DATA EVALUATION RECORD

PC No. 108800 S-metolachlor
DP Barcode D301593
FORMULATION-00-ACTIVE INGREDIENT

STUDY ID 46224201

Trask, J.R., Harbourt, C.M., Johnson, L.C., and Ball, R.H., 2003. 2001 S-metolachlor Monitoring Data for Community Water Systems in 29 States. Syngenta Crop Protection Report T001594-03. Unpublished study performed by Waterborne Environmental, Inc. (WEI) and submitted by Syngenta Crop Protection, Inc., Greensboro, NC.

STUDY ID 46224202

Trask, J.R., Harbourt, C.M., Johnson, L.C., and Ball, R.H., 2003. 2002 S-metolachlor Monitoring Data for Community Water Systems in 43 States. Syngenta Crop Protection Report T001596-03. Unpublished study performed by Waterborne Environmental, Inc. (WEI) and submitted by Syngenta Crop Protection, Inc., Greensboro, NC.

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ABSTRACT

This Data Evaluation Record (DER) provides review and comment on two non-guideline studies (MRID 46224201 and MRID 46224202) submitted in support of s-metolachlor. The studies are classified as supplemental because the studies are non-guideline they do not satisfy any of the requirements of Subdivision N. Although this study was submitted in support of s-metolachlor, the registrant acknowledges that the analytical methods used were unable to determine the isomeric ratio in each sample and therefore determinations of source of the detections is unknown. However, since the introduction of s-metolachlor occurred in 1997 it is likely that the data from this study are influenced by the change in use from racemic metolachlor to s-metolachlor. The study does not include data on metolachlor ESA or metolachlor OA.

In MRID 46224201, the registrant collected and analyzed drinking water samples from 4,947 community water system (CWS) in 29 states collected and analyzed in 2001. The drinking water samples represent a mixture of sources including surface water, groundwater, and other which may represent a mixture of surface water and groundwater or where the source is unknown. In this study, there were a total of 10,955 samples analyzed with only 113 detections above the method detection limit (MDL) or roughly 1% of all samples. The MDL varied from state to state and ranged from 0.02 ppb to 10.0 ppb. The maximum concentration detected was 9.1 ppb which was detected in a groundwater sample. The maximum detection in surface water was 6.4 ppb while the maximum detection in sources defined as other was 1.42 ppb. Based on data from previous studies the authors note that the number of surface water systems with detections decreased from 13.0% in 1998 to 3.1% in 2001 while the number of detections in groundwater supplied systems was 0.31% in 1998 and 0.38% in 2001.

Although not discussed by the authors, a state by state analysis of detections (Table 3, page17) indicate that the top five states in terms of detection frequency were Texas with 10 detections out of 15 samples (66.67%), Kansas with 28 detections out of 57 samples (49.12%), Iowa with 21 detections out of 59 samples (35.59%), Kentucky with 2 detections out of 45 samples (4.44%), and Virginia with 2 detections out of 55 samples (3.64%).

In MRID 46224202, the registrant collected and analyzed drinking water samples from 4,727 community water system (CWS) in 43 states collected and analyzed in 2002. The drinking water samples represent a mixture of sources including surface water, groundwater, and other which may represent a mixture of surface water and groundwater or where the source is unknown. In this study, there were a total of 10,886 samples analyzed with only 106 detections above the method detection limit (MDL) or roughly 1% of all samples. The MDL varied from state to state and ranged from 0.02 ppb to 5.0 ppb. The maximum concentration detected was 18.7 ppb which was detected in a groundwater sample. The maximum detection in surface water was 5.3 ppb while the maximum detection in sources defined as other was 2.3 ppb.

Although not discussed by the authors, a state by state analysis of detections (Table 3, page17) indicate that the top five states in terms of detection frequency were Kansas with 32 detections

out of 110 samples (29.09%), Iowa with 8 detections out of 59 samples (13.56%), Indiana with 5 detections out of 61 samples (8.20%), Texas with 15 detections out of 188 samples (7.98%), and Virginia with 9 detections out of 168 samples (5.36%).

Reviewers Comments

1. The study authors for both submissions suggest that this study provides results for s-metolachlor from high use states. It should be noted that the analytical methods used in these studies do not distinguish between racemic metolachlor and s-metolachlor. Therefore, no direct correlation can be made between a specific detection and s-metolachlor use. However, it is likely given the phase in of s-metolachlor since 1997 that the use of s-metolachlor is influencing these overall trends in these studies.

