

DP Barcode : 183917
 PC Code No. : 090501
 EFGWB Out : 5/18/93

TO: Robert Taylor
 Product Manager # 25
 Registration Division (H7505C)

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

THRU: Henry Jacoby, Chief *Henry Jacoby 5/18/93*
 Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

Reg./File # : ID#: 000524-00314

Common Name : Alachlor

Product Name : Lasso

Company Name : Monsanto Agricultural Co.

Purpose : Review/Respond to 6(a)2 action - Suffolk Co., New York

Type Product : Herbicide

Action Code : 405 6(a)2 EFGWB #(s): 93-0070 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

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DP BARCODE: D183917

CASE: 003362
SUBMISSION: S428096

DATA PACKAGE RECORD
BEAN SHEET

DATE: 05/18/93
Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REGISTRATION ACTION: 405 6(A)(2) ADVERSE DATA
CHEMICALS: 090501 Alachlor (ANSI)

45.1000%

ID#: 000524-00314 LASSO HERBICIDE BY MONSANTO
COMPANY: 000524 MONSANTO AGRICULTURAL CO
PRODUCT MANAGER: 25 ROBERT TAYLOR 703-305-6800 ROOM: CM2 241
PM TEAM REVIEWER: WESLEY ALLEN 703-305-5706 ROOM: CM2 251
RECEIVED DATE: 10/13/92 DUE OUT DATE: 12/22/92

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 183917 EXPEDITE: N DATE SENT: 10/28/92 DATE RET.: / /

CHEMICAL: 090501 Alachlor (ANSI)

DP TYPE: 001 Submission Related Data Package

ADMIN DUE DATE: 11/22/92

CSF: N

LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	10/29/92	/ /
BRAN: EFGB	10/29/92	/ /
SECT: GTS	10/30/92	05/18/93
REVR : JJORDAN	04/01/93	05/18/93
CONTR:	/ /	/ /

* * * DATA REVIEW INSTRUCTIONS * * *

plkease review ground water leaching involving alachlor in
NEW YORK WELL WATER

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

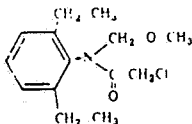
DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL
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1. CHEMICAL: Common name(s): alachlor

Chemical name(s): 2-chloro-2'-6'-diethyl-N-(methoxymethyl)-acetanilide

Structure (s):



2. TEST MATERIAL: N/A

3. STUDY/ACTION TYPE: 6(a)2 Action - Alachlor detections in Suffolk County, New York domestic well water.

4. STUDY IDENTIFICATION: Letter from Roger M. Weppelman, Monsanto Corp. October 7, 1992. Summary Report: Alachlor in Well Water, Suffolk County, New York, July 1992; Suffolk County Department of Health Services - 425149-01.

5. REVIEWED BY: John H. Jordan, Ph.D.
OPP/EFED/EFGWB/Ground-Water Section
Signature:

Date: 5/18/93

6. APPROVED BY: Elizabeth Behl, Head
OPP/EFED/EFGWB/Ground-Water Section
Signature:

Date: 5/18/93

7. CONCLUSIONS:

The New York State Department of Environmental Conservation (NYSDEC) investigated alachlor detections in 15 domestic wells and drew no conclusion concerning the cause or origin of contamination. Monsanto concluded that "ground-water contamination probably resulted from improper usage, storage, or disposal on the nursery grounds".

Review of the evidence by the NYSDEC did not prove that the use of one bag of alachlor at the nursery was the source of ground water contamination. Ten 50 pound bags of Lasso were purchased by the nursery in 1989 and one bag was applied at that time. The other nine bags were not used and were in storage at the time of the investigation.

8. RECOMMENDATIONS:

NYSDEC recommended periodic monitoring for alachlor in the East Hampton area and discontinuing use in Suffolk County through label restrictions. Monsanto has agreed to provide granular activated carbon filters to all residents whose wells contain more than 2.0 ppb alachlor.

U.S. EPA (OPP) would like to be informed of, (1) the criteria for determining when GAC filters will be installed on resident's wells, (2) filter replacement/maintenance schedules, (3) at what ground-water residue levels will filter systems be terminated, and (4) will ground-water in wells found to be <MCL be resampled? Also, the Agency requires more detail concerning follow-up sampling, e.g.,:

- (1) frequency of sampling, on an annual basis.
- (2) Density of samplings, i.e., every well in the suspect area?
- (3) Extent of sampling, i.e., how far away from the suspect area will wells be sampled?

Monsanto should continue to report alachlor residue detections. Monitoring results will be included in OPP's Pesticides in Ground-Water Data Base.

