1-2-90

Shaughnessy No: 128101

Date Out of EFGWB: 1/2/90

TO: John H. Lee
Product Manager #31
Registration Division (H7505C)

FROM: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section #2
Environmental Fate and Ground Water Branch, EFED (H7507C)

THRU: Henry M. Jacoby, Chief
Environmental Fate and Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of:

Reg./File #: 707-RTL

Common Name: Not yet assigned

Chemical Name: 4,5-Dichloro-2-octyl-isothiazole (RH-5287)

Type product: Marine antifoulant

Product Name: Kathon (c-9211M)

Company Name: Rohm & Haas

Purpose: Review of protocol for aquatic field dissipation studies.

Date Received: 10/27/89 EFGWB #: 90-0056

Action Code: 116 Total Reviewing Time (decimal days): 4.0

Deferrals to: _____ Ecological Effects Branch, EFED

_____ Science Integration & Policy Staff, EFED

_____ Non-Dietary Exposure Branch, HED

_____ Dietary Exposure Branch, HED

_____ Toxicology Branch I , HED

_____ Toxicology Branch II, HED

(1)

1. CHEMICAL:

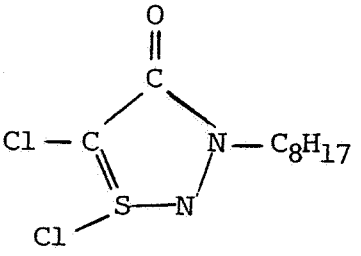
Common name: None yet assigned (identified by the company as RH-5287)

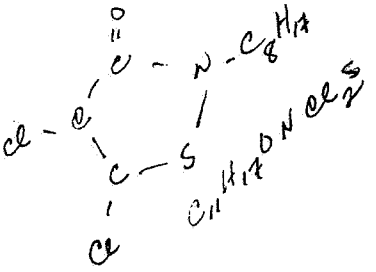
Chemical name: 4,5-dichloro-2-n-octyl-3(2H)-isothiazolone
"4,5-dichloro-2-octyl-isothiazole" (As appears at EPA)

Chemical Abstracts Registry #: 64359-81-5

Trade name(s): Antifoulant "C-9211M" (Kathon)

Chemical structure:





Formulation: 30-31% active ingredient (RH-5287)
70% inert solvent

Physical/Chemical properties (technical product):

Appearance:	tan-brown waxy solid
Melting point:	40-41°C
pH:	Not applicable
Specific gravity:	1.28 (at 25°C)
Solubility:	14 ppm (in water, 25°C) Miscible in most organic solvents
Vapor pressure:	4.5×10^{-6} Torr
Octanol/Water Partition Coefficient:	logP= 6.4

2. STUDY/ACTION TYPE:

Review of protocol for aquatic field dissipation studies. This study is required for the intended registration as a marine antifoulant (aquatic nonfood uses).

3. STUDY IDENTIFICATION:

- Proposed Protocol to Characterize the Aquatic Dissipation of RH-5287 in a Marine Environment. Prepared and submitted by Rohm & Haas Company. Submission date: 10/27/89.

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4. REVIEWED BY:

Silvia C. Termes, Chemist
Review section #2
OPP/EFED/EFGWB

Signature: _____

Date: _____

5. APPROVED BY:

Emil Regelman
Supervisory Chemist
Review Section #2
OPP/EFED/EFGWB

Signature: _____

Date: 1/2/90

6. CONCLUSIONS:

The submitted protocol to characterize the aquatic dissipation of the marine antifoulant containing the active ingredient 4,5-dichloro-2-octyl-isothiazole ("RH-5287") is basically acceptable. However, the registrant should carefully considered the recommendations give below (RECOMMENDATION Section). These recommendations pertain to experimental design as well as data reporting.

The two tentatively identified sites for these studies are two marina sites, one in New Jersey and the other in Florida.

7. RECOMMENDATIONS:

EFGWB recommends that the registrant considers the following points regarding the experimental design and data reporting:

1. Include Chang's leaching rate study with different formulations, which were performed in order to select which of the formulations would give the "worst-case" leaching. This study was performed following the ASTM Dynamic Leach Protocol (Subcommittee DO 1.45, October 1989). Submission of the study as an Appendix is acceptable.

2. Clearly state the composition of the chosen formulated paint.

3. Describe the substrate to which the formulated paint was applied (i.e., the type of material of the panels).

4. Clarify if any copper (elemental) or copper salts were also included in the paint formulation.

5. Water parameters (pH, E_h, etc.) should be recorded not only prior to initiation and at the time of sampling, but also at regular, set times between sampling. It is also important that these parameters be recorded after major events (such as storms, for example). Water temperatures should also be recorded and included in the report.

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6. It is highly recommended that a mineralogical characterization of the sediment be undertaken and reported. The registrant may wish to contact the U.S. Geological Survey for assistance on the mineralogical characterization.

7. When collecting water samples it is recommended that the turbidity of the withdrawn sample be measured and reported. A variety of turbidimeters are commercially available for in-situ measurements.

8. Confirmation of identity of parent and metabolites/degradates is required. Storage stability data should be included in the report.