2. The study authors report the MCL as 100 ppb. The actual value is a lifetime HA.

Table 1. S-metolachlor data availability from 1993 through 2001.

State	Data Availability		State	Data Availability
AL	1993-2001		MO	1993-2001
AR	1995-2001		MS	1997-2001
CA	1993-2001		NC	1993-2001
CO	1993-2001		ND	Limited Data Use[d]
DE	No data[a]		NE	1993-2001
FL	Limited Data Use[b]		NJ	No data[e]
GA	1993-2001		NM	2001
HI	1993-2001		NY	1993-2001
IA	1993-2001		OH	1993-2001
IL	1993-2001		OK	No data for 2001
IN	1993-2001		PA	1994-2001
KS	1993-2001		SC	May 1994-2001
KY	1993-2001		SD	1993-2001
LA	No Data[c]		TN	1993-2001
MD	1993-2001		TX	1993-2001
MI	1993-2001		VA	1997-2001
MN	1993-2001		WI	1993-2001

[a]assessed for 1993-2001 data, but no data available.
[b]assessed for 1993-2001, but no limits of quantification provided.
[c]assessed for 1993-2001, but no data available.
[d]assessed for 1993-2000, but no limits of quantification provided; not assessed in 2001.
[e]assessed for 1993-2000 data, but no data available; not assessed in 2001.

Table 2. S-metolachlor concentrations from 29 states in 2001.

Data	Totals	Ground water	Surface Water	Other[a]
Number of Samples	10,955	8,391	2,120	444
Number of Detections	113	32	66	15
Percent of Detections	1.03%	0.38%	3.11%	3.38%
Concentrations				
Minimum Detected Concentration (ppb)	--	0.09	0.2	0.15
Maximum Detected Concentration (ppb)	--	9.1	6.4	1.42
CWS				
Number of CWS within 29 states	38,838	30,295	8,543	--[b]
Number of CWS with Data	4,947	4,211	601	135
Percent CWS with Data	12.7%	13.9%	7.0%	
Number of CWS with Data with No Detections[c]	4,870	4,190	553	127
Number of CWS with Data with Detections[c]	77	21	48	8
Percent of CWS with Data with No Detections[c]	98.4%	99.5%	92.0%	--
Percent of CWS with Data with Detections[c]	1.6%	0.5%	8.0%	--

[a] "Other" indicates either a blended source or an unknown source.
[b] SDWIS FED does not report 'Other' as a category for CWS counts.
[c] The method detection levels (MDL) ranged from 0.02 to 10.0-ppb for all 29 states that provided monitoring data.

Table 3. S-metolachlor concentrations by state.

State*	Number of CWS in state	Number of CWS with Detections	% CWS with Detections	Number of data points	Number of Detects	% Detects
AL	570	--	0.00%	292	--	0.00%
AR	732	--	0.00%	320	--	0.00%
CA	3,283	1	0.03%	1,624	1	0.06%
CO	825	--	0.00%	191	--	0.00%
FL	2,001	--	0.00%	17	--	0.00%
GA	1,668	--	0.00%	191	--	0.00%
HI	117	--	0.00%	391	--	0.00%
IA	1,151	11	0.96%	59	21	35.59%
IL	1,800	11	0.61%	1,112	23	2.07%
IN	874	--	0.00%	368	--	0.00%
KS	918	21	2.29%	57	28	49.12%
KY	452	2	0.44%	45	2	4.44%
MD	504	3	0.60%	145	4	2.76%
MI	1,481	--	0.00%	838	--	0.00%
MN	957	--	0.00%	249	--	0.00%
MO	1,439	6	0.42%	1,540	7	0.45%
MS	1,211	--	0.00%	15	--	0.00%
NC	2,415	--	0.00%	1,256	--	0.00%
NE	614	4	0.65%	334	5	1.50%
NM	616	--	0.00%	420	--	0.00%
NY	2,868	3	0.10%	511	3	0.59%
OH	1,322	3	0.23%	231	5	2.16%
PA	2,184	1	0.05%	51	1	1.96%
SC	680	--	0.00%	541	--	0.00%
SD	473	--	0.00%	37	--	0.00%
TN	649	--	0.00%	10	--	0.00%
TX	4,574	8	0.17%	15	10	66.67%
VA	1,335	2	0.15%	55	2	3.64%
WI	1,125	1	0.09%	40	1	2.50%

*DE, LA, and OK did not provide S-metolachlor data for 2001 and therefore have not been included in the table.

