Selected Data From Field Studies of Pesticide Runoff to Surface Waters

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM

Water-Resources Investigations Report 00-4284

U.S. Department of the Interior
U.S. Geological Survey

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by Paul D. Capel, Thomas A. Winterstein, *and* Steven J. Larson

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U.S. GEOLOGICAL SURVEY

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U.S. DEPARTMENT OF THE INTERIOR
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FOREWORD

The U.S. Geological Survey (USGS) is committed to serve the Nation with accurate and timely scientific information that helps enhance and protect the overall quality of life, and facilitates effective management of water, biological, energy, and mineral resources. (http://www.usgs.gov/). Information on the quality of the Nation's water resources is of critical interest to the USGS because it is so integrally linked to the long-term availability of water that is clean and safe for drinking and recreation and that is suitable for industry, irrigation, and habitat for fish and wildlife. Escalating population growth and increasing demands for the multiple water uses make water availability, now measured in terms of quantity and quality, even more critical to the long-term sustainability of our communities and ecosystems.

The USGS implemented the National Water-Quality Assessment (NAWQA) Program to support national, regional, and local information needs and decisions related to water-quality management and policy. (http://water.usgs.gov/nawqa). Shaped by and coordinated with ongoing efforts of other Federal, State, and local agencies, the NAWQA Program is designed to answer: What is the condition of our Nation's streams and ground water? How are the conditions changing over time? How do natural features and human activities affect the quality of streams and ground water, and where are those effects most pronounced? By combining information on water chemistry, physical characteristics, stream habitat, and aquatic life, the NAWQA Program aims to provide science-based insights for current and emerging water issues and priorities. NAWQA results can contribute to informed decisions that result in practical and effective water-resource management and strategies that protect and restore water quality.

Since 1991, the NAWQA Program has implemented interdisciplinary assessments in more than 50 of the Nation's most important river basins and aquifers, referred to as Study Units. (http://water.usgs.gov/nawqa/nawqamap.html). Collectively, these Study Units account for more than 60 percent of the overall water use and population served by public water supply, and are representative of the Nation's major hydrologic landscapes, priority ecological resources, and agricultural, urban, and natural sources of contamination.

Each assessment is guided by a nationally consistent study design and methods of sampling and analysis. The assessments thereby build local knowledge about water-quality issues and trends in a particular stream or aquifer while providing an understanding of how and why water quality varies regionally and nationally. The consistent, multi-scale approach helps to determine if certain types of water-quality issues are isolated or pervasive, and allows direct comparisons of how human activities and natural processes affect water quality and ecological health in the Nation's diverse geographic and environmental settings. Comprehensive assessments on pesticides, nutrients, volatile organic compounds, trace metals, and aquatic ecology are developed at the national scale through comparative analysis of the Study-Unit findings. (http://water.usgs.gov/nawqa/natsyn.html).

The USGS places high value on the communication and dissemination of credible, timely, and relevant science so that the most recent and available knowledge about water resources can be applied in management and policy decisions. We hope this NAWQA publication will provide you the needed insights and information to meet your needs, and thereby foster increased awareness and involvement in the protection and restoration of our Nation's waters.

The NAWQA Program recognizes that a national assessment by a single program cannot address all water-resource issues of interest. External coordination at all levels is critical for a fully integrated understanding of watersheds and for cost-effective management, regulation, and conservation of our Nation's water resources. The Program, therefore, depends extensively on the advice, cooperation, and information from other Federal, State, interstate, Tribal, and local agencies, non-government organizations, industry, academia, and other stakeholder groups. The assistance and suggestions of all are greatly appreciated.

Robert M. Hirsch
Associate Director for Water

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ABSTRACT

Citations from the scientific literature for studies that quantified selected pesticides in field runoff or streams were obtained from two computerized bibliographic databases: Chemical Abstracts and AGRICOLA. Selected data were extracted from studies in field environments that lasted longer than a day and are summarized here. The data extracted from each article, if available, include pesticide information, environmental setting, year of study, and the mass of the pesticide in runoff as a percent of the mass applied. Data from two national studies of pesticides in surface waters done by the U.S. Geological Survey (National Water-Quality Assessment Program, 1992–1995, and National Stream-Quality Accounting Network, 1996-1998) also are summarized.

INTRODUCTION

Contamination of surface waters by pesticides is a topic of current national and international concern. One of the important sources of pesticides to surface waters is rain- or irrigation-induced runoff. The important processes that govern runoff were reviewed previously by Wauchope (1978), Weber and others (1980), Wauchope and Leonard (1980a,b), Leonard (1988,1990), and Willis and McDowell (1982). Leonard (1990), in his review identified four general factors that govern the extent of pesticide runoff: climate, soil, chemical properties, and management practices.

To facilitate current and future research on pesticides in surface waters, specifically for the U.S. Geological Survey's National Stream-Quality Accounting Network (NASQAN) program (Hooper and others, 1997), a search of the scientific literature for studies that quantified selected pesticides (see table 1 in back of report) in field runoff or streams was performed by means of two computerized bibliographic databases: Chemical Abstracts and AGRICOLA. This report summarizes data for the pesticides listed in table 1 (back of report). Only those data from published articles that contained information essential to the calculation of the pesticide mass in runoff as a percentage of the mass applied are included. The data extracted from each literature article, if available, include pesticide information, environmental setting (area, soil type, location, land use, and type of precipitation), year of study, and the mass of the pesticide in runoff as a percentage of the mass applied. The extracted data are summarized in table 2 (back of report). Furthermore, only the data from studies that were conducted in field environments and that lasted more than one day were included.

This report also summaries recent NAWQA (mostly 1992–1995) and NASQAN (1996–1998) data on the loads of pesticides in surface waters and the loads as a percentage of their estimated use. The concentration data are available elsewhere (National Water-Quality Assessment, 2000; Hooper and others, in press).

CALCULATION OF PESTICIDE LOADS

Pesticide loads for streams sampled in the NAWQA and NASQAN programs were calculated by summing estimated daily loads as described in Larson and others (1999). The daily loads were calculated by multiplying the daily stream discharge by the daily concentration. Stream discharge was measured daily, while pesticide concentrations were measured less frequently. Pesticide concentrations for days that were not sampled were

estimated by linear interpolation using concentrations measured on the closest preceding and following days in which pesticides were quantified. Only pesticides with use greater than 1 kilogram per square kilometer of total watershed area were included.

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Table 1. List of pesticides included in the study

Alachlor
Atrazine
Azinphos-methyl
Benfluralin
Butylate
Carbaryl
Carbofuran
Chlorpyrifos
Cyanazine
DCPA
Diazinon
Disulfoton
EPTC
Ethalfluralin
Ethoprop
Fonofos
Lindane
Linuron
Malathion
Metolachlor
Metribuzin
Molinate
Napropamide
Parathion
Pebulate
Pendimethalin
Permethrin
Phorate
Pronamide
Propachlor
Propanil
Propargite
Simazine
Terbacil
Terbufos
Thiobencarb
Triallate
Trifluralin

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Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1

[Studies are arranged in order of pesticide name, then watershed area. A "nd" reported under the columns "mass use in basin" and "annual load as a percent of use" means that the compound was not detected or not detected frequently enough to calculate an annual load. States are abbreviated by their postal codes. Soil type abbreviations: C, clay; CL, clay loam; L, loam; LS, loamy sand; S, sand; SC, sandy clay; SL, sandy loam; Si, silt; SiC, silty clay; SiL, silt loam; SiS, silty sand; SCL, sandy clay loam; SiCL; silty loam clay. sim, simulated rain. COL R., Columbia River; Cr., creek; Do., ditto; ha, hectares; kg, kilgram; NA, information not available in the article or report; NAWQA, National Water-Quality Assessment; R., river; WY, water year. %, percent]

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
				ALACHLOR					
0.000557	100	GA	LS	sim	0.0016	0.000011	0.70	1992	Wauchope and others, 1993
0.000557	100	GA	LS	sim	0.0016	0.000011	0.70	1992	Do.
0.000557	100	GA	LS	sim	0.0016	0.000011	0.70	1992	Do.
0.001	100	IA	SiS	sim	0.0025	0.000012	0.49	NA	Baker and others, 1979
0.001	100	IA	SiS	sim	0.0025	0.0000043	0.17	NA	Do.
0.001	100	IA	SiS	sim	0.0025	0.0000010	0.04	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.00032	8.6	NA	Baker and others, 1982
0.002	100	IA	SL	sim	0.0038	0.00017	4.5	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.00011	3.0	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.00004	1.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00036	5.3	NA	Baker and others, 1978
0.003	100	IA	SiC	sim	0.0067	0.00036	5.3	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00048	7.2	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00043	6.4	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00039	5.8	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00018	2.7	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00073	10.9	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00033	4.9	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00078	11.6	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00046	6.9	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00026	3.8	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00040	6.0	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00053	7.9	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00078	11.6	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00076	11.3	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00059	8.8	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00076	11.3	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00093	13.8	NA	Do.
0.003	100	IL	NA	sim	0.0098	0.00022	2.2	1985	Felsot, 1988

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.003	100	IL	NA	sim	0.0098	0.00016	1.6	1985	Felsot, 1988
0.003	100	IL	NA	sim	0.0098	0.000088	0.90	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.000078	0.80	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.000078	0.80	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.00062	6.3	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.00011	1.1	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.00014	1.4	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.00010	1.0	1985	Do.
0.003	100	IL	NA	sim	0.0098	0.00022	2.2	1985	Do.
0.003	100	IL	SiL	sim	0.010	0.000091	0.90	1987	Kenimer and others, 1997
0.003	100	IL	SiL	sim	0.010	0.00038	3.8	1987	Do.
0.003	100	IL	SiL	sim	0.010	0.00044	4.4	1987	Do.
0.003	100	IL	SiL	sim	0.010	0.00080	7.9	1987	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.00097	2.4	1987	Shaw and others, 1992
0.0088	100	MS	SiC	rain, sim	0.040	0.000089	0.22	1987	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.00011	0.28	1988	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.000034	0.09	1988	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.000023	0.06	1988	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.0040	10	1987	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.00014	0.36	1987	Do.
0.0088	100	MS	SiC	rain, sim	0.040	nd	nd	1988	Do.
0.0088	100	MS	SiC	rain, sim	0.040	0.000044	0.11	1988	Do.
0.023	100	WI	SiL	sim	0.064	0.00020	0.31	1983	Sauer and Daniel, 1987
0.023	100	WI	SiL	sim	0.064	0.00017	0.26	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.00024	0.37	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.00021	0.33	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.0020	3.2	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0014	2.2	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0039	6.1	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0032	4.9	1984	Do.
0.039	100	OH	SiC	rain	0.086	0.000031	0.036	1987	Logan and others, 1994
0.039	100	OH	SiC	rain	0.086	0.00011	0.13	1988	Do.
0.039	100	OH	SiC	rain	0.11	0.000068	0.062	1989	Do.
0.039	100	OH	SiC	rain	0.11	0.000016	0.015	1990	Do.
0.039	100	OH	SiC	rain	0.086	0.000013	0.015	1987	Do.
0.039	100	OH	SiC	rain	0.086	0.00010	0.12	1988	Do.
0.039	100	OH	SiC	rain	0.11	0.000048	0.044	1989	Do.
0.039	100	OH	SiC	rain	0.11	0.000010	0.0090	1990	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.04	100	OH	SiC	rain	0.11	0.000032	0.029	1987	Logan and others, 1991
0.04	100	OH	SiC	rain	0.088	0.00012	0.13	1988	Do.
0.04	100	OH	SiC	rain	0.11	0.000070	0.062	1989	Do.
0.04	100	OH	SiC	rain	0.11	0.000013	0.012	1987	Do.
0.04	100	OH	SiC	rain	0.088	0.00011	0.12	1988	Do.
0.04	100	OH	SiC	rain	0.11	0.000049	0.044	1989	Do.
0.1	100	Ontario	CL	rain	0.25	0.00085	0.34	1984	Gaynor and others, 1992
0.1	100	Ontario	CL	rain	0.25	0.00045	0.18	1985	Do.
0.1	100	Ontario	CL	rain	0.25	0.0014	0.54	1986	Do.
0.3	100	MD	SiL	rain	0.54	0.0026	0.48	1990	Isensee and Sadeghi, 1993
0.3	100	MD	SiL	rain	0.54	0.0031	0.57	1990	Do.
0.3	100	MD	SiL	rain	0.54	0.00081	0.15	1991	Do.
0.3	100	MD	SiL	rain	0.54	0.0015	0.28	1991	Do.
0.3	100	MD	SiL	rain	0.54	0.0012	0.22	1990	Do.
0.3	100	MD	SiL	rain	0.54	0.0013	0.24	1990	Do.
0.3	100	MD	SiL	rain	0.54	0.00081	0.15	1991	Do.
0.3	100	MD	SiL	rain	0.54	0.0013	0.24	1991	Do.
0.55	100	OH	fine Si	rain	1.8	nd	nd	1991	Shipitalo and others, 1997
0.55	100	OH	fine Si	rain	1.8	0.000018	0.0010	1992	Do.
0.55	100	OH	fine Si	rain	1.2	0.0027	0.22	1993	Do.
0.55	100	OH	fine Si	rain	1.8	nd	nd	1994	Do.
0.59	100	OH	fine L	rain	2.0	nd	nd	1991	Do.
0.59	100	OH	fine L	rain	2.0	0.000020	0.0010	1992	Do.
0.59	100	OH	fine L	rain	1.3	0.0030	0.23	1993	Do.
0.59	100	OH	fine L	rain	2.0	0.00020	0.010	1994	Do.
0.68	100	OH	fine L	rain	2.3	nd	nd	1991	Do.
0.68	100	OH	fine L	rain	1.5	nd	nd	1992	Do.
0.68	100	OH	fine L	rain	1.5	0.000061	0.0040	1993	Do.
0.68	100	OH	fine L	rain	2.3	nd	nd	1994	Do.
0.79	100	OH	fine L	rain	2.7	0.0013	0.050	1991	Do.
0.79	100	OH	fine L	rain	2.7	0.00027	0.010	1992	Do.
0.79	100	OH	fine L	rain	1.8	0.0034	0.19	1993	Do.
0.79	100	OH	fine L	rain	1.8	0.00088	0.050	1994	Do.
2.5	100	GA	LS	rain	8.6	0.052	0.61	1992	Lowrance and others, 1997
2.5	100	GA	LS	rain	8.6	0.0075	0.088	1992	Do.
2.5	100	GA	LS	rain	8.6	0.032	0.38	1992	Do.
2.5	100	GA	LS	rain	8.6	0.18	2.1	1992	Do.
5.0	100	IA	SiL	rain	11	0.054	0.48	1976	Johnson and Baker, 1982

