

MAY 27 1980

To: Product Manager Castillo (32)
TS-767

Through: Dr. Gunter Zweig, Chief
Environmental Fate Branch

Garner

From: Review Section No. 1
Environmental Fate Branch

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Attached please find the environmental fate review of:

Reg./File No.: 10182-RO & 10182-EUP-11

Chemical: Poly (hexamethylene biguanide) hydrochloride

Type Product: Algacide

Product Name: Baquacil

Company Name: ICI Americas

Submission Purpose: Registration of swimming pool use

EFB #: 402, 403

Action Code 112, 267

ZBB Code: Sec 3

Date in: 3-19-80

Date Completed MAY 27 1980

Deferrals To:

☐ Ecological Effects Branch

☐ Residue Chemistry Branch

☐ Toxicology Branch

Introduction

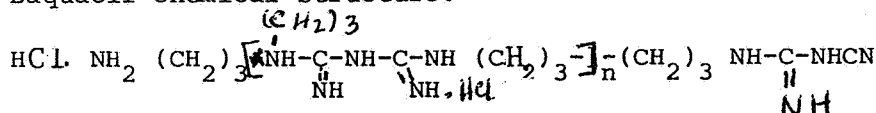
This is a review of two submissions for:

1. Extension of EUP application (file no. 10182-EUP-11) and
2. Registration application (file no. 10182-RO) of the algacide Baquacil. for use in swimming pools as alternative to chlorine.

The experimental program is designed to run in homeowners pools (ca. 200); 100 pools in Corpus Christi, TX and 100 pools in Phoenix, AZ. The program involves use of 15,000 pounds of the formulated product at a pool concentration of 50 ppm over a 4-5 month season to run from May thru September 1980. Additional 50 pools in Wilmington, Delaware are proposed for June thru September 1980. Baquacil contains 20% of the active ingredient poly (hexamethylene biquanide) hydrochloride = poly (iminoimido carbonyl iminoimido carbonylimino hexamethylene hydrochloride).

Other names: PHMB, Vantocil IB, Baquacil SB. There is only one EC review of previous submission of this chemical (file no. 10182-19) dated 4/3/79, noting data gaps and deficiencies and requiring clarification of some of the studies reviewed.

Baquacil chemical structure:



Direction for Use

Application: adjust pool water pH to 7.2-7.8, and add the required amount of Baquacil into the water in the region of the inlet to give a concentration of 50 ppm (10 ppm active ingredient) for the volume of the pool. Overwintering (at the end of swimming season) raise pH to 8.0 - 8.3 and maintain Baquacil's concentration at 50 ppm.

Environmental Hazards:

1. Discharge of pool waters of streams and other inland waterways are subject to the consent of the relevant water authority and should not be made without such consent.
2. Do not use Baquacil in ornamental fish ponds since at concentration above 2.5 ppm, Baquacil is likely to be toxic to fish.

Discussion of Data

The submission for registration (i.e. 10182-RO) includes 2 environmental chemistry studies in appendices 4-A and 8-A to Vol. 11 (Acc. No. 241793).

1. BAQUACIL HYDROLYSIS/PHOTODEGRADATION STUDY (App. 4-A; Oct. 17, 1979)
W.R. Turner & H.W. Ramaswamy

- The hydrolysis study of Baquacil was conducted at 10 and 20 ppm concentration of Baquacil (20% a.i.) at pH levels 5, 7, and 9, and incubated at temperatures 25°C and 45°C (in dark), for a 30-day period. Test solutions were sampled on 0, 8, 14, 21, and 28 day of the study and analyzed by PHMB specific analytical colorimetric and differential pulse polarographic procedures.

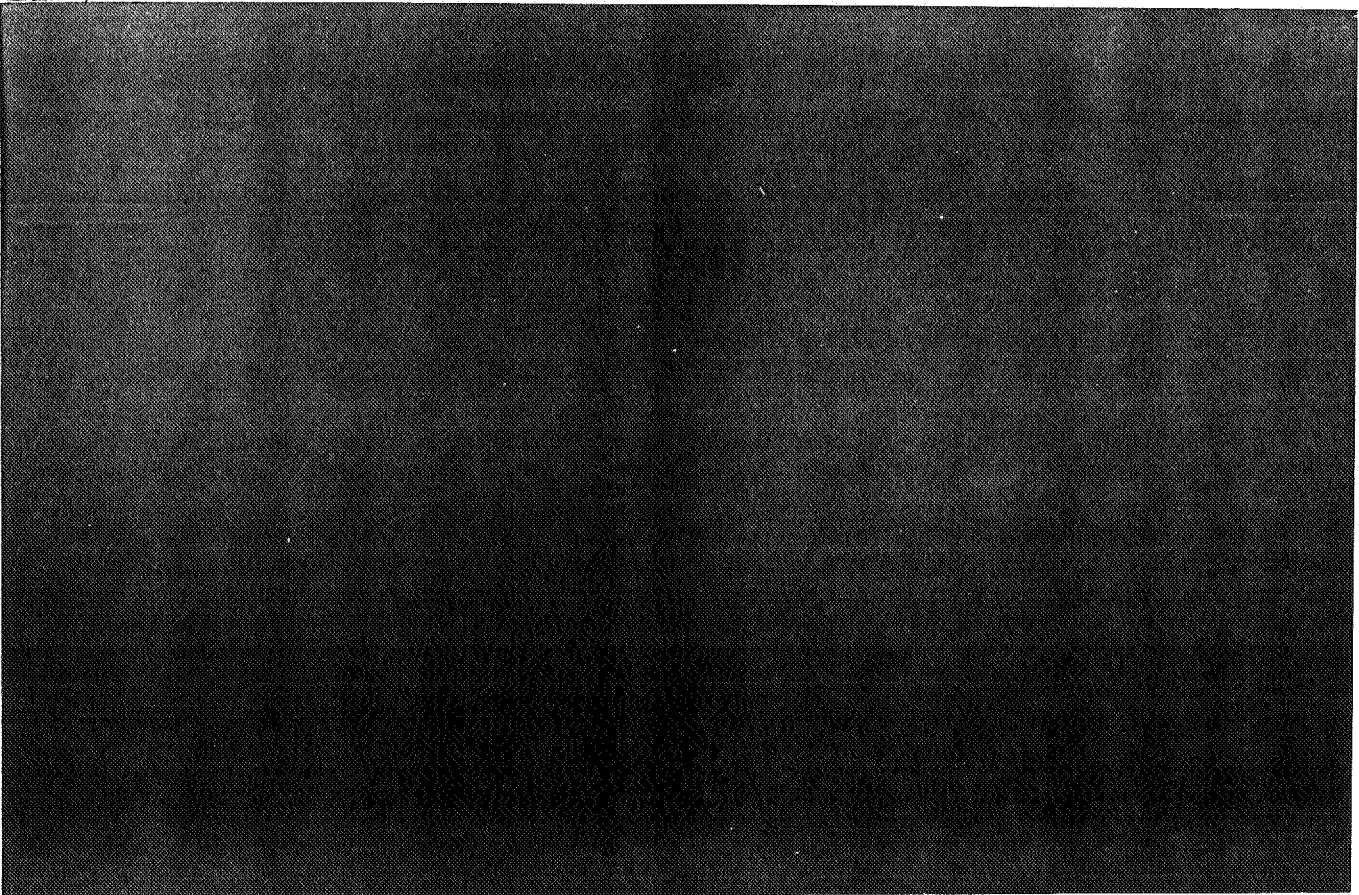
The reported results show no evidence of hydrolysis.

