11/5/79

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Date Out EFB:

To: Product Manager Jacoby (21)
TS-767

Through: Dr. Gunter Zweig, Chief
Environmental Fate Branch

From: Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 359-684,685

Chemical: 3-(3,5-dichlorophenyl)-N-(1-methylethyl)-2,4-dioxo-1-imidazolidine carboxide (RP-26019)

Type Product:

Product Name:

Company Name:

Submission Purpose: activated sludge study

ZBB Code: Sec. 6(a) (2)

Date in: 5/3/79

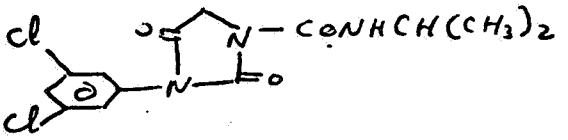
Date Completed: 11/5/79

Deferrals To:

- ☐ Ecological Effects Branch
- ☐ Residue Chemistry Branch
- ☐ Toxicology Branch

1. Introduction

This submission includes only the activated sludge study of Chipco 26019; no other environmental chemistry (EC) data is submitted or referenced. The study is apparently submitted for fulfillment of a request made by the product manager. Past EC reviews of this product are found in reg .file no. 359-AIL (10/10/78) and file no. 359-EUP-55(3/14/79) . Chipco is a fungicide product containing 50% the active ingredient 3-(3,5-dichlorophenyl)-N-(1-methylethyl)-2,4 dioxo-1-imidazolidine carboxide;
chemical structure



Other names: Glycophene 26019, Ipradione, and RP 26019.

Directions for use are being omitted from this review since there is no label information included in the submission.

2. Discussion of Data

2.1 Activated Sludge Study with RP-26019
3-(3,5-Dichlorophenyl)-N-(1-methylethyl)-2,3-Dioxo-1-Imidazolidine Carboxamide by Kurt Huhtaner, Ph.D. Cannon Labs., Inc., Nov. 9, '78 (EPA acc. # 238248)

Activated sludge used in this study was obtained from the sewage treatment plant in Hamburg, Penn.
By utilizing the Soap and Detergent Assoc., semicontinuous ~~AS~~ testing method, effects of RP-26019 (uniformly labeled with ^{14}C in the benzene ring) on the wastewater treatment process were examined. The study set up included 2 control and 3 test sludge units. In each sludge test unit, RP 21019 concentration was increased from 0-100 ppm over a 10 day period (i.e., 10 cycles). At the end of each cycle, and after 24 hours of earation, supernatant from each test units was sampled for microbiological examination; and sludge was characterized on 4 different media (general universal med., med for actinomycetes, med. for yeast and yeast extract agar). The effluent (supernatant) was also examined for DO, pH, and temp. Volatile traps were examined for each cycle, for CO_2.

Analytical Consideration

1. Sludge solids were combusted in Beckman biological material oxidizer.
2. Supernatant aliquots were counted in Beckman LSC after extraction with HCL and CH_2CO_2.
3. Solubility characteristics of RP-26019 under simulated experimental conditions were examined by spiking well water with ^{14}C-RP 26019, stirring it for 3 hours and determining the ^{14}C content of the solutions by radioassay.
4. Identification of RP 26019 and its degradates in the extracts was accomplished by TLC using non-labeled standards.
5. GC was used to analyze for RP-26019 and RP-30228 in the extracts of both solids and supernatant.

Results

1. Neither the sludge settling behavior nor its color were affected by the presence of RP-26019.
2. Temperature remained between 20 and 23.5° C and pH remained at 7 throughout the study.
3. Total solids and dissolved oxygen of test sludge were not affected by the addition of RP-26019.
4. Balance of radioactivity calculated as follows

$$\frac{S + N}{TAA-TAD} \times 100 = \% \text{ Recovered, where}$$

S = Solids,
N = Supernatant, TAA=total accumulated radioactivity added; and
TAD=tot. accumulated discarded.

5. After the 5th day of the study, % ^{14}C in supernatant and total recoveries decreased due to the low solubility of the compound in water, which was being removed by filteration during assay.
6. RP-30228 1-(3,5-dichlorophenyl(carbamoyl) 1 -isopropyl hydanation was noted to be the other major constituent in the supernatant; it is of much lower solubility than RP-26019 (0.5 ppm vs. 13 ppm).
7. The extraction sum of RP-26019 and RP 30229 from supernatant with CH_2CL_2 accounted for 54 to 70% of the total radioactivity recovered by the TLC plates. Author speculated the assumption that the original minor impurities could represent over 50% of the radioactivity associated with the supernatant.
8. GC analysis of extracts confirmed TLC results for the most part.
9. Solid extracts characterization by TLC indicated that 80% of recovered radioactivity is accounted for by RP-26019 and its isomer RP-30228.
10. No radioactivity detected in the gas traps.

Conclusion

1. RP-26016 and its major degradate RP-30228 are not biodegradable.
2. RP-26016 in wastewater will not affect the AS process.
3. At low concentrations and up to 13.0 ppm it will pass through the treatment system and discharged with the effluent. At higher concentration it will be removed by precipitation with sludge solids.

3. Recommendations

1. This study is acceptable in identifying the fate of Chipco-RP 26019 in wastewater treatment systems. However, it lacks GC Chromatograms and TLC photographs.
2. If discharged to wastewater treatment systems, chipco will pass thrcugh and be discharged to the aquatic environment at concentrations up to 13 ppm, beyond which it will settle with sludge solids.
3. Hence, label must caution against the discharge of the active pesticide intc wastewater treatment systems.
4. Alternately, data required for direct discharges outlined in the guidelines published in Federal Register July 10, 1978, must be fulfilled.
5. EEB concurrance is required.

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Environmental Fate Branch
Review Section #1