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
5.6	100	IA	SiL	rain	13	0.060	0.48	1976	Baker and others, 1979
6.4	100	IA	SiL	rain	14	0.039	0.27	1978	Johnson and Baker, 1982
10.4	100	MD	L	rain	24	0.048	0.20	1976	Wu, 1980
16.4	100	MD	NA	rain	38	0.003	0.0080	1976	Wu and others, 1983
16.4	100	MD	NA	rain	26	0.0010	0.0040	1977	Do.
16.4	100	MD	NA	rain	28	0.028	0.10	1978	Do.
35.0	100	MO	Claypan	rain	98	0.25	0.25	1993	Ghidey and others, 1997
35.0	100	MO	Claypan	rain	98	1.58	1.6	1995	Do.
57.5	0	MN	Lake Harriet	rain	0.049	0.00078	1.6	1993	Wotzka and others, 1994
2,700	35	CA	Orestimba Cr.	rain	30	0.43	1.4	1993	NAWQA, 2000
3,327	85	NE	Recharge Lake (SL)	rain	7,785	10	0.13	1993	Ma and Spalding, 1997
3,327	85	NE	Recharge Lake (SL)	rain	7,785	6.2	0.080	1994	Do.
3,500	18	NC	Devils Cradle Cr.	rain	97	0.23	0.24	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	450	0.13	0.029	1993	Do.
3,900	46	OR	Zollner Cr.	rain	150	0.29	0.20	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	311	1.1	0.35	1993	Do.
5,055	75	IA	Four-mile Cr. (SL)	rain	11,323	11	0.10	1976	Baker and others, 1979
11,600	28	PA	East Mahantango Cr.	rain	493	1.6	0.32	1993	NAWQA, 2000
11,600	28	PA	East Mahantango Cr.	rain	493	1.7	0.34	1994	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,035	0.61	0.059	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,035	0.042	0.0040	1994	Do.
14,100	49	PA	Mill Cr.	rain	1,184	0.58	0.049	1993	Do.
14,100	49	PA	Mill Cr.	rain	1,184	0.49	0.041	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	453	0.14	0.030	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	2,122	8.3	0.39	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	2,122	18	0.87	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	730	nd	nd	1994	Do.
16,100	30	GA	Lime Cr.	rain	419	0.042	0.010	1993	Do.
24,600	76	IN	Sugar Cr.	rain	3,497	33	0.93	1992	Do.
24,600	76	IN	Sugar Cr.	rain	3,497	6.0	0.17	1994	Do.
24,600	76	IN	Sugar Cr.	rain	3,497	9.7	0.28	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,887	20	1.0	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,887	0.45	0.024	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	642	0.51	0.079	1993	Do.
36,400	63	NE	Prairie Cr.	rain	5,082	5.2	0.10	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	768	0.0033	0.00043	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	768	nd	nd	1994	Do.
45,700	25	MD	Monocacy R.	rain	1,750	3.9	0.22	1994	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	2,755	0.26	0.0096	1976	Frank and others, 1982
62,300	12	ID	Rock Cr.	rain	946	0.086	0.0091	1993	NAWQA, 2000
76,200	70	NE	Shell Cr.	rain	11,811	29	0.24	1993	Do.
93,542		Greece	C, SC, SiCL	irrigation	18,319	861	4.7	1988	Albanis, 1992
95,500	68	NE	Maple Cr.	rain	14,044	89	0.63	1993	NAWQA, 2000
126,100	22	OR	Pudding R.	rain	2,421	11	0.47	1993	Do.
143,000	83	IL	Sangamon R.	rain	51,000	168	0.33	1991	Battaglin and Goolsby, 1994
147,300	15	CO	Lonetree Cr.	rain	5,210	6.5	0.12	1993	NAWQA, 2000
177,400	26	OH	Grand R.	rain	840	nd	nd	1988	Richards and others, 1996
177,400	26	OH	Grand R.	rain	840	nd	nd	1989	Do.
177,400	26	OH	Grand R.	rain	840	17	2.0	1990	Do.
177,400	26	OH	Grand R.	rain	840	2.3	0.27	1993	Do.
180,400	37	WI	Milwaukee R.	rain	11,169	41	0.37	1993	NAWQA, 2000
183,100	4	OH	Cuyahoga R.	rain	5,660	21	0.38	1983	Richards and others, 1996
183,100	4	OH	Cuyahoga R.	rain	5,660	20	0.36	1984	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	6.8	0.12	1985	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	153	2.7	1986	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	13	0.23	1987	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	0.50	0.0088	1988	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	nd	nd	1989	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	45	0.80	1990	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	9.4	0.17	1991	Do.
183,100	4	OH	Cuyahoga R.	rain	5,660	0.10	0.0018	1993	Do.
269,900	67	MI	Raisin R.	rain	51,620	222	0.43	1983	Do.
269,900	67	MI	Raisin R.	rain	51,620	278	0.54	1984	Do.
269,900	67	MI	Raisin R.	rain	51,620	89	0.17	1985	Do.
269,900	67	MI	Raisin R.	rain	51,620	339	0.66	1986	Do.
269,900	67	MI	Raisin R.	rain	51,620	121	0.23	1987	Do.
269,900	67	MI	Raisin R.	rain	51,620	12	0.023	1988	Do.
269,900	67	MI	Raisin R.	rain	51,620	90	0.17	1992	Do.
269,900	67	MI	Raisin R.	rain	51,620	38	0.074	1993	Do.
312,000	66	NB	West Fork of the Big Blue R.	rain	79,000	687	0.87	1991	Battaglin and Goolsby, 1994
324,000	80	OH	Sandusky R.	rain	96,050	472	0.49	1983	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	96,050	548	0.57	1984	Do.
324,000	80	OH	Sandusky R.	rain	96,050	532	0.55	1985	Do.
324,000	80	OH	Sandusky R.	rain	96,050	855	0.89	1986	Do.
324,000	80	OH	Sandusky R.	rain	96,050	490	0.51	1987	Do.
324,000	80	OH	Sandusky R.	rain	96,050	22	0.023	1988	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
324,000	80	OH	Sandusky R.	rain	96,050	1,192	1.2	1989	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	96,050	1,196	1.2	1990	Do.
324,000	80	OH	Sandusky R.	rain	96,050	262	0.27	1991	Do.
324,000	80	OH	Sandusky R.	rain	96,050	241	0.25	1992	Do.
324,000	80	OH	Sandusky R.	rain	96,050	758	0.79	1993	Do.
575,400	17	NC	Tar R.	rain	12,886	8.2	0.064	1993	NAWQA, 2000
638,000	52	WA	Palouse R.	rain	6,953	0.32	0.0046	1993	Do.
788,000	8	VA	Shenandoah R.	rain	30,256	6.7	0.022	1993	Do.
788,000	8	ND	Shenandoah R.	rain	30,256	16	0.052	1994	Do.
911,300	9	NY	Mohawk	rain	19,107	12	0.063	1994	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	2,305	0.46	1983	Richards and others, 1996
1,639,500	76	OH	Maumee R.	rain	503,580	4,567	0.91	1984	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	357	0.071	1985	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	2,902	0.58	1986	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	1,428	0.28	1987	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	63	0.013	1988	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	3,422	0.68	1989	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	4,495	0.89	1990	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	3,050	0.61	1991	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	924	0.18	1992	Do.
1,639,500	76	OH	Maumee R.	rain	503,580	3,929	0.78	1993	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	64,476	9.5	0.015	1994	NAWQA, 2000
2,929,100	44	IN	White R.	rain	850,000	1,275	0.15	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	244,105	1,258	0.52	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	244,105	1,625	0.67	1993	Do.
2,929,100	44	IN	White R.	rain	244,105	1,012	0.41	1994	Do.
3,858,500	80	MN	MN R.	rain	1,400,000	2,800	0.20	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	1,500,000	600	0.040	1990	Schottler and others, 1994
3,858,500	80	MN	MN R.	rain	1,500,000	3,000	0.20	1991	Do.
6,926,700	61	IL	IL R.	rain	2,000,000	9,200	0.46	1991	Larson and others, 1995
7,571,606	58	OH R.	Wabash R.	rain	780,860	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	780,860	2,720	0.35	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	780,860	1,840	0.24	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	126,765	45	0.035	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	1,000,000	3,100	0.31	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	672,635	3,041	0.45	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	672,635	342	0.051	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	672,635	1,817	0.27	WY98	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,149,600	17	MO R.	Platte R.	rain	667,685	1,411	0.21	1993	NAWQA, 2000
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	2,100,000	6,300	0.30	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	787,171	659	0.084	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	787,171	499	0.063	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	787,171	289	0.037	WY98	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	577,418	1,958	0.34	WY96	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	577,418	2,122	0.37	WY97	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	577,418	880	0.15	WY98	Do.
40,996,592	17	MS R.	AR. R. below Little Rock, AR	rain	426,221	71	0.017	WY96	Do.
40,996,592	17	MS R.	AR.R. below Little Rock, AR	rain	426,221	149	0.035	WY97	Do.
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	426,221	69	0.016	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	2,309,091	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	2,309,091	2,674	0.12	WY97	Do.
44,366,700	31	MS	MS R. at Grafton, IL	rain	2,309,091	3,156	0.14	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	4,700,000	5,640	0.12	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,739,033	4,567	0.26	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,739,033	11,943	0.69	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,739,033	5,035	0.29	WY98	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	795,154	563	0.071	WY96	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	795,154	259	0.033	WY97	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	795,154	158	0.020	WY98	Do.
135,767,800	10	MO R.	MO R. at Omaha, NE	rain	4,700,000	7,520	0.16	1991	Larson and others, 1995
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,753,305	4,769	0.17	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,753,305	3,029	0.11	WY97	Do.
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,753,305	3,044	0.11	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	12,000,000	32,400	0.27	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	5,285,034	8,367	0.16	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	5,285,034	3,392	0.064	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	5,285,034	7,278	0.14	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	32,300	0.17	1991	Larson and others, 1995
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	3,990	0.021	1987	Pereira and Rostad, 1990
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	129,200	0.68	1989	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	15,000	0.079	1992	Clark and others, 1999
315,621,500	15	MS	MS R. at Baton Rouge, LA	rain	19,000,000	49,000	0.26	1993	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	23,000	0.12	1994	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	10,000	0.052	1995	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	7,000	0.037	1996	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	19,000,000	4,000	0.021	1997	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	8,174,009	19,463	0.24	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	8,174,009	19,513	0.24	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	8,174,009	10,514	0.13	WY98	Do.
				ATRAZINE					
0.000023	100	OR	SiL	sim	0.000083	0.00000008	0.10	NA	Gaynor and Volk, 1981
0.000023	100	OR	SiL	sim	0.000083	0.0000014	1.70	NA	Do.
0.000557	100	GA	LS	sim	0.0010	0.000019	1.80	1992	Wauchope and others, 1993
0.000557	100	GA	LS	sim	0.0010	0.000025	2.40	1992	Do.
0.000557	100	GA	LS	sim	0.0010	0.000010	1.00	1992	Do.
0.000557	100	GA	LS	sim	0.0010	0.000005	0.50	1992	Do.
0.0009	100	VA	SiL	rain	0.0041	0.00016	3.85	NA	Foy and Hiranpradit, 1989
0.001	100	IA	SiS	sim	0.0025	0.000011	0.45	NA	Baker and others, 1979
0.001	100	IA	SiS	sim	0.0025	0.0000028	0.11	NA	Do.
0.001	100	IA	SiS	sim	0.0025	0.0000010	0.040	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.00022	5.710	NA	Baker and others, 1982
0.002	100	IA	SL	sim	0.0038	0.00013	3.370	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.00010	2.540	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.000037	0.970	NA	Do.
0.002	100	TX	C	sim	0.0040	0.000080	2.000	1993	Pantone and others, 1996
0.0022	100	VA	SiL	sim	0.0099	0.00017	1.720	NA	Foy and Hiranpradit, 1989
0.0022	100	VA	SiL	sim	0.0099	0.0000047	0.047	NA	Do.
0.004	100	PA	SiC	rain	0.0088	0.00031	3.530	1972	Hall and others, 1983
0.004	100	PA	SiC	rain	0.018	0.00020	1.130	1972	Do.
0.004	100	PA	SiC	rain	0.0088	0.000083	0.940	1972	Do.
0.004	100	PA	SiC	rain	0.018	0.00015	0.850	1972	Do.
0.004	100	PA	SiC	rain	0.0088	0.000029	0.330	1972	Do.
0.004	100	PA	SiC	rain	0.018	0.000070	0.390	1972	Do.
0.004	100	PA	SiC	rain	0.0088	0.000029	0.330	1972	Do.
0.004	100	PA	SiC	rain	0.018	0.000027	0.150	1972	Do.
0.004	100	PA	SiC	NA	0.0024	0.000042	1.730	1967	Hall and others, 1972
0.004	100	PA	SiC	NA	0.0044	0.00016	3.670	1967	Do.
0.004	100	PA	SiC	NA	0.0088	0.00022	2.500	1967	Do.
0.004	100	PA	SiC	NA	0.018	0.00039	2.170	1967	Do.
0.004	100	PA	SiC	NA	0.027	0.00062	2.3	1967	Do.
0.004	100	PA	SiC	NA	0.036	0.0011	3.0	1967	Do.
0.004	100	PA	SiC	NA	0.0024	nd	nd	1968	Do.
0.004	100	PA	SiC	NA	0.0044	0.00000026	0.0060	1968	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.004	100	PA	SiC	NA	0.0088	0.0000018	0.021	1968	Hall and others, 1972
0.004	100	PA	SiC	NA	0.018	0.0000011	0.0060	1968	Do.
0.004	100	PA	SiC	NA	0.027	0.0000062	0.023	1968	Do.
0.004	100	PA	SiC	NA	0.036	0.0000047	0.013	1968	Do.
0.0088	100	NC	SCL	sim	0.014	0.00007	0.50	1990	Myers and others, 1995
0.0088	100	NC	SCL	sim	0.014	0.00023	1.6	1990	Do.
0.0088	100	NC	SCL	sim	0.014	0.00024	1.7	1991	Do.
0.0088	100	NC	SCL	sim	0.014	0.00042	3.0	1991	Do.
0.0088	100	NC	SCL	sim	0.014	0.00031	2.2	1990	Do.
0.0088	100	NC	SCL	sim	0.014	0.0013	9.4	1990	Do.
0.0088	100	NC	SCL	sim	0.014	0.00030	2.1	1991	Do.
0.0088	100	NC	SCL	sim	0.014	0.00066	4.7	1991	Do.
0.0088	100	NC	SCL	sim	0.014	0.00024	1.7	1990	Do.
0.0088	100	NC	SCL	sim	0.014	0.0011	8.1	1990	Do.
0.0088	100	NC	SCL	sim	0.014	0.00027	1.9	1991	Do.
0.0088	100	NC	SCL	sim	0.014	0.00035	2.5	1991	Do.
0.0125	100	France	SiL	rain	0.016	0.0000027	0.017	1993	Patty and others, 1997
0.02	100	KY	SiL	rain	0.022	0.0000043	0.019	1984	Blevins and others, 1990
0.02	100	KY	SiL	rain	0.022	0.000094	0.42	1985	Do.
0.02	100	KY	SiL	rain	0.022	0.000019	0.084	1984	Do.
0.02	100	KY	SiL	rain	0.022	0.00032	1.4	1985	Do.
0.02	100	KY	SiL	rain	0.022	0.00002	0.074	1984	Do.
0.02	100	KY	SiL	rain	0.022	0.00030	1.3	1985	Do.
0.02	100	GA	LS	rain	0.045	0.00013	0.28	1974	Rohde and others, 1981
0.02	100	GA	LS	rain	0.090	0.00030	0.34	1974	Do.
0.02	100	GA	LS	rain	0.045	0.00050	1.1	1975	Do.
0.02	100	GA	LS	rain	0.090	0.0014	1.6	1975	Do.
0.023	100	WI	SiL	sim	0.064	0.00023	0.36	1983	Sauer and Daniel, 1987
0.023	100	WI	SiL	sim	0.064	0.00019	0.29	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.00026	0.40	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.00026	0.40	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.0030	4.6	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0021	3.3	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0058	9.1	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.0049	7.7	1984	Do.
0.025	100	France	SiL	rain	0.031	0.00020	0.63	1993	Patty and others, 1997
0.039	100	OH	SiC	rain	0.086	0.00039	0.45	1987	Logan and others, 1994
0.039	100	OH	SiC	rain	0.098	0.00017	0.17	1988	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.039	100	OH	SiC	rain	0.086	0.00013	0.15	1989	Logan and others, 1994
0.039	100	OH	SiC	rain	0.086	0.000094	0.11	1990	Do.
0.039	100	OH	SiC	rain	0.086	0.000051	0.060	1987	Do.
0.039	100	OH	SiC	rain	0.098	0.00029	0.30	1988	Do.
0.039	100	OH	SiC	rain	0.086	0.000094	0.11	1989	Do.
0.039	100	OH	SiC	rain	0.086	0.000071	0.083	1990	Do.
0.04	100	OK	SiCL	sim	0.022	0.0024	10.9	1992	Basta and others, 1997
0.04	100	OK	SiCL	sim	0.022	0.0017	7.8	1992	Do.
0.04	100	OK	SiCL	sim	0.022	0.0018	7.9	1992	Do.
0.04	100	OH	SiC	rain	0.088	0.000053	0.060	1987	Logan and others, 1991
0.04	100	OH	SiC	rain	0.088	0.00017	0.19	1988	Do.
0.04	100	OH	SiC	rain	0.088	0.00013	0.15	1989	Do.
0.04	100	OH	SiC	rain	0.088	0.000017	0.019	1987	Do.
0.04	100	OH	SiC	rain	0.088	0.00030	0.34	1988	Do.
0.04	100	OH	SiC	rain	0.088	0.00010	0.11	1989	Do.
0.049	100	VA	SL	rain, sim	0.047	0.00033	0.70	1990	Heatwole and others, 1997
0.049	100	VA	SL	rain, sim	0.045	0.00067	1.5	1990	Do.
0.062	100	GA	SL	sim	0.12	0.0021	1.8	1992	Wauchope and others, 1993
0.062	100	GA	SL	sim	0.12	0.0025	2.1	1992	Do.
0.1	100	Ontario	CL	rain	0.18	0.0015	0.83	1984	Gaynor and others, 1992
0.1	100	Ontario	CL	rain	0.18	0.0016	0.90	1985	Do.
0.1	100	Ontario	CL	rain	0.18	0.011	6.3	1986	Do.
0.1	100	Ontario	CL	rain	0.11	0.00064	0.58	1991	Tan and others, 1993
0.107	100	Ontario	CL	rain	0.12	0.0021	1.8	1991	Ng and others, 1995
0.26	100	MD	L	rain	0.57	0.0063	1.1	1979	Glenn and Angle, 1997
0.26	100	MD	L	rain	0.57	nd	nd	1981	Do.
0.26	100	MD	L	rain	0.57	nd	nd	1982	Do.
0.26	100	PA	SiCL	rain	0.44	0.0016	0.36	1985	Hall and others, 1991
0.26	100	PA	SiCL	rain	0.44	0.0015	0.33	1986	Do.
0.26	100	PA	SiCL	rain	0.44	0.000088	0.020	1987	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1988	Do.
0.26	100	PA	SiCL	rain	0.44	0.00044	0.10	1986	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1987	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1988	Do.
0.3	100	MD	SiL	rain	0.40	0.0033	0.81	1990	Isensee and Sadeghi, 1993
0.3	100	MD	SiL	rain	0.40	0.0039	0.97	1990	Do.
0.3	100	MD	SiL	rain	0.40	0.00084	0.21	1991	Do.
0.3	100	MD	SiL	rain	0.40	0.0019	0.47	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.3	100	MD	SiL	rain	0.40	0.0056	1.4	1990	Isensee and Sadeghi, 1993
0.3	100	MD	SiL	rain	0.40	0.0061	1.5	1990	Do.
0.3	100	MD	SiL	rain	0.40	0.0023	0.56	1991	Do.
0.3	100	MD	SiL	rain	0.40	0.0036	0.90	1991	Do.
0.37	100	MD	L	rain	0.81	0.013	1.6	1979	Glenn and Angle, 1997
0.37	100	MD	L	rain	0.81	0.000081	0.010	1981	Do.
0.37	100	MD	L	rain	0.81	0.00013	0.016	1982	Do.
0.55	100	OH	fine Si	rain	1.2	0.000062	0.0050	1991	Shipitalo and others, 1997
0.55	100	OH	fine Si	rain	1.2	0.011	0.91	1993	Do.
0.59	100	OH	fine L	rain	1.3	0.00026	0.020	1992	Do.
0.59	100	OH	fine L	rain	1.3	0.0011	0.080	1994	Do.
0.68	100	OH	fine L	rain	1.5	0.0000091	0.00060	1992	Do.
0.68	100	OH	fine L	rain	1.5	0.0000091	0.00060	1994	Do.
0.79	100	OH	fine L	rain	1.8	0.0057	0.32	1991	Do.
0.79	100	OH	fine L	rain	1.8	0.019	1.1	1993	Do.
1	100	Ontario	CL	rain	1.7	0.018	1.1	1987	Gaynor and others, 1995
1	100	Ontario	CL	rain	1.7	0.0010	0.060	1988	Do.
1	100	Ontario	CL	rain	1.7	0.051	3.0	1989	Do.
1	100	Ontario	CL	rain	1.7	0.013	0.76	1990	Do.
1	100	IA	SiL	rain	3.4	0.181	5.4	1969	Ritter and others, 1994
1	100	IA	SiL	rain	3.4	0.534	15.9	1970	Do.
1	100	OH	NA	rain	3.4	nd	nd	1970	Triplett and others, 1978
1	100	OH	NA	rain	2.2	0.00090	0.040	1970	Do.
1	100	OH	NA	rain	1.7	0.029	1.7	1970	Do.
1	100	OH	NA	rain	1.1	0.064	5.7	1970	Do.
1	100	OH	NA	rain	3.9	0.033	0.84	1971	Do.
1	100	OH	NA	rain	1.7	nd	nd	1972	Do.
1	100	OH	NA	rain	1.1	0.00034	0.030	1972	Do.
1	100	OH	NA	rain	1.1	0.00022	0.020	1972	Do.
1	100	OH	NA	rain	2.2	0.0018	0.080	1972	Do.
1	100	OH	NA	rain	1.8	0.00090	0.050	1972	Do.
1.1	100	VT	coarse L	rain	1.6	0.028	1.8	1985	Clausen and others, 1996
1.1	100	VT	coarse L	rain	1.2	0.0037	0.30	1988	Do.
1.1	100	VT	L	rain	0.26	0.0046	1.8	1986	Clausen and others, 1990
1.1	100	VT	L	rain	0.19	0.040	20.7	1986	Do.
1.1	100	VT	L	rain	0.19	0.00057	0.30	1986	Do.
1.1	100	VT	L	rain	0.13	nd	nd	1986	Do.
1.1	100	VT	L	rain	0.13	nd	nd	1986	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
1.3	100	GA	SL	rain	4.4	0.083	1.9	1973	Leonard and others, 1979
1.3	100	GA	SL	rain	5.0	0.010	0.20	1974	Do.
1.3	100	GA	SL	rain	2.0	0.014	0.70	1975	Do.
1.3	100	GA	SL, SCL	NA	4.4	0.083	1.9	NA	Wauchope, 1978
1.3	100	GA	SL, SCL	NA	5.0	0.0094	0.19	NA	Do.
1.3	100	GA	SL, SCL	NA	2.0	0.014	0.70	NA	Do.
1.38	100	GA	SL, SCL	NA	4.6	0.039	0.84	NA	Do.
1.38	100	GA	SL, SCL	NA	5.6	0.011	0.19	NA	Do.
1.38	100	GA	SL, SCL	NA	2.0	0.0052	0.26	NA	Do.
1.4	100	GA	SL	rain	4.7	0.038	0.80	1973	Leonard and others, 1979
1.4	100	GA	SL	rain	5.6	0.011	0.20	1974	Do.
1.4	100	GA	SL	rain	2.0	0.0061	0.30	1975	Do.
1.5	100	VT	L	rain	0.34	0.0054	1.6	1986	Clausen and others, 1990
1.5	100	VT	coarse L	rain	2.1	0.034	1.6	1985	Clausen and others, 1996
1.5	100	VT	coarse L	rain	1.7	0.25	14.9	1988	Do.
1.6	100	LA	CL	rain	2.6	0.076	2.9	1987	Sabbagh and others, 1991
2.5	100	GA	LS	rain	8.6	0.22	2.6	1992	Lowrance and others, 1997
2.5	100	GA	LS	rain	8.6	0.022	0.26	1992	Do.
2.5	100	GA	LS	rain	8.6	0.18	2.1	1992	Do.
2.5	100	GA	LS	rain	8.6	0.87	10.2	1992	Do.
2.7	100	OH	NA	NA	3.0	0.14	4.7	NA	Wauchope, 1978
3	100	LA	CL	rain	4.9	0.16	3.2	1987	Southwick and others, 1990
3	100	LA	CL	rain	4.9	0.068	1.4	1987	Do.
4	100	LA	CL	rain	6.5	0.091	1.4	1987	Bengtson and others, 1990
4	100	LA	CL	rain	6.5	0.21	3.2	1987	Do.
10.4	100	MD	L	rain	18	0.18	1.0	1976	Wu, 1980
16.4	100	MD	NA	rain	28	0.10	0.36	1976	Wu and others, 1983
16.4	100	MD	NA	rain	16	0.030	0.18	1977	Do.
16.4	100	MD	NA	rain	16	0.023	0.14	1978	Do.
18	NA	TN	NA	rain	15	0.22	1.5	1985	Klaine and others, 1988
35	100	MO	Claypan	rain	78	0.67	0.85	1993	Ghidey and others, 1997
35	100	MO	Claypan	rain	67	1.6	2.4	1995	Do.
35.6	100	MO	loess, claypan	rain	78	0.60	0.76	1993	Alberts and others, 1995
57.5	0	MN	Lake Harrriet	rain	0.088	0.0023	2.6	1993	Wotzka and others, 1994
1,211	60	MO	Goodwater Cr. (loess, claypan)	rain	127	9.0	7.1	1993	Donald and others, 1998
1,211	60	MO	Goodwater Cr. (loess, claypan)	rain	135	23	16.9	1994	Do.
1,860	19	Ontario	Canagagigue Cr. (L)	rain	700	3.0	0.43	1975	Frank and Sirons, 1979
1,860	19	Ontario	Canagagigue Cr. (L)	rain	700	4.8	0.68	1976	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
1,990	23	Ontario	Hillman Cr. (S)	rain	572	1.1	0.20	1975	Frank and Sirons, 1979
1,990	23	Ontario	Hillman Cr. (S)	rain	572	1.3	0.23	1976	Do.
2,383	11	Ontario	Salt Cr. (C)	rain	303	nd	nd	1975	Do.
2,383	11	Ontario	Salt Cr. (C)	rain	303	0.48	0.16	1976	Do.
2,547	85	IA	NA	rain	550	1.5	0.28	1992	Jaynes and others, 1999
2,547	85	IA	NA	rain	360	26	7.3	1993	Do.
2,547	85	IA	NA	rain	390	0.51	0.13	1994	Do.
2,547	85	IA	NA	rain	450	0.77	0.17	1995	Do.
2,750	46	MD	Wye R. (Si)	rain	4,813	111	2.3	1981	Glotfelty and others, 1984
3,000	42	Ontario	Holiday Cr. (L)	rain	1,972	6.9	0.35	1975	Frank and Sirons, 1979
3,000	42	Ontario	Holiday Cr. (L)	rain	1,972	9.3	0.47	1976	Do.
3,025	16	Ontario	North Cr. (C)	rain	504	8.7	1.7	1975	Do.
3,025	16	Ontario	North Cr. (C)	rain	504	7.6	1.5	1976	Do.
3,147	60	MO	Goodwater Cr. (loess, claypan)	rain	763	91	11.9	1993	Donald and others, 1998
3,147	60	MO	Goodwater Cr. (loess, claypan)	rain	809	45	5.6	1994	Do.
3,327	85	NE	Recharge Lake (SL)	rain	4,000	11	0.28	1993	Ma and Spalding, 1997
3,327	85	NE	Recharge Lake (SL)	rain	4,000	7.6	0.19	1994	Do.
3,470	66	Ontario	Nissouri Cr. (L, SiL)	rain	3,100	10	0.33	1990	Ng and others, 1995
3,470	66	Ontario	Nissouri Cr. (L, SiL)	rain	3,100	4.7	0.15	1991	Ng and Clegg, 1997
3,700	21	VA	Muddy Cr.	rain	478	3.1	0.65	1993	NAWQA, 2000
3,817	85	IA	NA	rain	790	2.7	0.34	1992	Jaynes and others, 1999
3,817	85	IA	NA	rain	570	26	4.5	1993	Do.
3,817	85	IA	NA	rain	640	1.2	0.18	1994	Do.
3,817	85	IA	NA	rain	760	0.76	0.10	1995	Do.
3,900	46	OR	Zollner Cr.	rain	259	7.6	2.9	1993	NAWQA, 2000
4,400	40	NC	Pete Mitchell Swamp	rain	239	0.78	0.33	1993	Do.
4,504	10	Ontario	Mill Cr. (L)	rain	820	13	1.6	1975	Frank and Sirons, 1979
4,504	10	Ontario	Mill Cr. (L)	rain	820	8.1	0.99	1976	Do.
5,080	23	Ontario	Big Cr. (C)	rain	736	23	3.1	1975	Do.
5,080	23	Ontario	Big Cr. (C)	rain	736	12	1.6	1976	Do.
5,130	85	IA	NA	rain	1,052	5.6	0.53	1992	Jaynes and others, 1999
5,130	85	IA	NA	rain	691	39	5.6	1993	Do.
5,130	85	IA	NA	rain	800	1.4	0.18	1994	Do.
5,130	85	IA	NA	rain	850	1.1	0.13	1995	Do.
5,472	12	Ontario	Upper Maitland R. (L)	rain	1,047	5.2	0.50	1975	Frank and Sirons, 1979
5,472	12	Ontario	Upper Maitland R. (L)	rain	1,047	3.7	0.35	1976	Do.
5,645	10	Ontario	Chelter Valley Cr. (S)	rain	431	0.73	0.17	1975	Do.
5,645	10	Ontario	Chelter Valley Cr.(S)	rain	431	nd	nd	1976	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
6,200	31	Ontario	Little Ausable R. (C)	rain	2,132	34	1.6	1975	Frank and Sirons, 1979
6,200	31	Ontario	Little Ausable R. (C)	rain	2,132	37	1.7	1976	Do.
6,250	35	Quebec	Runnets R. (SL)	rain	15,625	281	1.8	1974	Muir and others, 1978
6,250	35	Quebec	Runnets R. (SL)	rain	15,625	16	0.10	1975	Do.
6,510	NA	MN	Whitewater R.	rain	470	4.7	1.0	1993	Ma, 2000
6,510	NA	MN	Whitewater R.	rain	470	0.80	0.17	1994	Do.
6,510	NA	MN	Whitewater R.	rain	470	0.80	0.17	1995	Do.
7,250	60	MO	Goodwater Cr. (loess, claypan)	rain	1,757	128	7.3	1993	Donald and others, 1998
7,250	60	MO	Goodwater Cr. (loess, claypan)	rain	1,864	199	10.7	1994	Do.
7,913	10	Ontario	Venison Cr. (S)	rain	1,353	6.0	0.44	1975	Frank and Sirons, 1979
7,913	10	Ontario	Venison Cr. (S)	rain	1,353	4.9	0.36	1976	Do.
10,900	50	Quebec	St. Nazaire R. (SL)	rain	27,250	790	2.9	1974	Muir and others, 1978
10,900	50	Quebec	St. Nazaire R. (SL)	rain	27,250	82	0.30	1975	Do.
11,600	28	PA	East Mahantango Cr.	rain	1,385	7.6	0.55	1993	NAWQA, 2000
11,600	28	PA	East Mahantango Cr.	rain	1,385	15	1.1	1994	Do.
11,900	42	Quebec	La Barbue R. (SL, L, CL)	rain	29,750	357	1.2	1974	Muir and others, 1978
11,900	42	Quebec	La Barbue R. (SL, L, CL)	rain	29,750	89	0.30	1975	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,448	3.0	0.21	1993	NAWQA, 2000
13,300	47	WI	North Branch Milwaukee R.	rain	1,448	0.33	0.023	1994	Do.
13,400	1	AR	Yocum Cr.	rain	167	0.069	0.041	1994	Do.
14,100	49	PA	Mill Cr.	rain	3,866	11	0.28	1993	Do.
14,100	49	PA	Mill Cr.	rain	3,866	15	0.38	1994	Do.
14,500	58	Quebec	Chibouet R. (S, SL, C)	rain	36,250	508	1.4	1974	Muir and others, 1978
14,500	58	Quebec	Chibouet R. (S, SL, C)	rain	36,250	109	0.30	1975	Do.
14,600	55	WA	Crab Cr. Lateral	rain	354	0.84	0.24	1993	NAWQA, 2000
14,600	87	IN	Kessinger Ditch	rain	7,372	119	1.6	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	7,372	126	1.7	1994	Do.
15,200	23	Ontario	Payne R.	rain	499	0.65	0.13	1991	Fischer and others, 1995
15,200	23	Ontario	Payne R.	rain	526	0.68	0.13	1992	Do.
15,500	19	NY	Canajoharie Cr.	rain	927	9.0	0.97	1994	NAWQA, 2000
16,000	95	England	R. Granta (C)	rain	7	0.11	1.5	1987	Gomme and others, 1991
16,100	30	GA	Lime Cr.	rain	1,701	1.4	0.083	1993	NAWQA, 2000
20,600	63	Quebec	Salvail R. (SL, S)	rain	51,500	721	1.4	1974	Muir and others, 1978
20,600	63	Quebec	Salvail R. (SL, S)	rain	51,500	155	0.30	1975	Do.
24,600	76	IN	Sugar Cr.	rain	11,787	263	2.2	1996	NAWQA, 2000
24,600	76	IN	Sugar Cr.	rain	11,787	1680	14.3	1997	Do.
24,600	76	IN	Sugar Cr.	rain	11,787	267	2.3	1998	Do.
24,600	76	IN	Sugar Cr.	rain	11,787	133	1.1	1992	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
24,600	76	IN	Sugar Cr.	rain	11,787	97	0.82	1994	NAWQA, 2000
24,600	76	IN	Sugar Cr.	rain	11,787	95	0.80	1993	Do.
24,700	49	WI	Duck Cr.	rain	3,566	97	2.7	1993	Do.
24,700	49	WI	Duck Cr.	rain	3,566	11	0.31	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	2,779	0.84	0.030	1993	Do.
36,400	63	NE	Prairie Cr.	rain	18,556	59	0.32	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,037	0.69	0.067	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,037	0.36	0.034	1994	Do.
45,700	25	MD	Monocacy R.	rain	4,727	46	0.98	1994	Do.
49,500	NA	MN	East Fork of the Blue Earth R.	rain	5,900	124	2.1	1993	Ma, 2000
49,500	NA	MN	East Fork of the Blue Earth R.	rain	5,900	21	0.36	1994	Do.
49,500	NA	MN	East Fork of the Blue Earth R.	rain	5,900	20	0.34	1995	Do.
76,200	70	NE	Shell Cr.	rain	35,279	226	0.64	1993	NAWQA, 2000
93,542	NA	Greece	C, SC, SiCL	irrigation	11,680	397	3.4	1988	Albanis, 1992
95,500	68	NE	Maple Cr.	rain	36,929	521	1.4	1993	NAWQA, 2000
126,100	22	OR	Pudding R.	rain	4,070	127	3.1	1993	Do.
143,000	83	IL	Sangamon R.	rain	52,000	728	1.4	1991	Battaglin and Goolsby, 1994
147,300	15	CO	Lonetree Cr.	rain	3,949	5.2	0.13	1993	NAWQA, 2000
177,400	26	OH	Grand R.	rain	11,190	39	0.35	1988	Richards and others, 1996
177,400	26	OH	Grand R.	rain	11,190	94	0.84	1989	Do.
177,400	26	OH	Grand R.	rain	11,190	1.1	0.0098	1990	Do.
177,400	26	OH	Grand R.	rain	11,190	19	0.17	1993	Do.
180,400	37	WI	Milwaukee R.	rain	16,389	82	0.50	1993	NAWQA, 2000
183,100	4	OH	Cuyahoga R.	rain	8,140	114	1.4	1983	Richards and others, 1996
183,100	4	OH	Cuyahoga R.	rain	8,140	103	1.3	1984	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	205	2.5	1985	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	325	4.0	1986	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	266	3.3	1987	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	36	0.44	1988	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	354	4.3	1989	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	91	1.1	1990	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	155	1.9	1991	Do.
183,100	4	OH	Cuyahoga R.	rain	8,140	7.3	0.090	1993	Do.
213,100	16	TX	Chambers Cr.	rain	10,789	1,036	9.6	1994	NAWQA, 2000
269,900	67	MI	Raisin R.	rain	66,200	469	0.71	1983	Richards and others, 1996
269,900	67	MI	Raisin R	rain	66,200	591	0.89	1984	Do.
269,900	67	MI	Raisin R.	rain	66,200	258	0.39	1985	Do.
269,900	67	MI	Raisin R.	rain	66,200	875	1.3	1986	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
269,900	67	MI	Raisin R.	rain	66,200	339	0.51	1987	Richards and others, 1996
269,900	67	MI	Raisin R.	rain	66,200	70	0.11	1988	Do.
269,900	67	MI	Raisin R.	rain	66,200	19	0.029	1992	Do.
269,900	67	MI	Raisin R.	rain	66,200	111	0.17	1993	Do.
312,000	66	NB	West Fork of the Big Blue R.	rain	159,000	2,767	1.7	1991	Battaglin and Goolsby, 1994
324,000	80	OH	Sandusky R.	rain	83,140	1,005	1.2	1983	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	83,140	1,038	1.2	1984	Do.
324,000	80	OH	Sandusky R.	rain	83,140	1,643	2.0	1985	Do.
324,000	80	OH	Sandusky R.	rain	83,140	1,825	2.2	1986	Do.
324,000	80	OH	Sandusky R.	rain	83,140	1,398	1.7	1987	Do.
324,000	80	OH	Sandusky R.	rain	83,140	63	0.076	1988	Do.
324,000	80	OH	Sandusky R.	rain	83,140	2,867	3.4	1989	Do.
324,000	80	OH	Sandusky R.	rain	83,140	3,658	4.4	1990	Do.
324,000	80	OH	Sandusky R.	rain	83,140	571	0.69	1991	Do.
324,000	80	OH	Sandusky R.	rain	83,140	258	0.31	1992	Do.
324,000	80	OH	Sandusky R.	rain	83,140	1,526	1.8	1993	Do.
399,840	39	Ontario	Saugeen R. (S, L)	rain	97,000	582	0.60	1983	Bodo, 1991
399,840	39	Ontario	Saugeen R. (S, L)	rain	35,000	525	1.5	1988	Do.
399,840	39	Ontario	Saugeen R. (S, L)	rain	42,800	364	0.85	1975	Frank 1981
399,840	39	Ontario	Saugeen R. (S, L)	rain	42,800	325	0.76	1976	Frank 1981
575,400	17	NC	Tar R.	rain	7,080	36	0.50	1993	NAWQA, 2000
679,000	51	Ontario	Grand R. (C, L, S)	rain	155,000	4,340	2.8	1983	Bodo, 1991
679,000	51	Ontario	Grand R. (C, L, S)	rain	177,000	1,062	0.60	1988	Do.
679,000	51	Ontario	Grand R. (C, L, S)	rain	167,000	1,670	1.0	1975	Frank 1981
679,000	51	Ontario	Grand R. (C, L, S)	rain	167,000	1,202	0.72	1976	Frank 1981
684,000	74	Ontario	Thames R. (CL)	rain	424,000	9,328	2.2	1983	Bodo, 1991
684,000	74	Ontario	Thames R. (CL)	rain	190,000	1,520	0.80	1988	Do.
788,000	8	VA	Shenandoah R.	rain	33,689	309	0.92	1993	NAWQA, 2000
788,000	8	ND	Shenandoah R.	rain	33,689	306	0.91	1994	Do.
911,300	9	NY	Mohawk R.	rain	24,460	169	0.69	1994	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	3,377	0.79	1983	Richards and others, 1996
1,639,500	76	OH	Maumee R.	rain	426,810	5,558	1.3	1984	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	3,147	0.74	1985	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	7,254	1.7	1986	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	4,875	1.1	1987	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	271	0.063	1988	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	8,573	2.0	1989	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	16,629	3.9	1990	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
1,639,500	76	OH	Maumee R.	rain	426,810	7,542	1.8	1991	Richards and others, 1996
1,639,500	76	OH	Maumee R.	rain	426,810	2,894	0.68	1992	Do.
1,639,500	76	OH	Maumee R.	rain	426,810	10,005	2.3	1993	Do.
1,713,100	56	ND	Red R. of the North above Fargo	rain	38,031	141	0.37	1994	NAWQA, 2000
2,025,121	81	IA	Cedar R.	rain	816,480	12,247	1.5	1985	Squillace and Thurman, 1992
2,929,100	44	IN	White R.	rain	710,000	6,745	0.95	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	864,710	41,350	4.8	1996	NAWQA, 2000
2,929,100	44	IN	White R.	rain	864,710	68,009	7.9	1997	Do.
2,929,100	44	IN	White R.	rain	864,710	44,610	5.2	1998	Do.
2,929,100	44	IN	White R.	rain	864,710	9,049	1.0	1992	Do.
2,929,100	44	IN	White R.	rain	864,710	15,018	1.7	1993	Do.
2,929,100	44	IN	White R.	rain	94,536	13,878	14.7	1994	Do.
3,858,500	80	MN	MN R.	rain	290,000	1,798	0.62	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	320,000	1,056	0.33	1990	Schottler and others, 1994
3,858,500	80	MN	MN R.	rain	320,000	1,984	0.62	1991	Do.
6,926,700	61	IL	IL R.	rain	2,000,000	38,000	1.9	1991	Larson and others, 1995
7,571,606	58	OH R.	Wabash R.	rain	2,639,528	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	2,639,528	88,041	3.3	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	2,639,528	106,664	4.0	WY98	Do.
10,445,470	5	OH R.	TN R.	rain	261,085	nd	nd	WY96	Do.
10,445,470	5	OH R.	TN R.	rain	261,085	7,973	3.1	WY97	Do.
10,445,470	5	OH R.	TN R.	rain	261,085	8,379	3.2	WY98	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	442,726	nd	nd	WY96	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	442,726	15,617	3.5	WY97	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	442,726	8,519	1.9	WY98	Do.
22,110,800	21	MO R.	Platte R.	rain	1,600,000	13,440	0.84	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	1,765,998	94,923	5.4	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	1,765,998	6,142	0.35	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	1,765,998	19,466	1.1	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	1,762,371	15,252	0.87	1993	NAWQA, 2000
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	1,500,000	14,400	0.96	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,480,253	10,635	0.72	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,480,253	7,337	0.50	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,480,253	8,789	0.59	WY98	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,479,153	49,228	3.3	WY96	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,479,153	62,636	4.2	WY97	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,479,153	37,052	2.5	WY98	Do.
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	1,266,802	4,448	0.35	WY96	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	1,266,802	13,724	1.1	WY97	Hooper and others, in press
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	1,266,802	12,080	0.95	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,057,136	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,057,136	92,901	1.3	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,057,136	168,350	2.4	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	4,800,000	57,600	1.2	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	5,325,651	275,293	5.2	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	5,325,651	362,185	6.8	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	5,325,651	295,686	5.6	WY98	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,195,544	23,613	2.0	WY96	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,195,544	6,120	0.51	WY97	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,195,544	9,699	0.81	WY98	Do.
135,767,800	10	MO R.	MO at Hermann, MO	rain	6,300,000	75,600	1.2	1991	Larson and others, 1995
135,767,800	7	MO R.	MO at Hermann, MO	rain	6,769,425	137,805	2.0	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO at Hermann, MO	rain	6,769,425	70,377	1.0	WY97	Do.
135,767,800	7	MO R.	MO at Hermann, MO	rain	6,769,425	103,318	1.5	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	13,000,000	195,000	1.5	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	14,416,096	387,038	2.7	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	14,416,096	109,320	0.76	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	14,416,096	320,040	2.2	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	273,000	1.3	1991	Larson and others, 1995
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	102,900	0.49	1987	Pereira and Rostad, 1990
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	420,000	2.0	1989	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	144,000	0.69	1992	Clark and others, 1999
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	489,000	2.3	1993	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	329,000	1.6	1994	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	439,000	2.1	1995	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	526,000	2.5	1996	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	21,000,000	286,000	1.4	1997	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	22,232,508	812,291	3.7	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	22,232,508	565,613	2.5	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	22,232,508	431,218	1.9	WY98	Do.
				AZINPHOS-METHYL					
0.0065	100	LA	SiL	rain	0.0055	0.000020	0.37	1992	Southwick and others, 1995
0.0065	100	LA	SiL	rain	0.0055	0.000041	0.75	1992	Do.
0.0065	100	LA	SiL	rain	0.0055	0.00010	1.8	1992	Do.
0.22	100	LA	SiL	rain	0.18	0.00094	0.52	1994	Granovsky and others, 1996

