9/9/93

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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

030702

DP Barcode: D192765
PC Code No.: 030703
EFGWB# : 93-0849

MEMORANDUM

SUBJECT: Response to Low Volume/Minor Use Waiver Request from Uniroyal Chemical Company for Naptalam

TO: Susan Cerelli, Product Reviewer
Linda Propst, Product Manager #73
Special Review and Reregistration Branch (H7508W)

FROM: William R. Effland, Ph.D. William R. Effland
Chemistry Review Section #2
Environmental Fate and Groundwater Branch
Environmental Fate and Effects Division (H7507C)

THROUGH: Mah T. Shamim, Ph.D., Acting Section Chief M.T. Shamim SEP 07 1993
Chemistry Review Section #2
Environmental Fate and Groundwater Branch
Environmental Fate and Effects Division (H7507C)

Henry M. Jacoby, Branch Chief Henry M. Jacoby 9/9/93
Environmental Fate and Groundwater Branch
Environmental Fate and Effects Division (H7507C)

EFGWB can not concur with the waiver request for the Hydrolysis data requirement (161-1) submitted by Uniroyal Chemical Company for the herbicide, naptalam. The previously reviewed study (MRID #001432-97; EFGWB review dated 5/31/91) contained partially acceptable data demonstrating the stability of naptalam to hydrolytic degradation at pH 7 and 9. Supplemental study results suggested hydrolytic degradation at pH 5 of naptalam to N-1-naphthylphthalimide. The degradate N-1-naphthylphthalimide did not undergo further appreciable degradation after 166 days. The registrant has requested a waiver of the pH 5 hydrolysis study because the "chances are low of Alanap [naptalam] encountering pH 5 in the environment." However, strongly acid conditions (i.e. pH 5 range) are encountered in agricultural soils. For example, soil pH measurements of 4.6 and 5.5 were reported for two of the four test soils used in the adsorption/desorption study (MRID #0015410-14).

Naptalam is applied as an aqueous solution of the sodium salt of N-1-napthylphthalamic acid. Following reaction with the soil, the soluble acid forms and is probably the active ingredient.

The solubility of N-1-napthylphthalamic acid is reportedly 200 mg/L in water (USEPA, 1985 Guidance for the Reregistration of Pesticide Products Containing Naptalam), which differs from the "low solubility" stated in the registrant's response. Adsorption of naptalam to soil is probably low, based on the estimated K_ds reported in the adsorption/desorption study (MRID 001541-14). A soil column leaching study (1983; #00106318) with a sandy loam soil (not further characterized) indicated 52% of the applied [^{14}C] was recovered in the leachate with the parent compound comprising 95% of the [^{14}C] in the leachate. Based on this supplemental information, naptalam is hypothesized to be mobile.

In addition to the physico-chemical properties of naptalam, the soil environment typically used for agricultural production of cucurbits (cucumbers, watermelons, muskmelons, and cantelopes) is commonly well- to excessively-well drained, coarse textured soils with moderate to high infiltration rates. Furthermore, the cation exchange capacity and resulting sorption potential of coarse textured soils is normally low unless adequate levels of soil organic matter are present. This soil environment would be conducive to leaching of naptalam.

The registrant, Uniroyal Chemical Company, has requested a "Low Volume/Minor Use Waiver request [that] is intended to extend to all data requirements that may be raised in the future as a result of any new reviews." Although the hydrolysis study results for the pH 7 and 9 tests were partially acceptable, the pH 5 test should be repeated because some degradation occurred and material balance information was not provided. In consideration of the persistence to hydrolytic degradation (at pH 7 and 9), the potential mobility of naptalam, and the typical soil environment for cucurbit production, concurrence with the waiver request for the hydrolysis study at pH 5 can not be granted.

TABLE 1. STATUS OF ENVIRONMENTAL FATE STUDIES FOR NAPTALAM (ALANAP)

DATA REQUIREMENT	MRID (Study Date)	STATUS
161-2: Photolysis In Water	001541-13 (1985)	Unacceptable[1]
161-3: Photolysis In Soil	001541-13 (1985)	Upgradeable[2]
163-1: Leaching-Adsorption/Desorption	001541-14 (1985)	Acceptable (unaged)[3] Unacceptable (aged)[4]
164-1: Terrestrial Field Dissipation	413854-03 (1989) 417096-01 (1990) 001432-96 (1979)	Unacceptable Supplemental Unacceptable[5]
165-4: Bioaccumulation In Fish	001533-73 A,B (1979)	Supplemental[6]

NOTES:

[1] Study deficiencies included (1) incomplete material balances (ranged from 55.1-80.6%), and (2) hydrolysates/degradates exceeding 10% of the applied concentration were not characterized.

[2] The study is upgradeable if sufficient information describing the experimental design and quantitative data, including material balance and degradate information, are provided to support the reported results.

[3] The portion of the study using unaged naptalam is acceptable; however, only three soils were used (four soils are required in the Guidelines) and the soil:solution ratio (1:1) was atypical. Although atypical soil:solution ratios and narrow concentration ranges were used, Freundlich K_ds suggest that naptalam is mobile under the experimental conditions.

[4] The portion of the study with aged naptalam is unacceptable. Additional information on the adsorption/desorption of individual degradates is required.

[5] This study had a nonspecific analytical method which did not clearly describe the parent compound and its associated degradates. The frequency, depth and duration of soil sampling was not sufficient to establish the pattern of dissipation of naptalam. The treated crop was soybeans; however, cucurbits (cucumbers, cantelope, watermelons and muskmelons) are the only remaining use crops on the label.

[6] The extractable [^{14}C] residues in the fish tissues were not adequately characterized. BCFs of 1.46x, 1.57x, and 1.16x were reported for the edible, nonedible, and whole fish tissues, respectively.

TABLE 2. STATUS OF ENVIRONMENTAL FATE DATA REQUIREMENTS FOR NAPTALAM (ALANAP)

DATA REQUIREMENT	MRID (Study Date)	STATUS
161-1: Hydrolysis	001432-97 (1974)	Partially satisfied[1]
161-2: Photolysis In Water	413854-01 (1989) 001541-13 (1985)	Not satisfied
161-3: Photolysis In Soil	413854-02 (1989) 001541-13 (1985)	Not satisfied
162-1: Aerobic Soil Metabolism	001454-16 (1978) 414272-01 (1990)	Partially satisfied[2]
162-2: Anaerobic Soil Metabolism	001454-17 (1978) 414272-02 (1990)	Satisfied[3]
163-1: Leaching-Adsorption/Desorption	001541-14 (1985)	Not satisfied
164-1: Terrestrial Field Dissipation	400691-01 (1987) 404889-01 (1987) 413854-03 (1989) 417096-01 (1990; freezer storage stability) 001432-96 (1979)	Not satisfied
165-4: Bioaccumulation In Fish	001533-73 A,B (1979)	Not satisfied

NOTES:

[1] The hydrolysis studies for pH 7 and 9 were acceptable; however, the pH 5 study was unacceptable because some degradation occurred and the material balance was not provided.

[2] Data Requirement 162-1 was partially satisfied; however, the two acceptable studies reported two different half-life values (<3 vs. 36.7 days). The EFGWB review dated 5/29/91 requested clarification for the difference in the two values.

[3] Data Requirement 162-2 was satisfied because one study (MRID 414272-02) was acceptable.