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

OFFICE OF
PREVENTION, PESTICIDES, AND
TOXIC SUBSTANCES

PC Code: 080808
DP Barcode: D249788

Date: March 2, 1999

MEMORANDUM

SUBJECT: Tier I Estimated Environmental Concentrations for Propazine (MiloPro 4L) on Grain Sorghum

TO: Edith Minor, PM Team Reviewer
Jim Tompkins, Product Manager
Herbicide Branch
Registration Division (7505C)

FROM: Rudy A. Pisigan, Jr., Ph.D., Environmental Chemist RPisigan Jr.
Environmental Risk Branch IV
Environmental Fate and Effects Division (7507C)

THRU: Mah T. Shamim, Ph.D., Chief MTShamim 3/4/99
Environmental Risk Branch IV
Environmental Fate and Effects Division (7507C)

This memo is in response to RD's request for water numbers for the product MiloPro 4L (propazine as active ingredient) to be used by Health Effects Division (HED) in risk assessment. EFED had already completed a Tier I Assessment on February 27, 1998 for propazine with a maximum allowable rate of 1.2 lbs ai/acre for grain sorghum. As indicated in the attached memo (DP Barcode: D242425), the Estimated Environmental Concentrations (EECs) of propazine are 3.5 ppb in groundwater, and 54.2 ppb for peak or acute value and 53.0 ppb for average 56-day or chronic value in surface water. EFED did not conduct a new Tier I Assessment because to date and based on the currently available documents, the registrant(Griffin L.L.C.) has not changed or proposed to change the maximum allowable application rate of 1.2 lbs ai/acre.

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PC Code 080808
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MEMORANDUM

SUBJECT: Tier I Estimated Environmental Concentrations for Propazine on Grain Sorghum

FROM: Rudy A. Pisigan, Jr., Chemist RPisigan Jr. 2/27/98
Environmental Risk Branch IV
Environmental Fate and Effects Division

THROUGH: Mah T. Shamim, Ph.D., Chief MTShamim 2/27/98
Environmental Risk Branch IV
Environmental Fate and Effects Division

TO: Andrew R. Rathman, Chemist
PM Team Reviewer
Edward Zager, Chief
Registration Action Branch I
Health Effects Division

and

Stephen Schaible
Registration Division Minor Use,
Inerts and Emergency Response
Branch

This memo presents the Tier I Estimated Environmental Concentrations (EECs) for propazine calculated using GENEEC (surface water) and SCIGROW (groundwater) for use in the human health risk assessment. For surface water, the acute (peak) value is 54.2 ppb and the chronic (average 56-day) value is 53.0 ppb. The groundwater screening concentration is 3.5 ppb. These values represent upper-bound estimates of the concentrations that might be found in surface water and groundwater due to the use of propazine on grain sorghum.

Should the results of this assessment indicate a need for further refinement, please contact us as soon as possible so that we may schedule a Tier II assessment.

Background Information on GENEEC:

GENEEC is a screening model designed to estimate the pesticide concentrations found in water for use in ecological risk assessments. As such, it provides high-end values on the concentrations that might be found in ecologically sensitive environments due to the use of a pesticide. GENEEC is a single-event model (one runoff event), but can account for spray drift from multiple applications. GENEEC is hardwired to represent a 10-ha field immediately adjacent to a 1-ha pond, 2 meters deep with no outlet. The pond receives a spray drift event from each application plus one runoff event. The runoff event moves a maximum of 10% of the applied pesticide into the pond. This amount can be reduced due to degradation on field and the effects of binding to soil. Spray drift is equal to 1% of the applied concentration from the ground spray application and 5% for aerial application.