The label should be modified to prohibit use in Suffolk County, New York, in accord with the recommendation by the NYSDEC.

9. BACKGROUND/DISCUSSIONS:

During 1990, 1991, and 1992, 63 private wells, in the vicinity of a nursery in East Hampton, New York, were tested for alachlor by the Suffolk County (NY) Department of Health Services. Tests for alachlor residues resulted in detections in 14 wells. Residues of alachlor in 10 of the positive wells were >MCL of 2 ppb which may result in unreasonable adverse health effects. Alachlor residue levels ranged from 0.5 to 49 ppb.

Sampling of 92 additional wells in another location adjacent to tree nurseries resulted in one detection of 0.6 ppb alachlor (total detections = 15 wells). Aldicarb and carbofuran were also detected in 5 of the 92 wells but no residue concentrations were reported.

Alachlor has been included in the general testing program of private wells in the county. Approximately 800 additional private wells have been tested, but none were positive for alachlor. SCDHS has also included alachlor testing in their comprehensive analyses performed at all community and noncommunity public water supply wells; to date, alachlor has not been detected in the county's public wells. Depth to ground water is 15 to 35 feet.

The Pesticides in Ground-Water Data Base indicated that there have been detections of alachlor in 467 wells in 25 states, at levels from 0.006 to 3,000 ppb; 25,993 wells were sampled. Ninety-nine of the 467 detections were >MCL of 2 ppb. In the required (statistically designed) large-scale retrospective study of 1,430 wells in 89 counties, detectable levels of alachlor were present in < 1% of the wells.

Monsanto

425149-00

*already
submitted*

The Agricultural Group
800 N. Lindbergh Boulevard
St. Louis, Missouri 63167
Phone: (314) 694-1000

October 7, 1992
Office of Pesticide Programs
Document Processing Desk
(FIFRA Section 6(a)(2))
Room 266A, Crystal Mall 2
1921 Jefferson Davis Highway
Arlington, VA 22202

Subject: Lasso Herbicide, EPA Reg. No. 524-314
Information which may or may not be required under Section 6(a)(2) of FIFRA

Dear Sir:

Monsanto has received the attached study of alachlor in well water in Suffolk County, New York State. In more than 8000 assays, only 15 wells were found to contain detectable levels of alachlor. Fourteen of these were located in one subdivision in East Hampton adjacent to an active nursery and it is our professional opinion based on the location of the wells and on the direction of groundwater flow in the area that the groundwater contamination probably resulted from improper usage, storage, or disposal on the nursery grounds. 425149C

This material is submitted to provide the Environmental Protection Agency additional information and it may or may not constitute data required to be submitted by a registrant pursuant to 7 U.S.C. §136(d)(a) [§6(a)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended]. To the extent this information is not encompassed within the express language of §6(a)(2), this submission should in no way be construed as an express or implied admission by Monsanto Company that the legal authority of the Environmental Protection Agency to require submission of data pursuant to §6(a)(2) is broader than the express language of that section.

Sincerely,


Roger M. Weppelman, Ph.D.
Manager, Product Registration and
Regulatory Affairs

Betsy Beal

RMWL1.D5

[92-09-20]

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SUMMARY REPORT
ALACHLOR IN WELL WATER
SUFFOLK COUNTY, NEW YORK
JULY 1992

BACKGROUND

In May 1990, water analyses performed by the Suffolk County Department of Health Services (SCDHS) for two test wells at a proposed residential subdivision in the Springs section of East Hampton detected the presence of the herbicide alachlor. Alachlor is manufactured by Monsanto Company and is marketed under the trade name *Lasso*. The chemical is a herbicide used to control annual grasses and broadleaf weeds on food and nursery stock.

The two subdivision test wells in East Hampton were located on vacant property adjacent to an active nursery. A sampling program undertaken by SCDHS tested sixty-three private wells in the vicinity of the nursery operation. Reliable data on the depth of the wells tested in East Hampton was available for the subdivision test wells, but most residents were uncertain of the depth of their private wells. Most private wells were probably installed to a depth of 40 feet below the water in accordance with the department's standards governing private water systems. Depth to groundwater in the area ranged from 15 to 35 feet. The direction of groundwater flow is estimated to be generally northerly.

SAMPLING PROGRAM

The results of the initial sampling program indicated 10 private wells, serving single family homes, contained alachlor. Eight of the residential wells equaled or exceeded the 2 part per billion Maximum Contaminant Level (MCL) for alachlor and 2 wells contained lesser traces. The highest alachlor concentration found in any well was 49 ppb. Subsequent testing at a second, newly proposed subdivision in the same area has detected alachlor in two additional subdivision test wells. Nitrate concentrations were also detected in each of the 14 wells containing alachlor. Six of these wells exceeded the nitrate MCL of 10 milligrams per liter.