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.22	100	LA	SiL	rain	0.18	0.00016	0.09	1995	Granovsky and others, 1996
1	100	LA	SiL	rain	0.84	0.00067	0.08	1980	Smith and others, 1983
1	100	LA	SiL	rain	0.84	0.0046	0.55	1981	Do.
284	40	Italy	Cesena Basin	rain	14	0.26	1.9		Sandroni and others, 1996
2,700	35	CA	Orestimba Cr.	rain	372	1.2	0.32	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	49	nd	nd	1993	Do.
3,900	46	OR	Zollner Cr.	rain	49	0.083	0.17	1993	Do.
14,600	55	WA	Crab Cr. Lateral	rain	816	1.0	0.12	1993	Do.
45,700	25	MD	Monocacy R.	rain	3,142	0.038	0.0012	1994	Do.
122,400	44	CA	Salt Slough	rain	5,825	nd	nd	1993	Do.
361,900	4	CA	Merced R.	rain	4,771	0.80	0.017	1993	Do.
361,900	4	CA	Merced R.	rain	4,771	0.19	0.0040	1992	Do.
788,000	8	VA	Shenandoah R.	rain	8,455	nd	nd	1993	Do.
788,000	8	ND	Shenandoah R.	rain	8,455	nd	nd	1994	Do.
1,902,400	10	CA	San Joaquin R.	rain	44,265	11	0.026	1993	Do.
2,929,100	44	IN	White R.	rain	72	nd	nd	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	60	nd	nd	1991	Do.
6,926,700	61	IL	IL R.	rain	1,200	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	180	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	4,300	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	14,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	150	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	11,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	150,000	nd	nd	1991	Do.
				BENFLURALIN					
16,100	30	GA	Lime Cr.	rain	340	nd	nd	1993	NAWQA, 2000
27,300	24	GA	Aycocks Cr.	rain	660	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	732	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	732	nd	nd	1994	Do.
				BUTYLATE					
2,700	35	CA	Orestimba Cr.	rain	92	0.0036	0.0039	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	74	nd	nd	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	71	0.000070	0.00010	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	1,322	10	0.76	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	1,322	3	0.21	1994	Do.
16,100	30	GA	Lime Cr.	rain	342	0.0012	0.00035	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
24,600	76	IN	Sugar Cr.	rain	2,117	0.66	0.031	1992	NAWQA, 2000
24,600	76	IN	Sugar Cr.	rain	2,117	0.14	0.0066	1994	Do.
24,600	76	IN	Sugar Cr.	rain	2,117	0.19	0.0089	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	594	0.28	0.047	1993	Do.
36,400	63	NE	Prairie Cr.	rain	1,895	nd	nd	1993	Do.
76,200	70	NE	Shell Cr.	rain	3,644	0.063	0.0017	1993	Do.
95,500	68	NE	Maple Cr.	rain	3,783	0.0010	0.000026	1993	Do.
122,400	44	CA	Salt Slough	rain	1,588	0.053	0.0033	1993	Do.
2,929,100	44	IN	White R.	rain	270,000	27	0.010	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	155,247	63	0.040	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	155,247	54	0.035	1993	Do.
2,929,100	44	IN	White R.	rain	155,247	74	0.047	1994	Do.
3,858,500	80	MN	MN R.	rain	160,000	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	750,000	150	0.020	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	432,252	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	432,252	45	0.010	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	432,252	nd	nd	WY98	Do.
22,110,800	21	MO R.	Platte R.	rain	560,000	nd	nd	1991	Larson and others, 1995
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	470,000	nd	nd	1991	Do.
25,123,000	8	OH R.	MS R. at Clinton, IA	rain	289,748	655	0.23	WY96	Hooper and others, in press
25,123,000	8	OH R.	MS R. at Clinton, IA	rain	289,748	nd	nd	WY97	Do.
25,123,000	8	OH R.	MS R. at Clinton, IA	rain	289,748	nd	nd	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	476,120	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	476,120	nd	nd	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	476,120	nd	nd	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	1,900,000	570	0.030	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,126,444	nd	nd	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,126,444	201	0.018	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,126,444	nd	nd	WY98	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	1,900,000	nd	nd	1991	Larson and others, 1995
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	4,200,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	6,700,000	nd	nd	1991	Do.
				CARBARYL					
0.79	100	OH	SiL	rain	4.0	0.0056	0.14		Caro and others, 1974
2,700	35	CA	Orestimba Cr.	rain	130	0.097	0.075	1993	NAWQA, 2000
3,500	18	NC	Devils Cradle Cr.	rain	44	0.0033	0.0075	1993	Do.
3,900	46	OR	Zollner Cr.	rain	224	0.47	0.21	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
4,400	40	NC	Pete Mitchell Swamp	rain	84	0.028	0.033	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	473	0.48	0.10	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	193	0.51	0.27	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	193	0.0025	0.0013	1994	Do.
16,100	30	GA	Lime Cr.	rain	576	0.031	0.0054	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	538	0.090	0.017	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,281	0.39	0.030	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,281	0.29	0.022	1994	Do.
45,700	25	MD	Monocacy R.	rain	906	1.2	0.13	1994	Do.
76,200	70	NE	Shell Cr.	rain	1,100	1.6	0.15	1993	Do.
95,500	68	NE	Maple Cr.	rain	1,669	0.0010	0.000060	1993	Do.
122,400	44	CA	Salt Slough	rain	5,307	1.0	0.01945	1993	Do.
126,100	22	OR	Pudding R.	rain	3,600	0.14	0.004	1993	Do.
575,400	17	NC	Tar R.	rain	6,999	3.9	0.056	1993	Do.
2,929,100	44	IN	White R.	rain	3,200	nd	nd	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	83,612	nd	nd	1994	NAWQA, 2000
3,858,500	80	MN	MN R.	rain	8,600	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	30,000	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	140,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	36,000	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	200,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Herman, MO	rain	810,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	920,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	1,500,000	nd	nd	1991	Do.
				CARBOFURAN					
0.59	100	OH	SiL	rain	3.2	0.028	0.87	1971	Caro and others, 1973
0.59	100	OH	SiL	rain	1.8	0.035	1.9	1972	Do.
0.79	100	OH	SiL	rain	3.3	0.016	0.47	1971	Do.
1.1	100	VT	L	rain	0.30	0.00061	0.20	1986	Clausen and others, 1990
1.1	100	VT	L	rain	0.20	0.013	6.4	1986	Do.
1.1	100	VT	L	rain	0.20	0.0016	0.80	1986	Do.
1.1	100	VT	L	rain	0.24	nd	nd	1986	Do.
1.1	100	VT	L	rain	0.24	nd	nd	1986	Do.
1.1	100	VT	L	rain	0.24	0.0056	2.3	1986	Do.
1.1	100	VT	L	rain	0.24	0.0017	0.70	1986	Do.
1.46	100	VT	L	rain	0.40	0.0020	0.50	1986	Do.
24	100	CA	rice paddy water	NA	26	0.45	1.7	1988	Nicosia and others, 1991