- The photodegradation study was carried out at 25°C only on a 10 ppm solution of Baquacil (20% a.i.) in distilled water placed in a polyethylene container covered with a polyethylene film transparent to visible and U.V. lights (7280 nm), to which it was continuously (24 hrs/day) exposed for a 30-day period. Test solutions sampled and analyzed same as in the hydrolysis study.

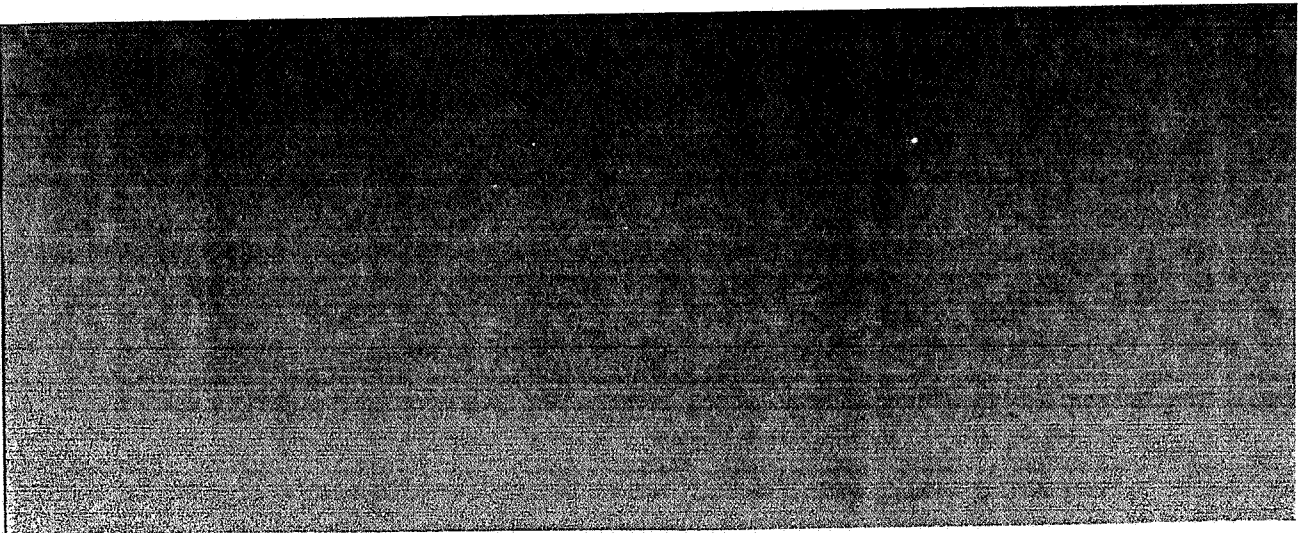
The reported results show absence of photodegradation.

2. THE EXAMINATION OF POLYMERIC BIQUANIDE PRODUCTS FOR N-NITROSAMINE
CONTAMINANTS (May, 1979)
Confidential Project no. 947.

Commercial/financial business information



Commercial/Financial business
information



Conclusion and Executive Summary

The studies reviewed here in conjunction with the application for registration of Baquacil have demonstrated the absence of the chemical's hydrolysis and photodegradation in aqueous medium; and the detectability of N-nitrosoamine contaminants as nitric oxide in the baguanide polymeric products Vactocil IB and Vactocil P at level less than 0.01 ppm. It may be concluded that Baquacil's environmental profile has been established short of the data gaps/clarifications requested in EFB's last review (dated 4-3-79; file no. 10182-19).

Recommendation

Environmental Fate Branch concurs with EUP as proposed; however, it declines to make any recommendation for the registration of Baquacil until all questions asked previously are properly and satisfactorily answered.

Madeline Nawar
Review Section 1
EFB
5/8/80

M. Nawar 5/19/80