

US EPA ARCHIVE DOCUMENT

Shaughnessy No.: 006315

Date Out of EAB: MAY 13 1987

To: Jeff Kempter
Product Manager 32
Registration Division (TS-767)

From: Akiva D. Abramovitch, Ph.D. *d*
Acting Chief, Review Section #1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached, please find the EAB review of...

Reg./File # : 8959-44

Chemical Name: 1-Bromo-3-Chloro-5,5-Dimethylhydantoin

Type Product : Disinfectant

Product Name : _____

Company Name : Analytical Biochemistry Laboratories

Purpose : Registration for use in indoor and outdoor swimming pools
and spas.

Date Received: 10/27/86

Action Code(s): 310

Date Completed: _____

EAB #(s) : 70043

Days: 1

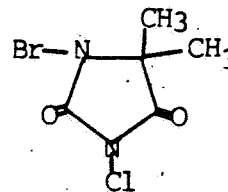
Deferrals to: _____ Ecological Effects Branch
_____ Residue Chemistry Branch
_____ Toxicology Branch

Monitoring study requested by EAB:

Monitoring study voluntarily conducted by registrant:

1.a CHEMICAL:

1-Bromo-3-Chloro-5,5-Dimethyl Hydantoin
N,N'-Bromo, Chloro-Dimethyl Hydantoin.
HALOBROM



1.b Physical Properties:

Not included in this submission.

2. TEST MATERIAL: 46.4% radiochemically pure 1-Bromo-3-Chloro-5,5-Dimethylhydantoin

3. STUDY/ACTION TYPE:

Review of studies for registration for use in swimming pools and spas (indoor and outdoor).

4. STUDY IDENTIFICATION: Acc. # 265455 and 265456.

- 1) Determination of Photodegradation of 1-Bromo-3-Chloro-5,5-Dimethylhydantoin in pH 7 buffer solution (report # 34463).
- 2) Determination of the Hydrolysis rate of 1-Bromo-3-Chloro-5,5-Dimethylhydantoin (report #33080).

5. REVIEWED BY:

Akiva D. Abramovitch, Ph.D.
Chemist
Environmental Chemistry Review Section 1/EAB/HED/OPP

Akiva Abramovitch
Date: MAY 13 1987

6. APPROVED BY:

Akiva D. Abramovitch, Ph.D.
Acting Chief
Environmental Chemistry Review Section 1/EAB/HED/OPP

Akiva Abramovitch
Date: MAY 13 1987

7. CONCLUSIONS:

Both the hydrolysis and the aqueous photolysis data requirement for the registration of 1-bromo-3-chloro dimethylhydantoin for use in indoor and outdoor swimming pools remain unsatisfied (see recommendations in 8, below).

8. RECOMMENDATIONS:

Both the hydrolysis and the aqueous photodegradation studies should be repeated with a purified material. It might be possible to conduct the study with "cold" material if a "sensitive" HPLC analytical method is available. The reviewer recommends that the aqueous photodegradation study be conducted under natural sunlight if the registrant finds it difficult simulating natural sunlight with artificial lamps. Based on the hydrolysis data submitted by the registrant it appears that hydrolytic degradation during the photodegradation study can be minimized at acidic pH 5 and thus pH 5 is more suitable for conducting the photodegradation study.

9. BACKGROUND:

A. Introduction: This is the first submission of environmental fate data on the chemical by this registrant.

B. Directions for Use:

1-Bromo-3-Chloro-5,5-Dimethylhydantoin is to be used as a disinfectant in swimming pools and spas (indoor and outdoor use). No label included with this submission.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

10.1 A. Study Identification: Determination of Photodegradation of 1-Bromo-3-Chloro-5,5-Dimethylhydantoin in pH 7 buffer solution (report # 34463).

The study was conducted by Analytical Biochemistry laboratories for Applied Biochemists, Inc.

B. Materials and Methods:

See remarks in section 10.1 E, below.

C. Reported Results:

See remarks in section 10.1 E, Below.

D. Study Author's Conclusions: N/A

E. Reviewer's Discussions and Interpretation of Study Results:

The study was not described in detail by the reviewer since it has major deficiencies and cannot be accepted in fulfillment of the data requirement. The study was not conducted under sunlight or simulated sunlight conditions and the test material was only 46.4% radiochemically pure. The reviewer noted a statement made by the study author that the objective of the study were to determine the photolysis rate constant when exposed to artificial light. Based on the spectral irradiance of the photolysis source shown in Fig. 4 it is obvious that sunlight conditions were not simulated and the light source did not provide continuous radiation in the complete range of sunlight from 290 nm and up. The reviewer feels that a 46.4% radiochemically pure substance is unacceptable for studies and the material should have been purified prior to use.

10.2 A. Study Identification: Determination of the Hydrolysis rate of 1-Bromo-3-Chloro-5,5-Dimethylhydantoin (report #33080).

The study was conducted by Analytical Biochemistry laboratories for Applied Biochemists, Inc.

B. Materials and Methods:

See remarks in section 10.2.E, below.

C. Reported Results:

See remarks in section 10.2 E, below.

D. Study Author's Conclusions: N/A

E. Reviewer's Discussions and Interpretation of Study Results:

The study was not described in detail by the reviewer since it has a major deficiency and cannot be accepted in fulfillment of the data requirement. The study was conducted with a 46.4% radiochemically pure test material and no attempt was made to purify the material prior to use. The reviewer considers experimentations with a 46.4% pure material a bad laboratory practice.

11. COMPLETION OF ONE LINER:

Not completed.

12. CBI APPENDIX:

None.