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
32	100	CA	rice paddy water	NA	20	2.3	11.0	1988	Nicosia and others, 1991
34	100	CA	rice paddy water	NA	41	2.2	5.4	1988	Do.
2,700	35	CA	Orestimba Cr.	rain	39	0.11	0.27	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	94	0.00043	0.00046	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	100	nd	nd	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	119	0.28	0.23	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	119	0.81	0.68	1994	Do.
14,100	49	PA	Mill Cr.	rain	299	nd	nd	1993	Do.
14,100	49	PA	Mill Cr.	rain	299	nd	nd	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	239	0.0081	0.0034	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	158	0.83	0.53	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	158	4.4	2.8	1994	Do.
16,100	30	GA	Lime Cr.	rain	325	nd	nd	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	545	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	808	1.5	0.19	1993	Do.
65,800	66	ND	Turtle R.	rain	827	0.48	0.059	1993	Do.
76,200	70	NE	Shell Cr.	rain	1,562	13.0	0.83	1993	Do.
95,500	68	NE	Maple Cr.	rain	1,674	3.7	0.22	1993	Do.
122,400	44	CA	Salt Slough	rain	2,784	1.2	0.043	1993	Do.
229,400	22	ID	Teton R.	rain	2,666	nd	nd	1993	Do.
2,929,100	44	IN	White R.	rain	42,000	21	0.050	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	11,000	nd	nd	1991	Do.
6,926,700	61	IL	IL R.	rain	95,000	361	0.38	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	190,000	171	0.090	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	53,000	148	0.28	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	370,000	296	0.080	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	650,000	585	0.090	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	930,000	1302	0.14	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	1,800,000	nd	nd	1991	Do.
				CHLORPYRIFOS					
0.003	100	GA	CL	sim	0.0034	0.0000034	0.10	1993	Smith and Bridges, 1996
0.012	100	PA	C	rain	0.013	nd	nd	1988	Harrison and others, 1993
0.023	100	WI	SiL	sim	0.064	0.000077	0.12	1983	Sauer and Daniel, 1987
0.023	100	WI	SiL	sim	0.064	0.000052	0.080	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.000052	0.080	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.000028	0.044	1983	Do.
0.023	100	WI	SiL	sim	0.064	0.00015	0.24	1984	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.023	100	WI	SiL	sim	0.064	0.00021	0.33	1984	Sauer and Daniel, 1987
0.023	100	WI	SiL	sim	0.064	0.00019	0.29	1984	Do.
0.023	100	WI	SiL	sim	0.064	0.000084	0.13	1984	Do.
1.2	100	OK	SiL	sim	2.6	0.0013	0.050	1995	Cole and others, 1997
1.2	100	OK	SiL	sim	2.6	0.000026	0.0010	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0037	0.14	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0013	0.050	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0013	0.050	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0011	0.040	1995	Do.
1.2	100	OK	SiL	sim	2.6	nd	nd	1995	Do.
1.2	100	OK	SiL	sim	2.6	nd	nd	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0098	0.37	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.025	0.94	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.0066	0.25	1995	Do.
1.2	100	OK	SiL	sim	2.6	nd	nd	1995	Do.
1.2	100	OK	SiL	sim	2.6	nd	nd	1995	Do.
1.2	100	OK	SiL	sim	2.6	nd	nd	1995	Do.
1.2	100	OK	SiL	sim	2.6	0.014	0.52	1995	Do.
60	100	CA	fine textured	irrigation	101	0.29	0.29	NA	Spencer and Cliath, 1991
60	100	CA	fine textured	irrigation	42	0.038	0.09	NA	Do.
60	100	CA	fine textured	irrigation	146	0.35	0.24	NA	Do.
60	100	CA	fine textured	irrigation	58	0.012	0.020	NA	Do.
60	100	CA	fine textured	irrigation	173	0.12	0.070	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	580	0.56	0.097	1993	NAWQA, 2000
3,500	18	NC	Devils Cradle Cr.	rain	200	0.001	0.00072	1993	Do.
3,700	21	VA	Muddy Cr.	rain	91	nd	nd	1993	Do.
3,900	46	OR	Zollner Cr.	rain	380	0.12	0.032	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	540	0.0044	0.00081	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	237	0.035	0.015	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	237	0.035	0.015	1994	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	341	nd	nd	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	341	nd	nd	1994	Do.
14,100	49	PA	Mill Cr.	rain	766	0.041	0.0053	1993	Do.
14,100	49	PA	Mill Cr.	rain	766	0.16	0.020	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	888	0.50	0.057	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	289	0.095	0.033	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	289	0.24	0.083	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	573	nd	nd	1994	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
16,100	30	GA	Lime Cr.	rain	1,707	nd	nd	1993	NAWQA, 2000
24,600	76	IN	Sugar Cr.	rain	467	0.56	0.12	1992	Do.
24,600	76	IN	Sugar Cr.	rain	467	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	467	0.33	0.071	1993	Do.
24,700	49	WI	Duck Cr.	rain	813	nd	nd	1993	Do.
24,700	49	WI	Duck Cr.	rain	813	0.0098	0.0012	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	2,820	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	2,118	0.19	0.0092	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,943	0.0070	0.00018	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,943	nd	nd	1994	Do.
45,700	25	MD	Monocacy R.	rain	2,968	0.16	0.0054	1994	Do.
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	1,003	0.035	0.0035	1976	Frank and others, 1982
65,800	66	ND	Turtle R.	rain	865	nd	nd	1993	NAWQA, 2000
76,200	70	NE	Shell Cr.	rain	4,178	2.0	0.049	1993	Do.
95,500	68	NE	Maple Cr.	rain	4,432	3.6	0.080	1993	Do.
122,400	44	CA	Salt Slough	rain	26,512	1.6	0.0060	1993	Do.
126,100	22	OR	Pudding R.	rain	6,146	4.5	0.073	1993	Do.
180,400	37	WI	Milwaukee R.	rain	3,815	nd	nd	1993	Do.
361,900	4	CA	Merced R.	rain	12,342	4.7	0.038	1993	Do.
361,900	4	CA	Merced R.	rain	12,342	0.43	0.0035	1992	Do.
575,400	17	NC	Tar R.	rain	38,368	0.081	0.00021	1993	Do.
788,000	8	VA	Shenandoah R.	rain	8,615	nd	nd	1993	Do.
788,000	8	ND	Shenandoah R.	rain	8,615	5.2	0.060	1994	Do.
911,300	9	NY	Mohawk R.	rain	15,328	nd	nd	1994	Do.
1,713,100	56	ND	Red R. of the North above Fargo	rain	19,407	nd	nd	1994	Do.
1,902,400	10	CA	San Joaquin R.	rain	106,364	21	0.020	1993	Do.
2,874,900	10	OR	Willamette R. at Portland, OR	rain	39,365	232	0.59	WY97	Hooper and others, in press
2,874,900	10	OR	Willamette R. at Portland, OR	rain	39,365	95	0.24	WY98	Do.
2,929,100	44	IN	White R.	rain	60,000	nd	nd	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	34,824	49	0.14	1993	NAWQA, 2000
2,929,100	44	IN	White R.	rain	142,773	3.0	0.0021	1994	Do.
3,858,500	80	MN	MN R.	rain	53,000	80	0.15	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	280,000	196	0.070	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	136,983	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	136,983	343	0.25	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	93,927	nd	nd	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	300,000	30	0.010	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	248,805	nd	nd	WY96	Hooper and others, in press