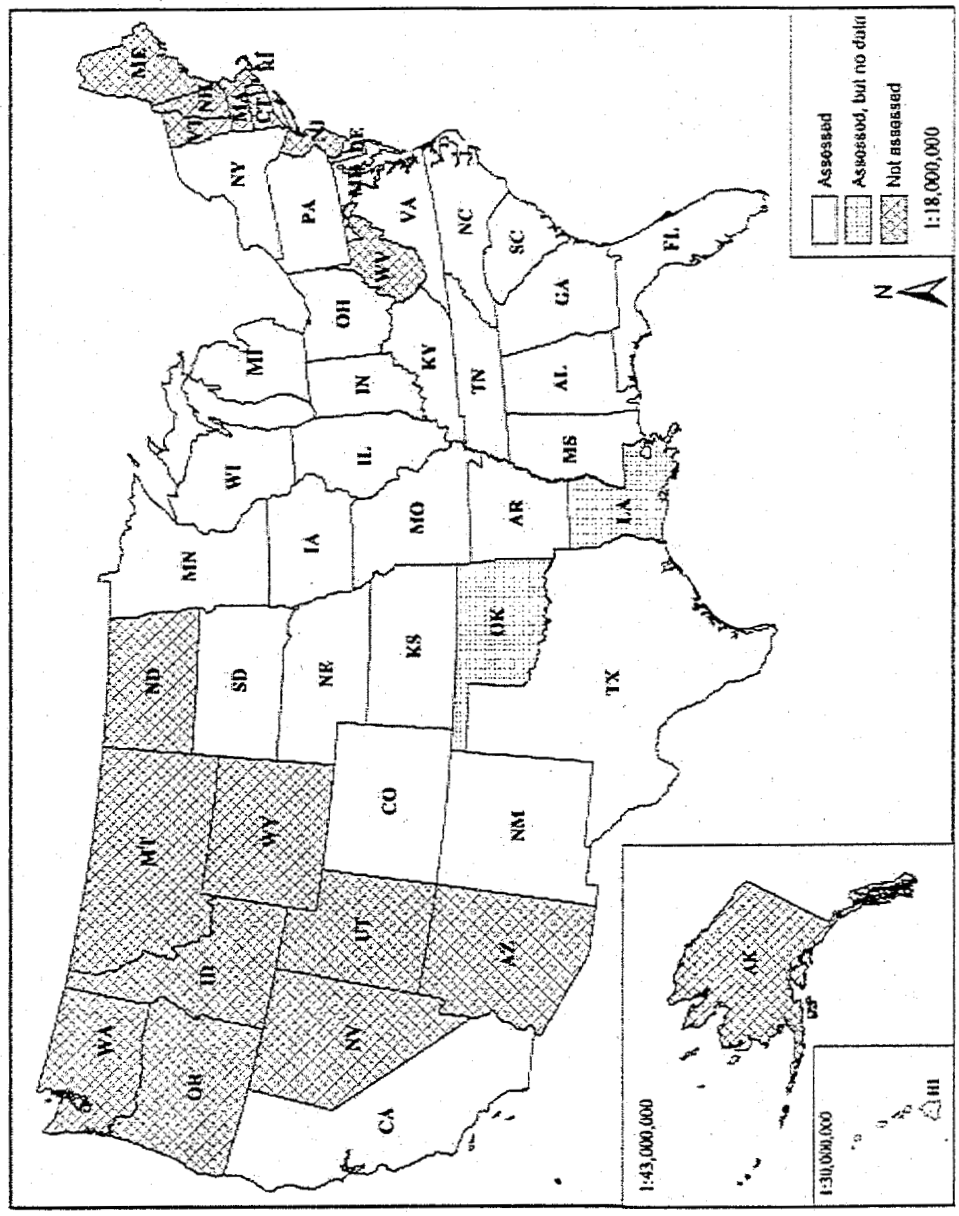

Figure 1-1. States assessed for 2001 S-metolachlor monitoring data.

Table 1. S-metolachlor data availability from 1993 through 2002 for the 50 states.

