DP Barcode : D181880
PC Code No. : 090501
080803
EFGWB Out : 1/12/93

TO: Robert Taylor
Product Manager Team Reviewer
Special Review and Reregistration Division (H7508W)

FROM: Elizabeth Behl, Head
Ground Water Technology Section
Environmental Fate & Ground Water Branch/EFED (H7507C)

THRU: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

Reg./File # : 283909

Common Name : Alachlor, and others (original listing Atrazine)

Product Name : Lasso
Company Name : Monsanto
Purpose : Review 6(a)(2) Adverse Data Submission
Type Product : Herbicide

Action Code : 405 EFGWB #(s): 92-1312 Total Review Time = 3 days

EFGWB Guideline/MRID/Status Summary Table: The review in this package contains...

161-1	162-4	164-4	166-1
161-2	163-1	164-5	166-2
161-3	163-2	165-1	166-3
161-4	163-3	165-2	167-1
162-1	164-1	165-3	167-2
162-2	164-2	165-4	201-1
162-3	164-3	165-5	202-1

Y = Acceptable (Study satisfied the Guideline)/Concur P = Partial (Study partially satisfied the Guideline, but additional information is still needed)
S = Supplemental (Study provided useful information, but Guideline was not satisfied) N = Unacceptable (Study was rejected)/Non-Concur

DP BARCODE: D181880

CASE: 283909 DATA PACKAGE RECORD DATE: 01/14/93
SUBMISSION: S424132 BEAN SHEET Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: MISCELLANEOUS ACTION: 405 6(A)(2) ADVERSE DATA
CHEMICALS: 080803 Atrazine (ANSI) 0.0000%

ID#: 283909
COMPANY: MONSANTO AGRICULTURAL CO
PRODUCT MANAGER: 25 ROBERT TAYLOR 703-305-6800 ROOM: CM2 241
PM TEAM REVIEWER: ROOM:
RECEIVED DATE: 07/28/92 DUE OUT DATE: 10/06/92

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 181880 EXPEDITE: N DATE SENT: 08/24/92 DATE RET.: / /
CHEMICAL: 080803 Atrazine (ANSI)
DP TYPE: 001 Submission Related Data Package
ADMIN DUE DATE: 09/18/92 CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	08/26/92	/ /
BRAN: EFGB	08/26/92	/ /
SECT: GTS	08/27/92	01/12/93
REVR : KCOSTELL	09/15/92	01/11/93
CONTR:	/ /	/ /

* * * DATA REVIEW INSTRUCTIONS * * *

Attention Betsy Behl:

Please review attached report submitted under FIFRA 6(a)(2) which details herbicide montioring data from irrigation and drinking water wells in eleven counties in Florida. The report MRID# is 424206-01

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL

2

1. CHEMICAL:

Chemical name: 2-chloro-2',6'-diethyl-n-(methoxymethyl)acetanilide

Common name: Alachlor, and others
Trade names: Lasso

2. TEST MATERIAL:

Alachlor, Atrazine, Metolachlor, Simazine

3. STUDY/ACTION TYPE

Review of report submitted under FIFRA 6 (a) (2).

4. STUDY IDENTIFICATION:

Title: A Summary of Well Water Monitoring for Alachlor, Metolachlor, Atrazine and Simazine in Florida

Authors: M.J. Mierkowski and J.M. Warner

Prepared by: Monsanto Agricultural Company

5. REVIEWED BY: Kevin Costello, Hydrologist
OPP/EFED/EFGWB/Ground-Water Technology Section

Signature: Kevin J Costello

Date: 1/12/93

6. APPROVED BY:
Elizabeth Behl
Section Chief
OPP/EFED/EFGWB

Signature: EBehl

Date: 1/12/93

7. CONCLUSIONS:

This study details the monitoring of irrigation and drinking water wells for alachlor, atrazine, metolachlor and simazine in 11 Florida counties. Monsanto prepared this study for the Florida Department of Agriculture and Consumer Services (FDACS). The results of this study and FDACS' dissatisfaction with the study's quality assurance/quality control (QA/QC) led in part to the removal and then ban of alachlor from the Florida market. Monsanto Agricultural Company submitted this study to OPP under FIFRA 6 (a) (2).

The main focus of this study was the monitoring of alachlor in open hole bedrock wells in Jackson County, in northernmost Florida. FDACS chose the initial 100 wells analyzed in the study, and conducted soil sampling in the vicinities of these wells. Water samples from these wells were analyzed by an enzyme-linked immunoassay (ELISA) method to screen for concentrations of at least 1 ppb. Thirteen of the 100 wells screened had detections of alachlor that could be confirmed by GC/MS. Six of these wells contained alachlor at concentrations greater than the maximum contaminant level (MCL) of 2 ppb.

After confirmation of the presence of alachlor in Jackson County ground-water, the sampling base was expanded. The wells with positive detections of alachlor were resampled on at least a quarterly basis, and additional samples were taken in wells "nearby" to those with alachlor detections. The study was expanded to 10 other counties in northeastern and north-central Florida. All further analyses were done by GC/MS, which allowed the simultaneous analysis of alachlor, metolachlor, atrazine and simazine.