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,110,830	17	MO R.	Platte R.	rain	248,805	6.6	0.0027	WY97	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	248,805	38	0.015	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	245,606	76	0.031	1993	NAWQA, 2000
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	250,000	50	0.020	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	259,963	26	0.010	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	259,963	9.5	0.0037	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,076,047	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,076,047	nd	nd	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	490,000	nd	nd	1991	Larson and others, 1995
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	1,100,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MO R. at Thebes, IL	rain	2,300,000	nd	nd	1991	Do.
184,718,800	8	MS R.	MO R. at Thebes, IL	rain	2,147,139	2,724	0.13	WY96	Hooper and others, in press
184,718,800	8	MS R.	MO R. at Thebes, IL	rain	2,147,139	205	0.0095	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	2,147,139	nd	nd	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	3,400,000	nd	nd	1991	Larson and others, 1995
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	3,053,287	153	0.0050	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	3,053,287	99	0.0032	WY98	Do.
				CYANAZINE					
0.003	100	IA	SiC	sim	0.0067	0.00036	5.3	NA	Baker and others, 1978
0.003	100	IA	SiC	sim	0.0067	0.00032	4.7	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00052	7.7	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00047	7.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00042	6.3	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00026	3.8	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00079	12	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00049	7.3	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.0013	19	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00077	11	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00047	7.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00088	13	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00080	12	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.0010	15	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.0011	17	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00091	14	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.0011	16	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.0013	19	NA	Do.
0.004	100	PA	SiC	rain	0.018	0.00103	5.7	1977	Hall and others, 1984

