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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D. C. 20460

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

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MEMORANDUM

SUBJECT: Request to Waive the Analysis of Degradates in Aqueous Availability and Photodegradation on Wood Surface Studies for: 5-Chloro-2-Methyl-4-Isothiazolin-3-One (PC Code 107103) and 2-Methyl-4-Isothiazolin-3-One (PC Code 107104)

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Conclusions:

The registrant, Rohm Haas Company, has submitted a request to waive the analysis of degradates for 5-Chloro-2-Methyl-4-Isothiazolin-3-One (PC Code 107103) and 2-Methyl-4-Isothiazolin-3-One (PC code 107104) in the Aqueous Availability and the Photodegradation on Wood Surface studies (the registrant only wants to monitor the disappearance of the parent compounds). Based on the available information, EFGWB concurs with the request to waive: (1) the analysis of degradates for these chemicals in the Aqueous Availability study; and (2) the Photodegradation on Wood Surface data requirement.

Background:

5-Chloro-2-Methyl-4-Isothiazolin-3-One (PC Code 107103) and 2-Methyl-4-Isothiazolin-3-One (PC code 107104) are used in a number of products as fungicides and microbicides. In addition to the Aquatic Non-Food Industrial uses (such as air washer tower, water cooling, evaporative condenser water, heat exchanger water, industrial water, pulp/paper mill water, secondary oil recovery injection water systems), these chemicals are also used as a wood preservative. Since the wood treatment chemicals are considered special use chemicals, the registrant (Rohm and Haas Company) was required to support the following Environmental Fate data requirements (see EFGWB' review dated 8/25/92 for details):

Hydrolysis (161-1)
Aqueous Availability
Photodegradation on Wood Surface

The registrant has submitted the following studies to support the data requirements:

5-Chloro-2-Methyl-4-Isothiazolin-3-One

Hydrolysis
Aerobic Soil Metabolism*
Adsorption/Desorption

2-Methyl-4-Isothiazolin-3-One

Hydrolysis

* These studies are no longer required. However, EFGWB will still review them in order to add more information to the data base.

Discussions:

The registrant has submitted a request to waive the degradate analysis for the Aqueous Availability and the Photodegradation on Wood Surface studies. The major justifications submitted by the registrant are listed below: (1) they have experienced difficulties in developing reliable methods for the separation of degradates in the on-going aqueous photodegradation and the anaerobic/aerobic aquatic metabolism studies; (2) since the use of an exaggerated dose in the treatment facilities is not feasible and the actual concentration incorporated into wood is much lower, the resulting degradates may be below detection limits; and (3) results from the Quantitative Structure Activity Relationship (QSAR) analysis showed that the major degradates (methylisothiazolinone and n-methyl malonamic acid) are over three orders of magnitude less toxic than parent.

Based on the available information, EFGWB has reevaluated the Aqueous Availability and the Photodegradation on Wood Surface data requirements. According to the label, the concentration of the active ingredients in the treatment solution is very low (7-12 ppm). Under extreme mildew conditions, the label recommends to use a concentration up to 48 ppm. Since the concentration used at the treatment facilities is relatively low and the wood preservative is applied by pressure treatment, it is highly unlikely that the concentration on the wood surfaces would be high enough to ensure significant photodegradation under actual use conditions. Therefore, EFGWB concurs to waive the Photodegradation on Wood Surface data requirement.

Based on available data, the chemicals appear to be stable to hydrolysis. Although some microbial degradation occurs in soil and is also expected to occur on wood surfaces, the degradation products may not be present in sufficient quantities to allow complete characterization and identification. Therefore, EFGWB concurs to waive the analysis of degradation products in the Aqueous Availability study.

References:

Jalali-Araghi, K., and K. Shepler. 1993. Hydrolysis of [^{14}C]-RH-651 (the major component of RH-886) at pH 5, 7, and 9. Rohm and Haas Technical Report No. 34-93-07; PTRL Project No. 225W. Unpublished study performed by PTRL-West, Inc., Richmond, CA, and submitted by Rohm and Haas Chemical Company, Spring House, PA. (42681301)

Marx, M., S. Castle, and K. Shepler. 1992. Hydrolysis of [^{14}C]RH-573 at pH 5, 7, and 9. PTRL Project No. 223W. Rohm and Haas Technical Report No. 34-92-63. Unpublished study performed by Pharmacology and Toxicology Research Laboratory-West, Richmond, CA, and submitted by Rohm and Haas Chemical Company, Spring House, PA. (42578401)

Wang, W.W. 1991a. Adsorption and desorption of ^{14}C -RH-651 in four soils and one sediment. XBL Report No. RPT0046. Rohm and Haas Technical Report No. 34-91-09. Unpublished study performed by XenoBiotic Laboratories, Inc., Princeton, NJ, and submitted by Rohm and Haas Company, Spring House, PA. (42086902)

Wang, W.W. 1991b. Aerobic soil metabolism of ^{14}C -RH-651. XenoBiotic Report No. RPT0045. Rohm and Haas Report No. 34-91-03. Unpublished study performed by XenoBiotic Laboratories, Inc., Princeton, NJ, and submitted by Rohm and Haas Company, Spring House, PA. (42086901)