Though GENEEC was not originally designed for use in drinking water risk assessments, it does provide a reasonable upper-bound estimate for screening purposes. Surface-water-source drinking water tends to come from bodies of water that are substantially larger than a 1-ha pond. Furthermore, GENEEC assumes that essentially the entire basin receives an application of the chemical. In virtually all cases, basins large enough to support a drinking water utility will contain a substantial fraction of area that does not receive the chemical. Additionally, there is always some flow (in a river) or turnover (in a lake or reservoir) of the water so that the persistence of the chemicals near the drinking water utility intakes will be overestimated. Given all these factors, GENEEC does provide an upper-bound estimate of the concentration of a pesticide that could be found at the drinking water utility and therefore can be appropriately used in screening calculations. If a risk assessment performed using GENEEC output does not exceed the level of concern, then one can be reasonably confident that the actual risk will not be exceeded. However, because GENEEC can substantially overestimate true drinking water concentrations, it will be necessary to refine the GENEEC estimates if the level of concern is exceeded.

Background Information on SCIGROW:

SCIGROW provides a groundwater screening exposure value to be used in determining the potential risk to human health from drinking water contaminated with the pesticide. Since the SCIGROW concentrations are likely to be approached in only a very small percentage of drinking water sources, i.e., highly vulnerable aquifers, it is not appropriate to use SCIGROW concentrations for national or regional exposure estimates.

SCIGROW estimates likely groundwater concentrations if the pesticide is used at the maximum allowable rate in areas where groundwater is exceptionally vulnerable to contamination. In most cases, a large majority of the use area will have groundwater that is less vulnerable to contamination that the areas used to derive the SCIGROW estimate.

Modeling Inputs and Results:

Table 1 and Table 2 summarize the input values used in the model runs for GENEEC and SCIGROW, respectively. The lowest Koc out of the 8 reported values was used in GENEEC. The average of the two median Koc vaues was used in SCIGROW. For the aerobic soil metabolism half-life, the higher value of the two reported half-lives was used in GENEEC. The average of the two half-lives was employed in SCIGROW modeling. The modeling results associated with maximum allowable rate per year (1.2 lbs ai/acre) are presented in Table 3. Attached to this memo are copies of the original printouts generated from the GENEEC and SCIGROW runs.

Table 1. Environmental Fate Input Parameters for GENEEC..

Chemical	PROPAZINE
PC Code	080808
Water Solubility (20 ^{0}C)	8.6 mg/L
Hydrolysis Half Life (pH 7)	stable
Aerobic Soil Metabolism Half Life	289days
Aerobic Aquatic Metabolism Half Life	not available
Photolysis Half Life	stable
Organic Carbon Adsorption Coefficient (Koc)	65 ml/g
Date	February 11, 1998

Table 2. Environmental Fate Input Parameters for SCIGROW.

Chemical	PROPAZINE
Organic Carbon Partition Coefficient (Koc)	110 ml/g
Aerobic Soil Metabolism Half-Life	197 days
Date	February 11, 1998

Table 3. Modeling Results for Use on Grain Sorghum

Chemical	PROPAZINE
Application Method	Ground Spray
Application Rate	1.2 lb a.i/acre
Application Frequency	1
Application Interval (days)	n/a
GENEEC Peak EEC	54.2 ppb
GENEEC 56-Day EEC (ppb)	53.0 ppb
SCIGROW Groundwater Concentration (ppb)	3.5 ppb

GENEEC PRINTOUT:

RUN No. 1 FOR propazine INPUT VALUES

RATE (#/AC) ONE (MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH (IN)
1.200 (1.200)	1 1	65.0	8.6	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
289.00	2	N/A	.00- .00	.00	*******

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
54.23	54.15	53.73	53.04

SCIGROW PRINTOUT:

RUN No. 1 FOR propazine INPUT VALUES

APPL (#/AC) RATE	APPL. NO.	URATE (#/AC/YR)	SOIL KOC	SOIL AEROBIC METABOLISM (DAYS)
1.200	1	1.200	110.0	197.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

3.461532

A= 192.000 B= 115.000 C= 2.283 D= 2.061 RILP= 4.428
F= .460 G= 2.885 URATE= 1.200 GWSC= 3.461532