9. A thorough record of meterological data (rainfall, sun conditions, temperature, wind velocity and direction, etc.) should be kept and submitted as an appendix. In the report, meterological conditions at the time of sampling, as well as those of the previous day, should be clearly indicated.

10. Indicate if sampling was carried out at high or low tide. Try to be consistent with sampling time. Ideally, sampling at both low and high tide is recommended. If this sampling scheme is not feasible, sampling at low tide is preferred over sampling at high tide. It is also recommended that the depths of the sampling sites at the time of sampling be indicated, if feasible

11. For E_h measurements, indicate and describe in detail the probe used. For the measured "redox" potential (which is more likely to be a non-equilibrium, "mixed" potential rather than a measurement of a true-equilibrium electrode potential) clearly state if the reported value has been expressed against the saturated calomel electrode (SCE) or against any other reference electrode. Because problems with some of the probes (for example, formation of oxide or sulfide coatings on the Pt surface in probes using a Pt electrode) may be encountered depending on the chemical species present in the water, any of these experimental difficulties should be addressed in the report.

12. Indicate clearly (by means of diagrams) the location of the pontoon raft within each of the marinas. Also show (by means of diagrams) the current flow pattern within each of the marinas.

13. Besides the proposed sampling sites nearby the pontoon, sampling at other sites away from the pontoon are recommended. Plausible sampling sites may be those where maximum carry over of parent and/or degradates-metabolites by currents is anticipated (that is, at sites where currents can be a anticipated to produce maximum drift). Sampling sites should also include the site at which the marina waters "discharge" into the larger water body (that is, at the entrance to the marina), if any.

14. EFGWB also recommends that a comparison of the results obtained for the two sites be included, since the location of the sites are significantly different. The registrant may consider presenting this summary in a tabulated or schematic manner apart from the results included in the discussion section.

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8. BACKGROUND:

a. Introduction

Rohm & Haas is currently seeking registration of the active ingredient 4,5-dichloro-octyl-isothiazole ("RH-5287") as a marine antifoulant. As part of the data requirements for registration of this active ingredient under aquatic nonfood-use pattern, the submission of an aquatic field dissipation study (conducted at least two different sites) has been requested from Rohm & Haas.

The registrant had previously submitted a modeling study with the purpose of fulfilling data requirements for aquatic field dissipation studies. However, in a meeting held between Rohm & Haas and EFGWB on 3/8/89, it was agreed that the modeling study (or any modeling study generated at a later day) will be considered as providing supplemental information only and that, therefore, an actual aquatic field dissipation study had to be conducted. The registrant submitted a protocol for this study on 10/27/89, which is reviewed here.

b. Directions for use

C-9211M (active ingredient, 4,5-dichloro-2-octyl-isothiazole, or code number "RH-5287) is an algicide/barnicide developed for use in antifoulant marine coatings (aquatic nonfood uses). It is intended for distribution to the largest industrial formulators/ painters involved in the painting of large military and commercial ships. The product should not be available to private boat owners or small commercial establishments. The active ingredient is available as a 30-31% solution in an organic solvent, which will be then formulated into paint by the purchaser.

9. DISCUSSION OF INDIVIDUAL STUDIES:

No studies were submitted. The present is a review of a protocol for conducting aquatic field dissipation studies. Copy of the protocol is attached.

Summary of protocol

The proposed sites are two small marinas (one in New Jersey and the other in Florida). The registrant had previously conducted a testing of paint formulations producing maximum release rate. This formulation will be used in the study. Panels will be painted and suspended into the water from a pontoon raft. Criteria for selecting the sites were a) obtaining a small enclosed basin, b) minimal tidal flow, c) minimum agitation (such as boat traffic), d) water/sediment variability between the two sites, e) availability of personnel and/or ease of access for sampling and monitoring, and f) location security.

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Water and bottom sediments will be characterized by several parameters (E_h included). Sampling procedures are thoroughly described for both water and sediment. Sampling times are at pre- and post- application, 3, 7, 14, 21, 28, 1.5 months, 2 months, 3 months, 4, months, 5 months, and 6 months after introduction of the panels; provisions have been made to carry on sampling after panels have been removed (i.e. after 6 months). Seawater will be analyzed for parent compound using a previously established method. metabolites/degradates will also be quantitated. Methods for analysis of parent/metabolites were under development at the time of submission. Stability studies will be performed. All sampling analyses will be performed by a contract laboratory.

10. COMPLETION OF ONE-LINER:

No one-liner was completed.

11. CBI APPENDIX:

No CBI.

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KATHON 287 T

Page _____ is not included in this copy.

Pages 7 through 23 are not included in this copy.

The material not included contains the following type of information:

_____ Identity of product inert ingredients.

_____ Identity of product impurities.

_____ Description of the product manufacturing process.

_____ Description of quality control procedures.

_____ Identity of the source of product ingredients.

_____ Sales or other commercial/financial information.

_____ A draft product label.

_____ The product confidential statement of formula.

_____ Information about a pending registration action.

X FIFRA registration data.

_____ The document is a duplicate of page(s) _____.

_____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.