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.004	100	PA	SiC	rain	0.018	0.00014	0.75	1977	Hall and others, 1984
0.004	100	PA	SiC	rain	0.027	0.00012	0.45	1977	Do.
0.004	100	PA	SiC	rain	0.018	0.000025	0.14	1977	Do.
0.004	100	PA	SiC	rain	0.027	0.000056	0.21	1977	Do.
0.004	100	PA	SiC	rain	0.018	0.000032	0.18	1977	Do.
0.004	100	PA	SiC	rain	0.027	0.000027	0.10	1977	Do.
0.004	100	PA	SiC	rain	0.0088	0.00013	1.5	1979	Do.
0.004	100	PA	SiC	rain	0.0088	0.000010	0.11	1979	Do.
0.004	100	PA	SiC	rain	0.018	0.000023	0.13	1979	Do.
0.004	100	PA	SiC	rain	0.0088	0.000006	0.070	1979	Do.
0.004	100	PA	SiC	rain	0.018	0.000022	0.12	1979	Do.
0.004	100	PA	SiC	rain	0.0088	0.000013	0.15	1979	Do.
0.004	100	PA	SiC	rain	0.018	0.000018	0.10	1979	Do.
0.26	100	PA	SiCL	rain	0.57	0.0007	0.13	1985	Hall and others, 1991
0.26	100	PA	SiCL	rain	0.57	0.0017	0.30	1986	Do.
0.26	100	PA	SiCL	rain	0.57	0.000057	0.010	1987	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1988	Do.
0.26	100	PA	SiCL	rain	0.57	0.00034	0.060	1986	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1987	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1988	Do.
0.3	100	MD	SiL	rain	0.40	0.0021	0.52	1990	Isensee and Sadeghi, 1993
0.3	100	MD	SiL	rain	0.40	0.0034	0.84	1990	Do.
0.3	100	MD	SiL	rain	0.40	0.00060	0.15	1991	Do.
0.3	100	MD	SiL	rain	0.40	0.0011	0.27	1991	Do.
0.3	100	MD	SiL	rain	0.40	0.0052	1.3	1990	Do.
0.3	100	MD	SiL	rain	0.40	0.0077	1.9	1990	Do.
0.3	100	MD	SiL	rain	0.40	0.0020	0.50	1991	Do.
0.3	100	MD	SiL	rain	0.40	0.0027	0.68	1991	Do.
1.0	100	GA	LS	sim	4.7	0.056	1.2	NA	Wauchope and others, 1990
1.0	100	GA	LS	sim	5.1	0.087	1.7	NA	Do.
1.0	100	GA	LS	sim	4.7	0.071	1.5	NA	Do.
1.0	100	GA	LS	sim	5.1	0.14	2.8	NA	Do.
1.1	100	VT	coarse L	rain	3.3	0.033	1.0	1985	Clausen and others, 1996
1.1	100	VT	coarse L	rain	2.0	0.061	3.1	1988	Do.
1.1	100	VT	L	rain	0.54	0.0054	1.0	1986	Clausen and others, 1990
1.1	100	VT	L	rain	0.40	0.054	13	1986	Do.
1.1	100	VT	L	rain	0.40	0.010	2.5	1986	Do.
1.1	100	VT	L	rain	0.27	nd	nd	1986	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
1.1	100	VT	L	rain	0.27	nd	nd	1986	Clausen and others, 1990
1.1	100	VT	L	rain	0.32	0.000032	0.010	1986	Do.
1.1	100	VT	L	rain	0.32	0.000016	0.0050	1986	Do.
1.3	100	GA	SL	rain	2.1	0.021	1.0	1977	Leonard and others, 1979
1.3	100	GA	SCL	NA	2.1	0.021	1.0	NA	Wauchope, 1978
1.38	100	GA	SL/SCL	NA	1.9	0.0013	0.07	NA	Do.
1.4	100	GA	SL	rain	1.9	0.0013	0.07	1977	Leonard and others, 1979
1.46	100	VT	L	rain	0.72	0.0064	0.90	1986	Clausen and others, 1990
1.5	100	VT	coarse L	rain	4.5	0.041	0.90	1985	Clausen and others, 1996
1.5	100	VT	coarse L	rain	2.7	0.18	6.5	1988	Do.
5.0	100	IA	SiL	rain	11	0.11	0.96	1976	Johnson and Baker, 1982
6.4	100	IA	SiL	rain	14	0.12	0.82	1978	Do.
7.6	100	IA	SiL	rain	17	0.16	0.96	1976	Baker and others, 1979
57.5	0	MN	Lake Harriet	rain	0.018	0.00031	1.7	1993	Wotzka and others, 1994
2,700	35	CA	Orestimba Cr.	rain	34	2.4	7.2	1993	NAWQA, 2000
3,327	85	NE	Recharge Lake (SL)	rain	392	1.1	0.29	1993	Ma and Spalding, 1997
3,327	85	NE	Recharge Lake (SL)	rain	392	0.55	0.14	1994	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	56	0.0054	0.0096	1993	NAWQA, 2000
5,055	75	IA	Four-mile Cr. (SiL)	rain	11,323	9.1	0.080	1976	Baker and others, 1979
11,600	28	PA	East Mahantango Cr.	rain	320	1.5	0.47	1993	NAWQA, 2000
11,600	28	PA	East Mahantango Cr.	rain	320	3.7	1.2	1994	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,683	2.8	0.17	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,683	0.10	0.0059	1994	Do.
14,100	49	PA	Mill Cr.	rain	911	0.23	0.025	1993	Do.
14,100	49	PA	Mill Cr.	rain	911	0.45	0.049	1994	Do.
14,600	87	IN	Kessinger Ditch	rain	2,628	133	5.1	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	2,628	20	0.76	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	443	0.44	0.10	1994	Do.
16,100	30	GA	Lime Cr.	rain	392	0.098	0.025	1993	Do.
24,600	76	IN	Sugar Cr.	rain	4,196	16	0.39	1992	Do.
24,600	76	IN	Sugar Cr.	rain	4,196	8.0	0.19	1994	Do.
24,600	76	IN	Sugar Cr.	rain	4,196	3.9	0.094	1993	Do.
24,700	49	WI	Duck Cr.	rain	3,652	35	0.95	1993	Do.
24,700	49	WI	Duck Cr.	rain	3,652	4.3	0.12	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	783	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	6,413	1.2	0.018	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,015	0.11	0.0037	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,015	3.6	0.12	1994	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
45,700	25	MD	Monocacy R.	rain	1,017	4.3	0.43	1994	NAWQA, 2000
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	1,003	0.035	0.0035	1976	Frank and others, 1982
76,200	70	NE	Shell Cr.	rain	12,320	132	1.1	1993	NAWQA, 2000
95,500	68	NE	Maple Cr.	rain	12,796	1,412	11	1993	Do.
122,400	44	CA	Salt Slough	rain	6,615	20	0.30	1993	Do.
143,000	83	IL	Sangamon R.	rain	19,000	279	1.5	1991	Battaglin and Goolsby, 1994
177,400	26	OH	Grand R.	rain	4,740	0.06	0.0013	1988	Richards and others, 1996
177,400	26	OH	Grand R.	rain	4,740	5.0	0.11	1989	Do.
177,400	26	OH	Grand R.	rain	4,740	nd	nd	1990	Do.
177,400	26	OH	Grand R.	rain	4,740	nd	nd	1993	Do.
180,400	37	WI	Milwaukee R.	rain	18,458	79	0.43	1993	NAWQA, 2000
183,100	4	OH	Cuyahoga R.	rain	3,800	41	1.1	1983	Richards and others, 1996
183,100	4	OH	Cuyahoga R.	rain	3,800	4.1	0.11	1984	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	78	2.1	1985	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	20	0.52	1986	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	27	0.70	1987	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	1.1	0.029	1988	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	11	0.30	1989	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	5.1	0.13	1990	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	nd	nd	1991	Do.
183,100	4	OH	Cuyahoga R.	rain	3,800	0.80	0.021	1993	Do.
269,900	67	MI	Raisin R.	rain	14,760	101	0.68	1983	Do.
269,900	67	MI	Raisin R.	rain	14,760	217	1.5	1984	Do.
269,900	67	MI	Raisin R.	rain	14,760	52	0.36	1985	Do.
269,900	67	MI	Raisin R.	rain	14,760	146	0.99	1986	Do.
269,900	67	MI	Raisin R.	rain	14,760	59	0.40	1987	Do.
269,900	67	MI	Raisin R.	rain	14,760	2.1	0.014	1988	Do.
269,900	67	MI	Raisin R.	rain	14,760	35	0.24	1992	Do.
269,900	67	MI	Raisin R.	rain	14,760	2.8	0.019	1993	Do.
312,000	66	NB	West Fork of the Big Blue R.	rain	39,000	121	0.31	1991	Battaglin and Goolsby, 1994
324,000	80	OH	Sandusky R.	rain	33,720	128	0.38	1983	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	33,720	184	0.55	1984	Do.
324,000	80	OH	Sandusky R.	rain	33,720	156	0.46	1985	Do.
324,000	80	OH	Sandusky R.	rain	33,720	320	0.95	1986	Do.
324,000	80	OH	Sandusky R.	rain	33,720	73	0.22	1987	Do.
324,000	80	OH	Sandusky R.	rain	33,720	22	0.066	1988	Do.
324,000	80	OH	Sandusky R.	rain	33,720	120	0.36	1989	Do.
324,000	80	OH	Sandusky R.	rain	33,720	527	1.6	1990	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
324,000	80	OH	Sandusky R.	rain	33,720	81	0.24	1991	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	33,720	25	0.074	1992	Do.
324,000	80	OH	Sandusky R.	rain	33,720	185	0.55	1993	Do.
399,840	39	Ontario	Saugeen R. (S, L)	rain	33,120	16	0.048	1983	Frank and Logan, 1988
679,000	51	Ontario	Grand R. (C, L , S)	rain	33,200	52	0.16	1983	Do.
684,000	74	Ontario	Thames R (CL)	rain	108,820	190	0.18	1983	Do.
911,300	9	NY	Mohawk R.	rain	11,657	19	0.17	1994	NAWQA, 2000
1,639,500	76	OH	Maumee R.	rain	158,910	1,296	0.82	1983	Richards and others, 1996
1,639,500	76	OH	Maumee R.	rain	158,910	2,623	1.7	1984	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	270	0.17	1985	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	1,750	1.1	1986	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	937	0.59	1987	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	48	0.030	1988	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	1,271	0.80	1989	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	2,813	1.8	1990	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	1,047	0.66	1991	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	752	0.47	1992	Do.
1,639,500	76	OH	Maumee R.	rain	158,910	2,373	1.5	1993	Do.
1,713,100	56	ND	Red R. of the North above Fargo	rain	38,855	96	0.25	1994	NAWQA, 2000
2,929,100	44	IN	White R.	rain	210,000	1,596	0.76	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	307,945	1,614	0.52	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	307,945	3,807	1.2	1993	Do.
2,929,100	44	IN	White R.	rain	307,945	2,093	0.68	1994	Do.
3,858,500	80	MN	MN R.	rain	450,000	5,850	1.3	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	500,000	1,600	0.32	1990	Schottler and others, 1994
3,858,500	80	MN	MN R.	rain	500,000	6,500	1.3	1991	Do.
6,926,700	61	IL	IL R.	rain	750,000	23,250	3.1	1991	Larson and others, 1995
7,571,606	58	OH R.	Wabash R.	rain	1,117,207	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	1,117,207	15,496	1.4	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	1,117,207	21,172	1.9	WY98	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	176,456	nd	nd	WY96	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	176,456	2,010	1.1	WY97	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	176,456	1,086	0.62	WY98	Do.
22,110,800	21	MO R.	Platte R.	rain	460,000	11,960	2.6	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	590,068	30,289	5.1	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	590,068	1,084	0.18	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	590,068	3,818	0.65	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	589,539	5,066	0.86	1993	NAWQA, 2000