A map depicting the locations of the wells tested in East Hampton is included as Appendix I. A listing of those wells with detectable alachlor is contained in Appendix II.

Several wells which SCDHS found positive for alachlor were resampled with consecutive running split samples sent to Monsanto for confirmation. Results of the split samples are listed below.

ALACHLOR SPLIT SAMPLES

<u>WELL</u>	<u>SCDHS</u>	<u>MONSANTO</u>
1	3.7 PPB	4.43 PPB
2	3.9 PPB	4.64 PPB
3	2.4 PPB	2.79 PPB
4	0.6 PPB	0.62 PPB
5	1.1 PPB	1.35 PPB

SCDHS policy recommends the extension of public water as the best action alternative whenever private well contamination is found. In this case, providing public water was not feasible as the nearest water mains are approximately 3 miles away. SCDHS reached an agreement for remediation of the

contaminated wells with Monsanto in April 1991. The agreement is similar to past agreements between the county and other pesticide manufacturers. Monsanto consented to provide granular activated carbon (GAC) filters, meeting Suffolk County specifications, to all residents whose wells were found to contain 2.0 ppb or more alachlor. There would be no cost to the residents for the filter installation or maintenance of the filters, as long as the alachlor concentrations were equal to or greater than the MCL. Suffolk County was reimbursed for the cost of the well testing in East Hampton, and is to be further reimbursed for carrying out additional testing in other areas of the county.

The GAC filters consisted of two, 2 cubic foot vessels installed in series with sample ports for monitoring the raw water and after each filter vessel. Testing of the raw and filtered water was performed at five homes. The results of the SCDHS filter monitoring, listed in the table below, show the GAC filters to be effective for alachlor removal.

ALACHLOR RESULTS AT GAC FILTER INSTALLATIONS

<u>LOCATION</u>	<u>DATE</u>	<u>RAW</u>	<u>FILTER #1</u>	<u>FILTER #2</u>
A	07/17/91	4.5 ppb	-	ND
B	07/17/91	14. ppb	-	ND
B	02/20/92	5. ppb	ND	ND
C	10/29/91	16. ppb	ND	ND
D	12/23/91	33. ppb	ND	ND
E	02/20/92	0.8 ppb	ND	ND

NYSDEC INVESTIGATION

The New York State Department of Environmental Conservation (NYSDEC) has authority over pesticide use in the state. SCDHS notified the agency of the well contaminations, and an investigation of pesticide use at the nursery requested. The SCDHS evidence suggested that the cluster of 14 wells with detectable alachlor concentrations in East Hampton may have resulted from the improper use or disposal of the herbicide, since no similar incidents in the county were known.

Records available to the NYSDEC indicate the adjacent nursery purchased 10 bags of Lasso (50 lbs. each) in 1989, and one bag was applied at that time. Nine bags remained in storage at the nursery at the time of the DEC inspection. Pesticide use prior to 1988 was not determined. No violations were issued against the nursery or their pesticide applicator. The NYSDEC investigation drew no conclusions concerning the contamination's origin. Whether the groundwater was contaminated by pesticide use prior to 1988, was the result of a single application of 50 lbs. of Lasso in 1989, or other unknown event was not ascertained.

ADDITIONAL PRIVATE WELL TESTING

With the assistance of the Cooperative Extension Service, the department selected five tree nursery operations in the county for sampling of downgradient private wells. A total of 92 wells were sampled in the five target areas: Manorville (43), Moriches (28), East Moriches (8), Cutchogue (9), and Laurel (4). Analyses were performed for microbiological quality, inorganic chemical content, volatile organic compounds, and pesticides for each well sampled. Alachlor was detected in one of the 92 site specific wells tested. A well supplying nursery greenhouses in Laurel contained a concentration of 0.6 parts per billion alachlor. Additional parameters of interest detected in the 92 wells surveyed showed: the carbamate pesticides aldicarb and carbofuran were detected in 5 wells, nitrate exceeding 10 milligrams

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per liter was found in 8 wells, and dichlorodifluoromethane (a freon compound) was confirmed in one well.

In addition to the targeted site testing, analysis for alachlor has been incorporated as part of the general testing performed on private wells in the county. Approximately 800 additional private wells, sited randomly throughout the county, were tested. None of these samples were found to be positive for alachlor.

