

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD

STUDY IDENTIFICATION:

Bregger, T. E. 1992. SAN 582 H 7.5L/Soybeans Terrestrial Dissipation/Field Conditions Trial ID 0110215A. Field portion contracted to Heartland Technologies, Inc., Indianapolis, IN and analytical portion performed by Sandoz Corporation, Des Plaines, IL. MRID No. 422662-02, vol 1 of 2.

Bourry, R. 1991. A Method for the Determination of the Residues of SAN 582H in Corn and Soil Samples. Sandoz Agro Ltd., Analytical Chemistry and Environmental Sciences. MRID No. 422662-02, vol 2 of 2.

TYPE OF STUDY: Terrestrial Field Dissipation

REVIEWED BY:

George Tompkins, Entomologist
Review Section 1, EFGWB, EFED

Signature: *George Tompkins*
Date:

APPROVED BY:

Paul J. Mastradone, Section Chief
Review Section 1, EFGWB, EFED

Signature: *Paul J. Mastradone*
Date:

CONCLUSIONS:

1. EFGWB concludes that the study submitted is acceptable and partially satisfies the data requirements for terrestrial field dissipation studies. This study combined with the following three field dissipation studies and the storage stability study (MRID #'s 422662-03, 422662-04, 422662-05, and 422662-06) satisfy the data requirements for terrestrial field dissipation studies.

2. Based on the results of the study SAN 582 H applied at 1.5 lb ai/A to a loam soil near Noblesville, Indiana dissipated with a half-life of 14.1 days. SAN 582 H was not found below the 0-10 cm segment of the soil and was detected until 157 days after application. Oxalamide was detected no further than the 10-20 cm soil segment and was detected until 61 days after application of SAN 582 H.

3. It can be concluded that the limit of detection of SAN 582 H in both the soil and crop matrices was 0.01 mg/kg (ppm) by the methods developed and used.

MATERIALS AND METHODS:

Prequalifying soil cores from the proposed site were analyzed by Sandoz Crop Protection Corporation (SCPC), Residue Chemistry for SAN 582 H and oxalamide residues. Treatments were applied only after prequalifying sample analysis was completed and the site was shown to be free of SAN 582 H and its metabolite oxalamide.

The study site, located near Noblesville, IN, was prepared by chisel plowing followed by disking. To aid in weed control a preemergence application 0.75 lb ai/A pendimethalin as the product Prowl and 0.50 lb ai/A metribuzin as the product Lexone were applied the same day the SAN 582 H treatment was made. SAN 582 H formulated as 7.5 EC was applied at the maximum proposed label rate of 1.5 lb ai/A in 19.8 gal water/A on the morning of 5 July 1990, with a calibrated, tractor mounted sprayer. Twelve Tee Jet 8004 fan nozzles at 20 inch spacing covered 20 feet in a single pass when operated at a height of 18 inches and the unit was operated at a ground speed of 5.25 mph (7.7 ft/sec) with 30 psi back pressure. The soil at the study site was a loam formed in a thin loess overlying glacial till (see Table III for soil characteristics). The application was not incorporated and no rain fell nor was irrigation applied within 24 hours of application. A total of 60.55 inches of precipitation including rainfall and irrigation fell on this plot during the duration of the study. The study site was maintained in a crop of soybeans (planted on 3 July 1990) for the remainder of the 1990 season and fallowed in 1991. Weeds were controlled in 1991 by mowing.

The study was laid out in plots 130 x 25 ft with 3 replicates of treated plots and a control. The treated areas were separated from each other by a minimum of 20 ft and from the untreated control area by 100 ft along a line perpendicular to the prevailing winds and slope. Each area, both untreated and treated, was large enough to allow 10 or more subsampling areas each being approximately 25 ft long by 10 ft wide. Eight 5 x 90 cm cores were taken from the full length of each plot within an area 36 inches wide along the center line of the appropriate sampling area at -1, 0, 1, 3, 11, 14, 28, 61, 90, 114, 157, and 375 days after treatment resulting in 24 soil cores per sampling interval from the treated areas and 8 soil cores from the untreated area. Samples were taken so that they were encased in acetate tubes which became the shipping containers for the soil samples. The upper 10 cm of samples taken on days 0, 1, 3, 11, 14, 28, and 61 were taken separately as a 10 cm core 8 cm wide. The remaining 80 cm of the 90 cm core were taken as a continuous core from the middle of this 10 x 8 cm hole. Samples were frozen within 2 hr after being taken and remained frozen until analysis. Four soil cores out of the 8 taken from each subsampling area were selected for analysis. Soil cores were cut into 10 cm sections with a bandsaw while the cores were frozen corresponding to depth beginning at the end of the soil core at or closest to the soil subsurface. After sectioning, the corresponding sections of the 4 cores were composited in labeled plastic bags. Samples were thawed sufficiently for homogenization by shaking and crushing any large chunks and then returned to the freezer until

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extraction and analysis. Surface samples (0-10 cm) from the 0, 1, 3, 11, 14, 28, and 61 DAT sampling intervals were placed directly into plastic bags and homogenized. After determining soil moisture content the soil samples were analyzed for SAN 582 H and oxalamide by SCPC method AM-0865-0791-0 and some samples were analyzed according to a second method, BS 2304, as a check (Appendix VI).

Samples analyzed by method AM-0865-0791 were extracted from soil samples with 3% sulfuric acid in methanol. Oxalamide was methylated during concentration of the extract. The extract was cleaned up using a C-18 column with the analytes eluted from the column with ethyl ether. The ethyl ether was taken to dryness and the analytes redissolved in toluene. Analysis was by gas chromatography (GC) coupled to a nitrogen-phosphorous detector. The limit of detection to which this method has been validated is 0.01 ppm for SAN 582 H and its oxalamide metabolite. The limit of quantitation would be 0.018 ppm for SAN 582 H and 0.024 ppm for oxalamide methyl ester.

Samples analyzed by method BS 2304 were extracted with 95:5 v:v methanol:water. Cleanup was accomplished by using a C-18 reverse phase column followed by toluene/water partitioning and finally using a silica column. Analysis was by GC using a nitrogen specific detector. The limit of determination was defined to be 0.01 ppm for crop and soil matrices. Samples fortified with SAN 582 H and oxalamide were run concurrently with test samples. Subsamples of control or pretreatment soil were fortified to 0.01, 0.02, 0.05, 0.10, 0.20, 0.30, or 0.50 ppm SAN 582 H or oxalamide.

REPORTED RESULTS:

1. SAN 582 H dissipated with a reported half-life of 14.1 days from the soil in a field in Noblesville, Indiana which was treated at 1.5 lb ai/A (Fig.12). SAN 582 H dissipated from 0.68 ppm at day 0 to non detectable levels (<0.01 ppm) by 114 days after application (Table XVII). Oxalamide formed only to the limit of detection and appeared to dissipate rapidly.
2. SAN 582 H was detected only in the 0-10 cm sampling depth of soil and at no time was found below this depth. Oxalamide was detected no further than the 10-20 cm soil segment and was detected until 61 days after application of parent.
3. The method used for determining the residues of SAN 582 H in corn and soil samples had a limit of determination of 0.01 mg/kg for both crop and soil matrices.

DISCUSSION:

Soil moisture was 16.6% in the 0-10 cm segment when application was made. Soil moisture ranged from 12.1-24.8% but was predominantly >20%; deeper samples having higher moisture (Table VIII). Based on the percent moisture at field capacity determined by the soil testing laboratory (~33%) the samples were taken at

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about 50-75% of field capacity.

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