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	1,600,000	9,120	0.57	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,185,490	2,166	0.18	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,185,490	1,911	0.16	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	1,185,490	1,373	0.12	WY98	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	607,285	12,489	2.1	WY96	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	607,285	15,312	2.5	WY97	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	607,285	7,102	1.2	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	5,283,933	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	5,283,933	18,086	0.34	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	5,283,933	16,039	0.30	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	1,400,000	11,480	0.82	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	2,083,481	37,246	1.8	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	2,083,481	56,134	2.7	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	2,083,481	49,149	2.4	WY98	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	934,274	6,453	0.69	WY96	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	934,274	1,469	0.16	WY97	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	934,274	3,669	0.39	WY98	Do.
135,767,800	10	MO R.	MO at Hermann, MO	rain	2,000,000	40,000	2.0	1991	Larson and others, 1995
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,573,521	33,524	1.3	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,573,521	9,181	0.36	WY97	Do.
135,767,800	7	MO R.	MO at Hermann, MO	rain	2,573,521	10,088	0.39	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	6,200,000	99,200	1.6	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	8,221,540	98,050	1.2	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	8,221,540	19,991	0.24	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	8,221,540	31,831	0.39	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	124,500	1.5	1991	Larson and others, 1995
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	43,000	0.52	1992	Clark and others, 1999
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	321,000	3.9	1993	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	151,000	1.8	1994	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	216,000	2.6	1995	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	172,000	2.1	1996	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,300,000	88,000	1.1	1997	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	11,254,214	160,950	1.4	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	11,254,214	79,634	0.71	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	11,254,214	60,332	0.54	WY98	Do.
				DCPA					
2,700	35	CA	Orestimba Cr.	rain	86	2.0	2.3	1993	NAWQA, 2000