SCDHS has also included testing for alachlor in the comprehensive analyses performed at all community and noncommunity public water supply wells. No alachlor has been detected in any public supply well tested.

SUMMARY

In summary, 15 wells in Suffolk County have been found to contain alachlor. Since 1990, over 8,000 analyses performed by SCDHS do not indicate widespread contamination by alachlor in Suffolk County. The results show that the herbicide has the potential to contaminate groundwater even when applied in accordance with label restrictions. That so few alachlor detections have been confirmed may indicate that there has been little use of the herbicide in the county.

RECOMMENDATIONS

Periodic monitoring for alachlor in East Hampton area wells is recommended to help determine future plume movement and to identify any additional wells impacted. A continuing commitment from Monsanto Company to remediate any additional wells found to exceed the MCL should be required, as well as reimbursement of all related county costs. Additional monitoring of raw and filtered water at filter installations should be performed to insure their continued effective operation. Use of alachlor in Suffolk County should be discontinued by label restriction.

One issue that remains to be resolved is the fate of the two proposed residential subdivisions where alachlor was detected in the test wells. SCDHS regulations prohibit the subdivision of property where the (unfiltered) quality of the proposed water source, determined by subdivision test wells, does not meet drinking water standards. Monsanto Company's responsibility to provide remediate action or compensation to these landowners should be determined.

RIN 2858-00

Alachlor EFED Review

Page is not included in this copy.

Pages 10 through 11 are not included.

The material not included contains the following type of information:

- Identity of product inert ingredients.
- Identity of product impurities.
- Description of the product manufacturing process.
- Description of quality control procedures.
- Identity of the source of product ingredients.
- Sales or other commercial/financial information.
- A draft product label.
- The product confidential statement of formula.
- Information about a pending registration action.
- FIFRA registration data.
- The document is a duplicate of page(s) .
- The document is not responsive to the request.
- Personal privacy

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Environmental Fate & Effects Division
 PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
ALACHLOR

Last Update on April 26, 1993

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

LOGOUT	Reviewer:	Section Head:	Date:
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Common Name:ALACHLOR

Smiles Code:ClCC(=O)N(-c(c(cc1)CC)c(c1)CC)COC

PC Code # : 90501 CAS #:15972-60-8 Caswell #:

Chem. Name :2-CHLORO-2',6'-DIETHYL-N-(METHOXYMETHYL)ACETANILIDE

Action Type:Herbicide

Trade Names:LASSO; ALANEX

(Formul'tn):GRANULAR; EC; FC

Physical State: CLRLSS-YELLOW CRYSTALS-YEL/WINERED TECH

Use :PREEMERGENT CONTROL OF ANNUAL GRASSES AND BROADLEAF WEEDS
 Patterns :IN CORN, SOYBEANS, POTATOES, SUNFLOWERS, PEANUTS, AND
 (% Usage) :GRAIN SORGHUM
 :

Empirical Form: C₁₄H₂₀ClNO₂
 Molecular Wgt.: 269.77 Vapor Pressure: 2.20E -5 Torr
 Melting Point : 40 °C Boiling Point: N/A °C
 Log Kow : 2.64 pKa: @ °C
 Henry's : 3.20E -8 Atm. M3/Mol (Measured) 3.23E -8 (calc'd)

Solubility in ...					Comments
Water	2.42E	2	ppm	@20.0 °C	
Acetone	E		ppm	@ °C	
Acetonitrile	E		ppm	@ °C	
Benzene	E		ppm	@ °C	
Chloroform	E		ppm	@ °C	
Ethanol	E		ppm	@ °C	
Methanol	E		ppm	@ °C	
Toluene	E		ppm	@ °C	?
Xylene	E		ppm	@ °C	
	E		ppm	@ °C	
	E		ppm	@ °C	

Hydrolysis (161-1)

[] pH 5.0:
 [] pH 7.0:
 [] pH 9.0:NO DEGRADATION IN 30 DAYS
 [] pH 3.0:" " " " "
 [] pH 6.0:" " " " "
 [] pH :

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Environmental Fate & Effects Division
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY

ALACHLOR

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Photolysis (161-2, -3, -4)

[] Water:
[S] :ESTD. T1/2 IN SUNLIGHT
[] := 80 DAYS
[] :

[] Soil :
[] Air :T 1/2 = ABOUT 1 WEEK

Aerobic Soil Metabolism (162-1)

[V] T 1/2 = 2-3WKS FOR DRUMMER,
[] SPINKS. AND RAY SOILS
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[]
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Anaerobic Soil Metabolism (162-2)

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[]

Anaerobic Aquatic Metabolism (162-3)