Previously Assessed States						States added in 2002	
State	Data Availability		State	Data Availability		State	Data Availability
AL	1993 - 2002		MO	1993-2002		AK	No data
AR	1995-2002		MS	1997-2001		AZ	2002
CA	1993-2002		NC	1993-2002		CT	No data
CO	1993-2002		ND	Limited Data Use[d]		ID	2002
DE	2002[a]		NE	1993-2002		MA	2002
FL	Limited Data Use[b]		NJ	No data[c]		ME	2002
GA	1993-2002		NM	2001-2002		MT	2002
HI	1993-2002		NY	1993-2002		NH	2002
IA	1993-2002		OH	1993-2002		NV	2002
IL	1993-2002		OK	No data[f]		OR	2002
IN	1993-2002		PA	1994-2002		RI	2002
KS	1993-2002		SC	May 1994-2002		UT	2002
KY	1993-2002		SD	1993-2002		VT	2002
LA	No data[c]		TN	1993-2002		WA	2002
MD	1993-2002		TX	1993-2002		WV	2002
MI	1993-2002		VA	1997-2002		WY	2002
MN	1993-2002		WI	1993-2002			

[a]assessed for 1993-2001 data, but no data available; data available for 2002.

[b]assessed for 1993-2002, but no limits of quantification provided.

[c]assessed for 1993-2002, but no data available.

[d]assessed for 1993-2000, but no limits of quantification provided; not assessed in 2001; no data available for 2002.

[e]assessed for 1993-2000 data; not assessed in 2001; 2002 no data available.

[f]assessed for 2001 and 2002 data.

Table 2. S-metolachlor concentrations from 43 states in 2002.

Data	Totals	Groundwater	Surface Water	Other[a]
Number of Samples	10,886	7,527	2,971	388
Number of Detections	106	22	73	11
Percent of Detections	0.97%	0.29%	2.46%	2.84%
Concentrations				
Minimum Detected Concentration (ppb)	0.04	0.05	0.04	0.10
Maximum Detected Concentration (ppb)	18.7	18.7	5.3	2.3
CWS				
Number of CWS	46,828	36,761	10,067	--[b]
Number of CWS with Data	4,727	3,589	992	146
Percent CWS with Data	10.1%	9.8%	9.9%	--
Number of CWS with Data with No Detections[c]	4,647	3,576	932	139
Number of CWS with Data with Detections[c]	80	13	60	7
Percent of CWS with Data with No Detections[c]	98.3%	99.6%	93.9%	--
Percent of CWS with Data with Detections[c]	1.7%	0.4%	6.0%	--

[a]"Other" indicates either a blended source or an unknown source.
[b] SDWIS FED does not report 'Other' as a category for CWS counts.
[c] The method detection levels (MDL) ranged from 0.01 to 5.0-ppb for all 43 states that provided monitoring data.

Table 3. S-metolachlor concentrations by state.

State	Number of CWS in state	Number of CWS with Detections	% CWS with Detections	Number of Samples	Number of Detects	% Detects
AL	570	--	0.00%	644	--	0.00%
AR	732	--	0.00%	273	--	0.00%
AZ	793	1	0.13%	465	1	0.22%
CA	3,283	1	0.03%	611	1	0.16%
CO	825	--	0.00%	4	--	0.00%
DE	240	1	0.42%	101	2	1.98%
FL	2,001	--	0.00%	44	--	0.00%
GA	1,668	--	0.00%	322	--	0.00%
HI	117	--	0.00%	287	--	0.00%
IA	1,151	5	0.43%	59	8	13.56%
ID	743	--	0.00%	3	--	0.00%
IL	1,800	6	0.33%	664	8	1.20%
IN	874	3	0.34%	61	5	8.20%
KS	918	24	2.61%	110	32	29.09%
KY	452	--	0.00%	8	--	0.00%
MA	516	1	0.19%	65	1	1.54%
MD	504	1	0.20%	211	1	0.47%
ME	397	--	0.00%	69	--	0.00%
MI	1,481	--	0.00%	389	--	0.00%
MN	957	--	0.00%	382	--	0.00%
MO	1,439	6	0.42%	1,495	9	0.60%
MT	651	--	0.00%	140	--	0.00%
NC	2,415	--	0.00%	1,649	--	0.00%
NE	614	2	0.33%	76	3	3.95%
NH	676	--	0.00%	169	--	0.00%
NM	616	--	0.00%	246	--	0.00%
NV	261	--	0.00%	48	--	0.00%
NY	2,868	2	0.07%	366	3	0.82%
OH	1,322	1	0.08%	213	1	0.47%
OR	885	--	0.00%	2	--	0.00%
PA	2,184	--	0.00%	13	--	0.00%
RI	83	2	2.41%	168	5	2.98%
SC	680	--	0.00%	250	--	0.00%
SD	473	--	0.00%	73	--	0.00%
TN	649	--	0.00%	7	--	0.00%
TX	4,574	14	0.31%	188	15	7.98%
UT	390	--	0.00%	293	--	0.00%
VA	1,335	8	0.60%	168	9	5.36%
VT	439	--	0.00%	132	--	0.00%
WA	2,295	--	0.00%	121	--	0.00%
WI	1,125	2	0.18%	171	2	1.17%
WV	562	--	0.00%	16	--	0.00%
WY	270	--	0.00%	110	--	0.00%

