2-17-95

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Chemical No.: Unknown
DP Barcode: D163686
Submission: S394722
Date Out of EFGWB:

MEMORANDUM

To: John Lee
Product Manager #31
Registration Division

From: Siroos Mostaghimi, Ph.D., Environmental Engineer Siroos - Mostaghimi
Surface Water Section
Environmental Fate and Groundwater Branch/EFEF (7507C)

Thru: Henry Nelson, Ph.D., Head H Nelson
Surface Water Section
Environmental Fate and Groundwater Branch/EFED (7507C)

Henry Jacoby, Chief Henry Jacoby 2/17/95
Environmental Fate and Groundwater Branch
Environmental Fate and Effect Division (7507C)

A study by Rohm and Hass Company was conducted to evaluate the environmental dissipation of the compound RH-5287. RH-5287 is the active ingredient of the marine antifoulant formulation C-9211 which can be used for coating hulls of ships and other vessels to prevent buildup of algae and invertebrate animals. The objective of the study was to estimate the maximum concentrations of RH-5287 in aquatic environments and aquatic animals. The modelling results for the study are summarized in this report.

New York Harbor, San Diego Bay and Norfolk Harbor which have high concentrations of vessels were chosen for this study.

(1)

The EXAMS (Exposure Analysis Modeling Systems) was used to estimate the concentrations of RH-5287 that may occur as a result of its use in antifoulant marine coatings. The compartment numbering and the relationships among aquatic compartments for the New York harbor, San Diego Bay and Norfolk Harbor are shown in Figures 1, 2 and 3, respectively. The maximum aquatic concentrations of RH-5287 for different loads and adsorption parameters in the three sites are shown in Table 1. Adsorption of RH-5287 was investigated for a range of soil types and three aquatic sediments. A simple linear adsorption coefficient calculated for the lowest observed concentrations ranged from 171 to 1666. The degree of adsorption increases with the amount of organic matter present. Two adsorption coefficients, 171 and 865 were used in the simulation. The value of 171 is equal to the equivalent linear coefficient calculated based on the adsorption parameters reported in another study (Warren, 1985), and also observed at the beginning of the aerobic aquatic metabolism study conducted with this research. The 865 value represents an intermediate case. A field study conducted to determine the rate of leaching of RH-5287 from painted panels hung from a raft docked at a marina indicated different rates of leaching. The calculated average rates of leaching was 5.28 ug/(cm^2-day). Because of the uncertainty in the rate of leaching, a range of values was examined in the simulation. Based on the previous studies, the flushing time for these sites was estimated to be between 60 to 80 days. As would be expected, lowering the adsorption to bottom sediments increases the maximum concentrations in the overlying water. The data in table 1 indicate that the greatest concentrations of RH-5287 occurred in San Diego bay and ranging from $4.7x10^{-2}$ to $9.4x10^{-4}$ ppb. This is partly because the number of vessels berthed in the bay is large, the bay is open to the ocean only through a narrow channel, and there is no appreciable fresh water flow during dry weather. In the New York Harbor, RH-5287 concentrations was lower and ranged from $9.4x10^{-4}$ to $4.7x10^{-2}$ ppb. In the Norfolk harbor, the RH-5287 concentrations ranged from $5.0x10^{-4}$ to $2.6x10^{-2}$ ppb.

Since the report indicates a good correlation (R=0.95) between organic matter content and K_d, it will be more appropriate to compute a K_{oc} for each harbor and then calculate K_d using the average organic content of the sediment in each harbor. One also would expect the conditions in each harbor would be different (ie. pH, organic content, temperature etc.), which would effect the leaching rates. Therefore, it would be more appropriate to estimate separate leaching rates for each harbor.

The EEC results reported in this study should be used cautiously for risk assessment of the RH-5287 in the environment.

Note that the same barcode and bean sheets were assigned to this modeling report as were assigned to a series of fate studies reviewed by Silvia Termes. The Termes reviews were logged out of EFED on 2/11/93.

KATHON 287 T

Page _____ is not included in this copy.

Pages 3 through 6 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.