[V] T 1/2 = 3-4 DAYS
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Aerobic Aquatic Metabolism (162-4)

[V] AFTER 30 DAYS, 88.8% ALACHLOR
[] REMAINED
[]
[]
[]
[]
[]

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Soil Partition Coefficient (Kd) (163-1)

[V]	SOIL	%OM	Kd
[]	DRUMMER	4.6	3.74
[]	SPINKS	2.9	2.88
[]	RAY	0.1	0.88
[]	WISC.	0.8-11	0.62 - 8.13
[S]	SOIL Koc = 190 (ESTIMATE)		

Soil Rf Factors (163-1)

[V]	LEACH BEYOND 30 CM IN SOIL:	
[]	DRUMMER	0.5%
[]	SPINKS	42.5%
[]	RAY	82.0%
[]	LINTONIA	92%
[]		

Laboratory Volatility (163-2)

[]
[]

Field Volatility (163-3)

[]
[]

Terrestrial Field Dissipation (164-1)

[] 90% DISSIPATION AFTER 40-70 DAYS; FIELD REPORTED HALF-
[] LIVES OF 18 AND 15 DAYS
[]
[V] SOIL AEROBIC OR ANAEROBIC, T 1/2 = <2 WEEKS
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[]

Aquatic Dissipation (164-2)

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[]
[]
[]

Forestry Dissipation (164-3)

[]
[]

Environmental Fate & Effects Division
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
ALACHLOR

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Long-Term Soil Dissipation (164-5)

[]
[]

Accumulation in Rotational Crops, Confined (165-1)

[V] TOTAL RADIOACT. IN CROPS PLANTED 30 DAYS AFTER
[] TREATMENT, HARVESTED AT MATUR.=1.28 AND .66 PPM

Accumulation in Rotational Crops, Field (165-2)

[S] COMBINED UNCORRECTED RESIDUES WERE .02-.12 PPM IN
[] WINTER WHEAT AND BARLEY. NO RESID. IN GRAIN SAMPLS

Accumulation in Irrigated Crops (165-3)

[]
[]

Bioaccumulation in Fish (165-4)

[V] CHANNEL CATFISH: FILLET, 5.8X; WHOLE, 11 X; VISCERA, 15 X
[]

Bioaccumulation in Non-Target Organisms (165-5)

[]
[]

Ground Water Monitoring, Prospective (166-1)

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[]

Ground Water Monitoring, Small Scale Retrospective (166-2)

[]
[]
[]
[]

PLEASE NOTE-THE DATA BELOW ARE FROM PGWDB

Ground Water Monitoring, Large Scale Retrospective (166-3)

[] PGWDB - detections in 467 wells in 25 states at levels from 0.006
[] to 3,000 ppb - 25,993 wells were tested- 99 of the 467 detects
[] were >MCL of 2 ppb. (from EFGWB# 93-0070 - In Suffolk Co. NY, 14
[] of 63 private wells were positive foralachlor-10 above MCL 2ppb)

Ground Water Monitoring, Miscellaneous Data (158.75)

[S] IN IOWA, 9 OUT OF 297 WELLS SAMPLED HAD ALACHLOR WITH A
[] RANGE OF .09-2.30 PPB.
[] PGWDB indicates: detections in 467 wells in 25 states - levels of

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Field Runoff (167-1)

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Surface Water Monitoring (167-2)

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[]

Spray Drift, Droplet Spectrum (201-1)

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[]

Spray Drift, Field Evaluation (202-1)

[]
[]
[]
[]

Degradation Products

2,6-diethylaniline
2',6'-diethylacetanilide
Monochloroacetic acid 2',6-diethyl-N-methoxymethyl aniline
2-chloro-2',6'-diethylacetanilide
2',6'-dimethyl-N-methoxymethyl

Acetanilide (does not hydrolyze readily)

Koc = 170 (U)

Environmental Fate & Effects Division
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Comments

Alachlor found in GW at levels from .01 to 16.6 ppb in 3 states. Microbial decay assumed to be major mode of degradation but is less important below root zones, where hydrolysis is major mode. Hydrolysis is slow, however. More likelihood of alachlor reaching GW in cooler climates of Iowa and Indiana than in the southeast. Do not rotate crops used for food or feed which are not registered for use w/alachlor on areas prev. treat. w/alachlor. Alachlor is classified as a B2 oncogen. The major alternative is metolachlor, a class C oncogen. Principal concern is application exposure. Restricted in all formulations and uses.

Reported Koc 170.

References: EAB FILES
Writer : PJH, DW, JHJ