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Date Out EFB:

11/13/84

To: A. Castillo
Product Manager 32
Registration Division (TS-767)

From: Samuel M. Creeger, Chief 
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached please find the environmental fate review of:

Reg./File No.: 8959-UN

Chemical: 1-Bromo-3-chloro-5,5-dimethylhydantoin

Type Product: Microbiocide

Product Name: SPA-trine

Company Name: Applied Biochemists, Inc.

Submission Purpose: Request waiver from the aqueous photolysis study.

ACTION CODE: 161

Date In: 10/12/84

EAB # 5007

Date Completed: 11/13/84

TAIS (level II)

Days

67

0.7

Deferrals To:

 Ecological Effects Branch

 Residue Chemistry Branch

 Toxicology Branch

1. INTRODUCTION

1.1 Applied Biochemists, Inc. is requesting a waiver from the requirements of an aqueous photolysis study. The compound in question, 1-bromo-3-chloro-5,5-dimethylhydantoin, is to be used in spas and hot tubs to control microorganisms.

1.2 The registrant has placed the following statement on the label: "Not Recommended For Use In Outdoor Spas & Hot Tub".

2. DISCUSSION

2.1 Some spas and hot tubs may be indoors but still exposed to sunlight through glass. Therefore, the potential for the active ingredient to photodegrade must be investigated. The registrant was told that the aqueous photolysis study could be waived if it could be shown that the active ingredient does not absorb light in the range of 290-800 nm. In response, the registrant submitted the following information over the phone on 10/18/84:

<u>Nanometers</u>	<u>Molar Absorptivity Constant (cm⁻¹M⁻¹)</u>
300	117.
320	57.1
340	22.2
360	7.5
380	2.6
400	1.2

Since the above data shows the active ingredient to absorb light below 350 nm, there is potential for it to photodegrade to as yet unknown products when exposed to sunlight. Limiting the use to indoor spas and hot tubs will preclude photodegradation. However, some spas are considered indoors but are enclosed by glass or clear plastic (such as Plexiglass) which do transmit light. A phone call to the glass manufacturer Libbey Owens Ford in Toledo, Ohio (Murray Stewart, 419-247-4381) revealed that typical soda-lime composition glass used in homes transmits light as follows:

<u>Thickness of glass</u>	<u>Wavelength (nm)</u>	<u>% Transmission</u>
1/8 inch	300	0
	325	4
	350	63
	375	82
	400	87
1/4 inch	300	0
	325	20
	350	75
	375	85
	400	89

In discussion with Dr. Zepp (EPA/ORD, Athens, GA), it was learned that plastics made for extended outdoor use contain UV stabilizers. These stabilizers absorb UV light thereby increasing the life of the plastic material. (Organic materials such as plastics are susceptible to degradation under UV light).

Since the wavelengths of light absorbed by the active ingredient are not effectively transmitted by typical glass, or plastics used to enclose these kinds of structures, aqueous photolysis of the compound is not expected to occur.

3. CONCLUSIONS/RECOMMENDATIONS

3.1 Aqueous photolysis of the subject active ingredient is not expected to occur. Therefore, the aqueous photolysis study can be waived for the proposed use only.

3.2 We defer decision to the PM Team on whether the label statement "Not Recommended For Use In Outdoor Spas & Hot Tubs" will effectively limit use to only spas and hot tubs not subjected to direct sunlight.



Samuel M. Creeger
November 13, 1984
Section #1/EAB
Hazard Evaluation Division