APPENDIX 1: STATE SELECTION PROCESS

Traditionally, 32 states had been selected for collection of the SDWA data based on a ranking of S-metolachlor use in the state. The remaining 18 states were added for collection of the 2002 S-metolachlor SDWA data. S-metolachlor is considered an "unregulated" compound under the SDWA, therefore, all states do not require CWS to monitor for the presence of S-metolachlor. The CWS monitoring data was supplied by each state except for Alaska, Connecticut, Louisiana, Mississippi, New Jersey, North Dakota, and Oklahoma, resulting in data for 43 states (Figure 1-1).

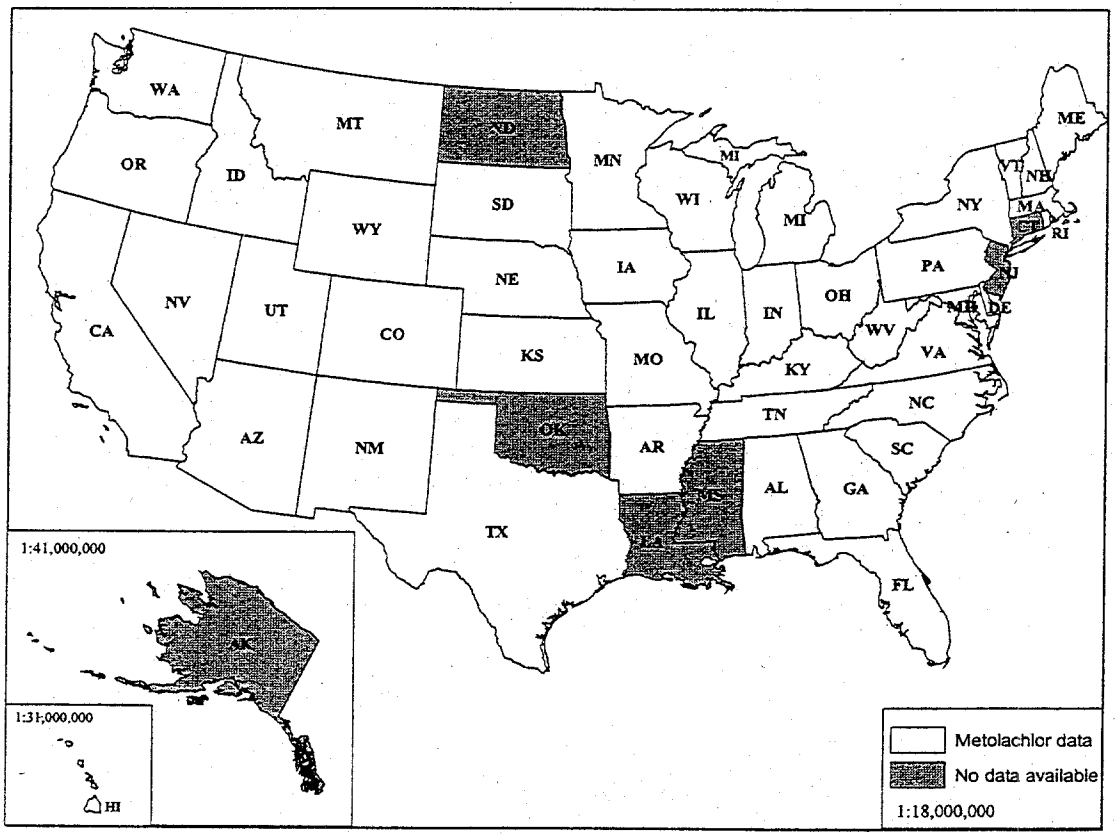

Figure 1-1. States assessed for 2002 SDWA monitoring data.

