

US EPA ARCHIVE DOCUMENT

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DATA EVALUATION RECORD

STUDY 2

CHEM 080807 Simazine \$161-2

FORMULATION--90--FORMULATION NOT IDENTIFIED

STUDY ID 00143171

Bowman, B. 1984. Determination of the photolysis rate constants and degradation products of simazine. Report No. 31829. Performed by Analytical Bio-Chemistry Laboratories, Inc., Columbia, MO, and submitted by Ciba-Geigy Corp., Greensboro, NC.

DIRECT REVIEW TIME = 3

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CONCLUSIONS:

Degradation - Photodegradation in Water

This study is scientifically sound and provides supplemental information towards the registration of simazine. This study does not fulfill EPA Data Requirements for Registering Pesticides because the test solutions were not buffered, the test substance was incompletely characterized, the incubation temperature was not specified, the spectral energy distribution of the artificial light source was inadequately described, and the intensity and wavelength distribution of the artificial light source were not compared to natural sunlight. The results, however, indicate that the presence of sensitizers may increase the rate of photodegradation.

SUMMARY OF DATA BY REVIEWER:

Ring-labeled [14C]simazine (radiochemical purity unspecified), at approx 1 ppm, degraded with a half-life of >30 days in sterile, unbuffered water (pH unspecified) irradiated with a mercury vapor lamp (intensity

$\approx 5560 \mu\text{W}/\text{cm}^2$ ). The registrant-calculated half-life was 1323 days. After 30 days of irradiation, simazine and the degradate . . .

2-amino-4-chloro-6-ethylamino-s-triazine (G-28279)

comprised 86.8-88.8 and 10.6-11.0% of the applied radioactivity, respectively. In the dark control, simazine and G-28279 comprised 96.5-98.1 and 1.6% of the applied, respectively, at 30 days posttreatment. The material balances ranged from 97.5 to 125.8% of the applied.

Under photosensitized conditions, [ $^{14}\text{C}$ ]simazine, at  $\approx 1$  ppm, degraded with a half-life of  $\approx 1$  day in a sterile, unbuffered 1% aqueous acetone solutions irradiated with artificial light. The registrant-calculated half-life was 16 hours. After 98 hours of irradiation, simazine comprised 24.8-26.4% of the applied, G-28279 comprised 77.8-82.1%, . . .

2,4-diamino-6-chloro-s-triazine (G-28273) comprised 4.8-5.6%,

2-hydroxy-4,6-bis(ethylamino)-s-triazine (G-30414) comprised 3.3-4.1%,

2-amino-4-hydroxy-6-ethylamino-s-triazine (GS-17792) comprised 0.7-0.9%,

and one unknown comprised 2.4-3.0%. In the dark control, simazine and G-28279 comprised 95.5-95.8 and 1.0-1.3% of the applied, respectively, at 21 days posttreatment. The material balances ranged from 95.3 to 133.8% of the applied.

DISCUSSION:

1. The test solution was not buffered, and the pH of the test solution was not reported.
2. The purity of the test substance was not reported.
3. The incubation temperature was not specified, but it was reported that the temperature did not exceed  $35^\circ\text{C}$ .
4. The artificial light intensity was not measured directly, but was calculated based on the manufacturer's specifications. In addition, the spectral energy distribution that was provided [1468 (5780A), 1802 (5461A), 1489 (4358A), and 793 (4045A)  $\mu\text{W}/\text{cm}^2$ ] should have been more detailed (e.g., a graphical distribution); it could not be determined if the light source was continuous.
5. The intensity and wavelength distribution of the light source were not compared to natural sunlight.
6. It was reported that there was no detectable difference between the absorption spectra of aqueous 2 ppm simazine solutions and pure water in

the range of 340-900 nm; however, the absorption spectra were not provided.

7. Reference compounds were not cochromatographed (TLC) with the samples.