A total of 310 wells were analyzed; 46 (15%) of these had alachlor detections above the quantitation limit of 0.2 ppb. Seventeen of these wells had alachlor levels above the 2 ppb MCL, with the highest detection measured at 135 ppb. Some wells with alachlor detections had previously been fitted with carbon filters to remove ethyl dimethylbromide (EDB) from ground water; this reportedly also removed the alachlor contamination. Metolachlor and/or atrazine were detected in 48 of the wells sampled. Metolachlor was found in 30 of these wells, with detections ranging to 4.65 ppb. Atrazine was detected in 18 wells, at concentrations from 0.021 to 1.13 ppb. Simazine was not detected in any of the wells sampled.

The majority of the alachlor detections were encountered in Jackson County, where the majority of the samples were taken. The depth to which alachlor, metolachlor, and atrazine have leached to ground water is a likely reflection of the karst geology that underlies the area. However, run-in through karst features can

not account for the detections of herbicides in the other 10 counties, which are not karst areas.

The information provided in this report increases our understanding of the movement of these pesticides through soil to the water table. However, we take note of FDACS' concerns regarding the QA/QC of the initial screening analyses, which led in part to the rejection of the study by the State. The level of confidence in the data was not enough to allow continued registration of alachlor in the state. It was, however, enough for the State to take action against the product. These results will similarly be considered with the body of evidence available to OPP to determine possible regulatory action outside the State of Florida.

8. RECOMMENDATIONS:

(1) The data from this study should be incorporated into the EWGWB Pesticides in Ground Water Database. Although alachlor is no longer registered for use in Florida, this data should be included to present a total picture of the behavior of alachlor, atrazine and metolachlor in agricultural soils and ground water.

(2) Since levels of alachlor were detected that exceed the MCL, RD should inform the Office of Water.

9. BACKGROUND:

The detections of alachlor in this Florida study add to a large body of data showing that alachlor has leached to ground water throughout the United States. According to the Pesticides in Ground Water Database (PGWD), alachlor has been found in at least 470 of more than 26,000 samples in 35 states. Alachlor is a class B2 oncogen. Alachlor is used for controlling grasses and broadleaf weeds in corn, soybeans and other crops; the 11 counties in this Florida study are in regions where alachlor is used on peanuts.

Metolachlor is a widely used alternative for alachlor in corn, soybeans and other crops as well as peanuts. According to the PGWD, metolachlor has been detected in about 1% (213 of 22,255) of ground-water samples analyzed nationwide, in 20 of the 29 states that have performed this analysis. Atrazine is the most widely used herbicide in the country, as well as one of the most widely detected in ground water (1512 of 26916 samples). Metolachlor and atrazine are also used in combination under the trade name Bicep.

The State of Florida first became concerned with the leaching of alachlor to ground water when residues were detected in a Suwanee County well in 1986. Monsanto was required to initiate widescale monitoring for alachlor in ground water in Jackson County in July 1989 after FDACS rejected a previously chosen and instrumented small-scale prospective study site. This study was extended to 11 counties, and to the analysis of metolachlor, atrazine and simazine, when preliminary screening detailed below exposed significant alachlor contamination in the Jackson County wells.

10. DISCUSSION:

The current study was initiated in July 1989, when FDACS selected and sampled 100 wells from Jackson County for screening for alachlor by enzyme-linked immunoassay method. Twenty-one wells were identified as contaminated through this screening, of which only 13 were confirmed by GC/MS. The confirmed detections ranged from 0.2 to 36 ppb, which is 18 times higher than the MCL of 2 ppb. Six of the 13 wells had alachlor concentrations that exceeded the MCL. It is possible that samples incorrectly shown by immunoassay to have at least 1 ppb of alachlor were indicating the presence of alachlor degradates in addition to any alachlor contamination. Monsanto did not analyze ground water by GC/MS for alachlor degradates in this study.

Monsanto agreed to expand the scope of the investigation to cover three more herbicides (metolachlor, atrazine and simazine) and 10 more peanut-growing counties. In addition, the wells with positive detections of alachlor were resampled on at least a quarterly basis, and additional samples were taken in wells "nearby" to those with alachlor detections. All further analyses were done by GC/MS. Alachlor was detected in 46 of 310 wells sampled, including the original 100; 17 had detections above the MCL. The highest concentration detected was 135 ppb. Metolachlor was detected in 30 wells, at levels from 0.023 to 4.65 ppb. Atrazine was detected in 18 wells at levels from 0.021 to 1.13 ppb. Simazine was not detected in any of the samples analyzed, and will not be discussed further.

Some wells with alachlor detections had carbon filters previously installed for EDB contamination. These filters successfully removed alachlor to below detection limits. However, no further filters were installed for wells with alachlor contamination.

The majority of the alachlor detections were in Jackson County, where most of the samples were taken. The depth to which alachlor, metolachlor, and atrazine have leached to ground water is a likely reflection of the karst geology that underlies the area. However, run-in through karst features can not account for the detections of herbicides in the other 10 counties, which are not karst areas.

According to Steven Dwinell of the Florida Department of Environmental Regulation, the State had sufficient concerns with this study that they requested that Monsanto initiate a completely new study at a different site. One of the major concerns was with QA/QC. The report describes a problem of QA/QC samples for the ELISA screening being incorrectly prepared with water instead of ethanol. Monsanto declined to perform a new study, instead withdrawing alachlor from the Florida market. The Department of Agriculture then banned the use of alachlor in the state, so that farmers could not legally buy alachlor in neighboring states for use in Florida.