5-5-05

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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

DP Barcodes: 313814
PC Code: 128008

Date: 5/5/2005

SUBJECT: Drinking Water Memo for Proposed Uses of Boscalid on Leafy Vegetables

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I. Summary

Boscalid (also known as nicobifen or BAS 510 F; PC Code 128008) is a fungicide belonging to the anilid class of fungicide chemicals, also known as carboxamide or oxathiin fungicides. Interregional Research Project No. 4 (IR-4) has requested registration for the use of boscalid on leafy vegetables (crop group 4) excluding brassica. Registrant BASF was previously granted registration of boscalid for use on turf, vegetables, canola, fruit and nut crops in the U.S. and Canada (May, 2003) and subsequently for soybeans, pome fruit and hops (Nov, 2003). Complete risk assessments for these uses can be found in the May 28, 2003 memo, "EFED Risk Assessment for Section 3 Registration of BAS 510 F (Nicobifen)" (DP Barcode D278387 and others) and the November 10, 2003 memo, "Risk Assessment for Proposed Uses of Boscalid on Soybeans, Pome Fruit, and Hops" (DP Barcode 293435/293436).

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Boscalid is a persistent compound with low mobility in most soils. The primary degradation pathway is aerobic soil metabolism, which proceeds slowly and results in the formation of intermediates which are relatively rapidly transformed into CO_2 or bound soil residues. Boscalid is stable to hydrolysis and to photolysis on soil and in water. The compound is also not transformed to any significant extent in either aerobic or anaerobic aquatic systems.

This memo provides estimated drinking water concentrations (EDWCs) for the Health Effects Division to use in their dietary risk assessment for the use of boscalid on leafy vegetables. Since the proposed new uses have lower use rates than on the previously approved use on turf, EDWCs for turf are reported. The EDWCs the turf use, which reflect corrected input parameters for the Tier 1 FIRST surface water exposure model, are 87.53 and 25.77 ppb (Appendices A and B).

A Tier I ground water assessment for boscalid has also been performed for the turf use, based on the EFED screening model SCI-GROW. The ground-water EDWC for boscalid on turf is 0.63 ppb. The inputs are attached as Appendix A and results are attached as Appendix C.

II. Introduction

Use Characterization

Application of boscalid to the proposed use sites would be as a ground spray, aerial spray, or through sprinkler irrigation systems. The maximum application rates (per application), maximum seasonal rates, application intervals, and pre-harvest intervals for the proposed new uses are listed below in **Table 1**. In addition, the use rate for turf is presented as well since it represents the highest use rate for boscalid and was used in the drinking water assessment.

Table 1: Proposed new label uses for boscalid

Crop Type	Maximum Rate per Application (lbs a.i./A) and Max. Number of Applications	Maximum Seasonal Application Rate (lbs a.i./A/season)	Application Interval (days)	Pre-Harvest Interval (days)
Leafy vegetables (except brassica) (Endura)	0.396(2)	0.79	7	0
Leafy vegetables (except brassica) (Pristine)	0.395 (2)	0.79	7	0
turf[1] (Pristine)	0.35 (not provided)	2.1	14-21	not applicable

[1] Represents highest use rate

Drinking Water Exposure

In the November 2003 risk assessment, EFED performed a drinking water exposure assessment for the registration of the use of boscalid on soybeans, pome fruit, and hops. The drinking water assessment detailed in that memo used the Tier 1 surface-water model FIRST to simulate use on turf since the turf use still represents the highest annual application rate (2.1 lb ai/acre) for boscalid. EFED proposes that the EDWCs for turf be used for the leafy vegetable assessment as well since turf application rates are still the highest, even when considering the currently proposed uses. EDWCs for the turf use are 87.53 and 25.77 ppb.

Appendix A

Table A1. FIRST (v1.0) input parameter values and results for boscalid applied to turf by ground spray.

Parameter	Value	Source
Application Rate (lb a.i./A)	0.35	Label Maximum
Number of Applications	6	Label Maximum
Interval between Applications (days)	14	Label Maximum
Organic Carbon Partitioning Coefficient (K_{oc})	655[1]	Swann et al., 1983
Aerobic Soil Metabolism Half-life (days)	401[2]	MRID#45405208 MRID#45405209 MRID#45643802
Wetted in?	No	Standard practice
Depth of Incorporation (inches)	0	Ground application
Method of Application	ground spray	Label
Percent Cropped Area	0.87	
Solubility in Water (mg/L or ppm)	6	
Aerobic Aquatic Metabolism Half-life (days)	stable	MRID#45405214
Hydrolysis Half-life @ pH 7 (days)	stable	MRID#45405205
Aquatic Photolysis Half-life @ pH 7 (days)	stable	MRID#45405206
FIRST Results (EEC for surface water drinking water sources)	**Acute Concentration (ppb): 87.5** **Chronic Concentration (ppb): 25.8**	

[1]Represents the lowest K_{oc} for a non-sand soil. [2]The aerobic soil metabolism half-life used in the models represents the 90th percentile of the upper confidence bound on the mean half-life for four soils.

Table A2. SCI-GROW2 input parameter values and results for boscalid applied to turf.

Parameter	Value	Source
Maximum Application Rate (lb a.i./A/application)	0.35	Label
Maximum Number of Applications per Year	6	Label
Aerobic Soil Metabolism Half-life (days)	407.5	MRID#45405208 MRID#45405209 MRID#45643802
Organic Carbon Partitioning Coefficient (K_{oc})	821[1]	Swann et al., 1983
Results (EEC for groundwater drinking water sources)	0.5708 ug/L (ppb) or 571 ng/L (parts per trillion)	

[1]Represents the median value.

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Appendix B- *FIRST Output*

RUN No. 1 FOR boscalid ON Turf * INPUT VALUES *

RATE (#/AC) ONE (MULT)	No.APPS & INTERVAL	SOIL Koc	SOLUBIL (PPM)	APPL TYPE (%DRIFT)	%CROPPED AREA	INCORP (IN)
.350(1.978)	6 14	655.0	6.0	GROUND(6.4)	87.0	.0

FIELD AND RESERVOIR HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (RESERVOIR)	PHOTOLYSIS (RES.-EFF)	METABOLIC (RESER.)	COMBINED (RESER.)
401.00	2	N/A	.00- .00	.00	.00

UNTREATED WATER CONC (MICROGRAMS/LITER (PPB)) Ver 1.0 AUG 1, 2001

PEAK DAY (ACUTE) CONCENTRATION	ANNUAL AVERAGE (CHRONIC) CONCENTRATION
87.533	25.771

Appendix C - *SCI-GROW Output*

SCIGROW
VERSION 2.3
ENVIRONMENTAL FATE AND EFFECTS DIVISION
OFFICE OF PESTICIDE PROGRAMS
U.S. ENVIRONMENTAL PROTECTION AGENCY
SCREENING MODEL
FOR AQUATIC PESTICIDE EXPOSURE

SciGrow version 2.3
chemical:Boscalid
time is 8/27/2003 8:58:12

Application rate (lb/acre)	Number of applications	Total Use (lb/acre/yr)	Koc (ml/g)	Soil Aerobic metabolism (days)
0.350	6.0	2.100	8.21E+02	407.5

groundwater screening cond (ppb) = 6.34E-01

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