Table 2-1. Initial state data request form

Requested Database Fields
Safe Drinking Water Act (SDWA) Data for Community Water Systems (CWS)

Please Respond To:
Linda Johnson
ljohnson@waterborne-env.com
897-B Harrison Street, SE, Leesburg, VA 20175
(703)777-0005

Preferred Formats: .mdb, .dbf, .txt, .xls, .csv

Requesting Atrazine, Simazine, and Metolachlor Sample Data

Jan. 1st 2002 – Dec. 31st 2002

Additional Fields Requested: Please include, using you judgment, any data which may increase the understanding of the reported results.

Minimum Data Required (Primary Key Field is CWS_ID):

CWS Data
CWS_ID 9-digit SDWIS ID Number Example: TX1090068
CWS_name Community Water Supply Name
CWS_water_type Examples: GW - Ground Water, SWP - Purchased Surface Water
CWS_Water_Name Examples: Sugar River, East Lake, Well 5
CWS_Purch_From CWS Purchased Water Then List the Actual Source CWS_ID
CWS_category Community, Non-Community/Non-Transient, etc.
CWS_city Primary City or Town Supplied
CWS_county County CWS Supplied
CWS_zip code CWS Zip Code
CWS_Pop_Served CWS Population Served
CWS_Status CWS Active or Inactive Water Supply

Sample Data
Sample_Date Sample Collection Date
Sample_Type Finished or Raw Water Sample
Sample_Water_Body Samples Origin Water, Examples: Lake, Well, River (Name or Class)
Sample_location Examples: Tap on Well 8, Storage Reservoir 2, Lab Sink, Flash Mixer

Sample_Number State, Lab, or CWS Sample Number

Lab Data
Sample_Result Sample Result in ppb 3-Fields (Atrazine, Simazine, and Metolachlor)
Result_Qual Detection or Nondetection 3-Fields
Detection_Limit MDL or LOQ (Method or Methods Detection Limit)
Analyzed_date Date the Sample was Analyzed
EPA _Method Test Method Examples: 505, 525.2, 508.1, and 551.1
Lab_Name/ID Name or ID of Testing Laboratory

The standardized data request form (Table 2-1) was sent to each state drinking water monitoring agency to collect information about the CWS and the availability of S-metolachlor monitoring data. A list of state contacts and the associated state agencies used during the data request can be found in Table 2-2. Based on the request form, specific SDWA monitoring data for CWS as well as specific CWS information for each state were submitted either by electronic or paper format. The file formats consisted of Microsoft ™ Access files, dbf (database) files, text files, Microsoft ™ Excel, or Lotus123 files.

Table 2-2. State Contact List.

State	State Agency	Division or Section	Data Contact	Contact Phone
Alabama	Alabama Department of Environmental Management	Division of Water	Tom DeLoach	334-271-7791
Alaska	Alaska Dept of Environmental Conservation	Division of Environmental Health	James Weise	907-269-7647
Arizona	Arizona Department of Water Resources		John Calkins	602-417-2400
Arkansas	Arkansas Department of Health	Bureau of Environmental Health Services	Susan Corder	501-661-2574
California	Monitoring and Evaluation Unit	Drinking Water Program	Anthony Meeks	916-327-1420
Colorado	Colorado Dept of Public Health and Environment	Water Quality Control Division	Richard E. Sickles	303-692-3500
Connecticut	Connecticut Dept of Public Health Drinking Water Division		Mike Hage	860-509-7333
Delaware	Delaware Health and Social Services	Div. Of Public Health, Health Systems Protection	Howard Hammond	302-739-5410
Florida	Florida Department of Environmental Protection	Division of Water Resource Management	Robert Glenn	850-414-9031
Georgia	Georgia Department of Natural Resources	Environmental Protection Division	Charles Williams	404-656-6328
Hawaii	Hawaii Department of Health	Division of Environmental Management	Dan Chang	808-586-4258
Idaho	Idaho Department of Environmental Quality	DEQ State Office	Howard Woods	208-373-0502
Illinois	Chemical Monitoring Sub-Unit	Illinois Environmental Protection Agency		217-782-9720
Indiana	Sandra DeCastro - PWS, Bacteriological Results	Drinking Water Branch, Compliance Section	Lilia Park	317-308-3283
Iowa	Water Supply Section	Iowa Department of Natural Resources	Jim Warren	515-281-8998

