



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

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OFFICE OF  
PESTICIDES AND TOXIC  
SUBSTANCES

MEMORANDUM

SUBJECT: Tier 1 Drinking Water Assessment for Difenconazole Use as a Wheat Seed Treatment  
(Chemical # 128847, DP Barcode 252509)

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and

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TO: Cynthia Giles-Parker, PM 22  
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This Tier 1 drinking water assessment will supplant previous FQPA drinking water assessments to support use of difenconazole as a wheat seed treatment. Since GENEEC and SCI-GROW are not designed to estimate runoff or leaching for seed treatment pesticides, there are uncertainties in the predictive potential of the Tier 1 modeling. Additional uncertainties are associated with the use of unreviewed "screened" environmental fate data. It was necessary to use screened environmental fate data in the assessment because there was insufficient time to conduct a formal data review before the Registration Division (RD) due date. The noted uncertainties in the water assessment, however, are not expected to substantially decrease the conservativeness of the Tier 1 modeling results.

GENEEC modeling indicates that difenconazole concentrations in drinking water are not likely to exceed 0.125 µg/L for the maximum annual concentration (acute) and 0.048 µg/L for the 56 day average concentration (chronic). SCI-GROW modeling indicates that difenconazole concentrations in groundwater used as drinking water are not likely to exceed 0.00084 µg/L.

## Uncertainties in the Modeling

The main uncertainty in the Tier 1 FQPA water assessment is the use of GENEEC and SCIGROW models to estimate runoff and leaching of difenconazole from seed treatment use. These models do not account for the pesticide sorption to the seed coat. For purposes of this assessment, it is assumed that difenconazole does not sorb to the seed coat and hence is simulating a broadcast applied pesticide. This assumption is expected to provide a conservative leaching and runoff scenario.

Another uncertainty in the water assessment is the use of unreviewed environmental fate data; the photodegradation in water study (MRID 42245128), batch equilibrium study (MRID 42245135 and 42245136), and aerobic soil metabolism study (MRID 42245131) were screened for acceptability of Subdivision N guidelines. The studies will be reviewed formally at a later date. EFED notes that interpretation of Tier 1 modeling results is not likely to be altered through the formal data evaluation process because of the conservativeness in the input parameter selection.

Other uncertainties in the model assessments are associated with the application rate of difenconazole. The maximum seeding rate for wheat (120 lbs wheat seed/A) was used to calculate the maximum difenconazole application rate. EFED notes that the planting rates for wheat can range from 60 to 120 lbs seed/A.

## Input Parameter Selection

The application rate of difenconazole is based on a seed treatment rate of 0.025 lbs a.i./100 lbs (EPA Reg. No. 100-778) and of maximum seeding rate 120 lbs/A. Therefore, the maximum difenconazole application rate is 0.03 lbs ai/A.

Based on a preliminary screen of the environmental fate data, difenconazole is expected to be relatively immobile and persistent in terrestrial environments. The adsorption coefficient for difenconazole is 12.76 ml/g ( $K_{oc}=3866$ ) in an agricultural sand, 62.97 ml/g ( $K_{oc}=3470$ ) in sandy loam soil, 54.84 ml/g ( $K_{oc}=7734$ ) in silt loam soil, and 47.18 ml/g ( $K_{oc}=7,734$ ) in a silty clay loam soil. The aerobic soil metabolism half-life for difenconazole ranged from 175 to 1600 days. Difenconazole had a first-order photodegradation in water half-life of 5.68 days. For purposes of the Tier 1 assessment, the environmental fate characteristics for difenconazole are shown in Table 1.

RUN No. 1 FOR difenconazole INPUT VALUES

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APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC  
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)  
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.030 1 .030 4370.0 1600.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

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.000854  
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A= 1500.000 B= 4375.000 C= 3.176 D= 3.641 RILP= 1.140  
F= -1.545 G= .028 URATE= .030 GWSC= .000854

RUN No. 1 FOR difenconazole INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY INCORP DRIFT DEPTH(IN)
.030( .030)	1 1	4370.0	3.0	.0 .0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC DAYS UNTIL COMBINED (FIELD)	HYDROLYSIS RAIN/RUNOFF (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)
1600.00	2	N/A	6.00- 736.20 .00 736.20

GENERIC EECs (IN PPT)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
125.66	113.44	73.61	48.92