collection system (See Figures 2 and 3). Figure 2 is calculation for residue samples, and Figure 3 is for typical samples.

DATA SUMMARY:

These data indicate that mepiquat chloride is stable in Texas soil for up to 40 months when stored at <-5°C. There was no significant change in the concentration of mepiquat chloride during the 40 month storage period (See Tables I, V, and VI). The mepiquat chloride concentration was 0.78 ppm (not corrected for analytical method) at Time 0 and 0.80 at 40 months post-storage. During the testing period, the mepiquat chloride concentration ranged from 0.74 to 0.84 ppm.

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In addition, storage stability data for the mepiquat chloride analytical standard solution (in water) indicated that the standard solution was stable for up to 119 days when stored at room temperature in sunlight and at 4°C in the dark (See Table IV). The concentration of the analytical standard for samples stored at room temperature and in sunlight ranged from 96.7% to 112.0% of initial concentration during the 119 day storage period. The concentration of the analytical standard for samples stored at 4°C and in the dark ranged from 93.3% to 103.3% of initial concentration during the 119 day testing period.

COMMENTS:

1. The test soil was characterized in a previous terrestrial field dissipation study (MRID 42353301) and reported as sandy loam/sandy clay loam.

2. These storage stability data reflex the storage stability of mepiquat chloride applied at an application rate of 1 ppm in a Texas soil. These data may not reflect storage stability of mepiquat chloride in other test soils and at significantly lower or higher concentrations. EFGWB prefers that storage stability test samples be fortified (at the application rate level) in the field at each test site and be handled and transported in the same manner as the test samples. This testing method for storage stability data is believed to better reflect stability of the test samples during transfer and storage. Future storage stability studies should carried out in this manner.

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Mepiquat Chloride MRID 43415401

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