Table 2-2 (*cont.*). State Contact List

State	State Agency	Division or Section	Data Contact	Contact Phone
Kansas	Kansas Department of Health and Environment	Bureau of Water	Ellan E. Spivey	785-296-5503
Kentucky	KY Department of Environmental Protection	Division of Water, Drinking Water Branch	Angela Fitzpatrick	502-564-3410
Louisiana	Louisiana Dept of Health and Hospitals	Office of Public Health	Kate Gilmore	225-765-5083
Maine	Dept if Human Services Bureau of health	Division of Health Engineering	Bob Peterson	207-287-1979
Maryland	Public Drinking Water Program	Maryland Department of the Environment	Louise Connelly	410-631-3000
Massachusetts	Massachusetts Water Resources Authority		Damon Guterman	617-539-4302
Michigan	Michigan Department of Environmental Quality	Drinking Water and Radiological Protection	Mark Breithart	517-241-1300
Minnesota	Minnesota Department of Health	Division of Environmental Health	Theresa Roble	651-215-0746
Mississippi	Mississippi Department of Health	Office of Health Regulation	Shirley Kimbrell	601-576-7518
Missouri	Missouri Department of Natural Resources	Division of Environmental Quality	Dianne Holtmeyer	573-751-1188
Montana	Department of Water Quality	Public Water Supply Section	Jim Melstad	406-444-5315
Nebraska	Nebraska Department of Health		Laura Hardesty	402-471-0930
Nevada	Nevada State Health Division		Judy Neubert	775-687-6615
New Hampshire	New Hampshire Department of Environmental Service	Water Supply Engineering Bureau	Laurie Cullerot	603-271-3139
New Jersey	New Jersey Department of Environmental Protection	Bureau of Safe Drinking Water	Josephine Craver	609-292-5550
New Mexico	New Mexico Environmental Department	Drinking Water and Community Services Bureau	Karen Beezhold	505-827-1400
New York	New York State Department of Health	Center for Environmental Health	Kim Evans - Database	518-402-7650
North Carolina	Dept. of Environment and Natural Resources	Division of Environmental Health	Martha Fillinger	919-715-3222
North Dakota	North Dakota Department of Health	Division of Municipal Facilities	Larry Thelan	701-328-5209
Ohio	Ohio Environmental Protection Agency	Division of Drinking and Groundwater	Todd Kelleher	614-644-2752
Oklahoma	Oklahoma Department of Environmental Quality	Drinking Water Division	Rebecca Poole, P.E.	405-702-8158

Table 2-2 (*cont.*). State Contact List

State	State Agency	Division or Section	Data Contact	Contact Phone
Oregon	Department of Environmental Quality	Water Quality	Mary Alvey	503-229-5413
Pennsylvania	Department of Environmental Protection	Bureau of Water Supply and Wastewater Mgmt	Tim Leeman	717-772-4018
Rhode Island	Department of Environmental Management Bureau of Environmental Protection	Office of Water Resources	Deborah Lafleur	401-222-3961
South Carolina	SC Department of Health and Environmental Control	Bureau of Water	Susan Alder	803-898-4300
South Dakota	Department of Environment and Natural Resources	Drinking Water Program	Mitch Williams	605-773-3754
Tennessee	TN Department of Environment and Conservation	Bureau of Environment		615-532-0191
Texas	Texas Natural Resources Conservation Commission	Water Supply Division	Marie Knipfer	512-239-6020
Utah	Utah Division of Drinking Water		Don Lore	801-536-4204
Vermont	Agency of Natural Resources	Department of Environmental Conservation	Jay Rutherford	802-241-3405
Virginia	Virginia Department of Health	Office of Water Programs	Monte Waugh	804-371-2882
Washington	Dept of Health Environmental Health Programs Division of Drinking Water	Division of Drinking Water	Jack Eden	360-236-3178
West Virginia	Dept of Environmental Protection	Division of Water and Waste Management	Nancy Flemming	304-558-2107
Wisconsin	Wisconsin Department of Natural Resources	Bureau of Drinking Water and Groundwater	Mark A. Nelson	608-267-7604
Wyoming	Wyoming Dept of Environmental Quality (EPA)		David Robbins	307-777-7937

The initial state data request period began in February of 2002 and continued through the beginning of May 2002. As the data was received, it was checked against the initial data form for completeness of each parameter. In many cases, the initial data request provided all the necessary information for the database. However, some additional requests were needed