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
3,900	46	OR	Zollner Cr.	rain	77	0.012	0.016	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	370	4.5	1.2	1993	Do.
122,400	44	CA	Salt Slough	rain	1294	0.91	0.070	1993	Do.
147,300	15	CO	Lonetree Cr.	rain	1765	74	4.2	1993	Do.
				DIAZINON					
2,700	35	CA	Orestimba Cr.	rain	732	3.7	0.51	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	252	0.27	0.11	1993	Do.
14,600	55	WA	Crab Cr. Lateral	rain	159	0.0075	0.0047	1993	Do.
45,700	25	MD	Monocacy R.	rain	501	0.43	0.085	1994	Do.
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	8.0	0.00020	0.0025	1976	Frank and others, 1982
122,400	44	CA	Salt Slough	rain	12,874	11	0.085	1993	NAWQA, 2000
126,100	22	OR	Pudding R.	rain	3,905	3.7	0.094	1993	Do.
361,900	4	CA	Merced R.	rain	8,370	16	0.19	1993	Do.
361,900	4	CA	Merced R.	rain	8,370	3.2	0.038	1992	Do.
1,902,400	10	CA	San Joaquin R.	rain	84,384	169	0.20	1993	Do.
2,929,100	44	IN	White R.	rain	80	16	20	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	90,701	53	0.059	1994	NAWQA, 2000
6,926,700	61	IL	IL R.	rain	2,400	96	4.0	1991	Larson and others, 1995
22,110,800	21	MO R.	Platte R.	rain	39,000	7.8	0.020	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	18,000	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	6,600	73	1.1	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	84,000	59	0.070	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	110,000	143	0.13	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	150,000	nd	nd	1991	Do.
				DISULFOTON					
4,400	40	NC	Pete Mitchell Swamp	rain	44	nd	nd	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	543	0.022	0.0041	1993	Do.
16,100	30	GA	Lime Cr.	rain	211	nd	nd	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	286	nd	nd	1993	Do.
37,700	40	WA	El 68 Wasteway	rain	901	0.33	0.037	1993	Do.
638,000	52	WA	Palouse R.	rain	6,930	nd	nd	1993	Do.
3,858,500	80	MN	MN R.	rain	390	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	240	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	39,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	11,000	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	3,300	nd	nd	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	200,000	nd	nd	1991	Larson and others, 1995
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	220,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	470,000	nd	nd	1991	Do.
				EPTC					
60	100	CA	fine texture	irrigation	168	12	7.2	NA	Spencer and Cliath, 1991
60	100	CA	fine texture	irrigation	396	25	6.4	NA	Do.
60	100	CA	fine texture	irrigation	828	56	6.8	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	302	0.42	0.14	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	723	0.27	0.037	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	976	0.59	0.060	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	976	0.065	0.0066	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	2,307	3.6	0.16	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	517	0.26	0.050	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	517	0.14	0.026	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	176	0.10	0.059	1994	Do.
24,600	76	IN	Sugar Cr.	rain	829	nd	nd	1992	Do.
24,600	76	IN	Sugar Cr.	rain	829	0.28	0.034	1994	Do.
24,600	76	IN	Sugar Cr.	rain	829	0.20	0.024	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,279	1.9	0.15	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,279	0.075	0.0059	1994	Do.
36,400	63	NE	Prairie Cr.	rain	834	0.015	0.0018	1993	Do.
37,700	40	WA	El 68 Wasteway	rain	1,883	5.9	0.32	1993	Do.
56,600	56	MN	Snake R.	rain	1,713	0.058	0.0034	1993	Do.
62,300	12	ID	Rock Cr.	rain	2,996	1.2	0.041	1993	Do.
65,800	66	ND	Turtle R.	rain	2,281	0.049	0.0022	1993	Do.
76,200	70	NE	Shell Cr.	rain	1,604	0.13	0.0081	1993	Do.
93,542		Greece	C, SC, SiLC	irrigation	1,692	37	2.2	1988	Albanis, 1991
95,500	68	NE	Maple Cr.	rain	1,707	0.19	0.011	1993	NAWQA, 2000
122,400	44	CA	Salt Slough	rain	6,750	40	0.60	1993	Do.
126,100	22	OR	Pudding R.	rain	10,881	5.1	0.047	1993	Do.
147,300	15	CO	Lonetree Cr.	rain	4,001	14	0.35	1993	Do.
180,400	37	WI	Milwaukee R.	rain	8,854	1.0	0.012	1993	Do.
229,400	22	ID	Teton R.	rain	14,449	1.8	0.013	1993	Do.
240,700	29	MN	Wild Rice R.	rain	2,778	0.17	0.0062	1993	Do.
361,900	4	CA	Merced R.	rain	4,963	23	0.46	1993	Do.
361,900	4	CA	Merced R.	rain	4,963	0.52	0.011	1992	Do.
638,000	52	WA	Palouse R.	rain	30,953	0.79	0.0025	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	138,481	192	0.14	1994	NAWQA, 2000
1,902,400	10	CA	San Joaquin R.	rain	42,697	63	0.15	1993	Do.
2,874,900	10	OR	Willamette R.	rain	52,226	65	0.12	WY96	Hooper and others, in press
2,874,900	10	OR	Willamette R.	rain	52,226	90	0.17	WY97	Do.
2,874,900	10	OR	Willamette R.	rain	52,226	43	0.08	WY98	Do.
2,929,100	44	IN	White R.	rain	42,000	8.4	0.02	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	60,776	12	0.02	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	60,776	13	0.02	1993	Do.
2,929,100	44	IN	White R.	rain	252,742	5.8	0.0023	1994	Do.
3,858,500	80	MN	MN R.	rain	1,500,000	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	650,000	325	0.050	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	228,419	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	228,419	11	0.0049	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	228,419	22	0.0096	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	369,169	75	0.020	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	460,000	nd	nd	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	261,785	48	0.018	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	261,785	2.1	0.00081	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	261,785	2.9	0.0011	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	257,340	6.7	0.0026	1993	NAWQA, 2000
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	3,900,000	390	0.010	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	897,607	95	0.011	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	897,607	38	0.0042	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	897,607	23	0.0025	WY98	Do.
28,179,200	8	COL R.	Snake R.	rain	477,659	140	0.029	WY96	Do.
28,179,200	8	COL R.	Snake R.	rain	477,659	232	0.049	WY97	Do.
28,179,200	8	COL R.	Snake R.	rain	477,659	171	0.036	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,957,905	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,957,905	79	0.0040	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,957,905	88	0.0045	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	810,000	162	0.020	1991	Larson and others, 1995
62,160,000	3	COL R.	Columbia R. at Warrendale, OR	rain	698,476	nd	nd	WY96	Hooper and others, in press
62,160,000	3	COL R.	Columbia R. at Warrendale, OR	rain	698,476	449	0.064	WY97	Do.
62,160,000	3	COL R.	Columbia R. at Warrendale, OR	rain	698,476	451	0.065	WY98	Do.
66,537,100	2	COL R.	Columbia R. near Quincy, OR	rain	753,370	375	0.050	WY96	Do.
66,537,100	2	COL R.	Columbia R. near Quincy, OR	rain	753,370	377	0.050	WY97	Do.
66,537,100	2	COL R.	Columbia R. near Quincy, OR	rain	753,370	396	0.053	WY98	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,069,680	280	0.026	WY96	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,069,680	2,230	0.21	WY97	Hooper and others, in press
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,069,680	194	0.018	WY98	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	4,200,000	nd	nd	1991	Larson and others, 1995
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,637,862	83	0.0051	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,637,862	133	0.0081	WY97	Do.
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,637,862	70	0.0043	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	12,000,000	1,200	0.010	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,674,673	335	0.0091	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,674,673	101	0.0027	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,674,673	119	0.0032	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	13,000,000	nd	nd	1991	Larson and others, 1995
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	4,125,823	707	0.017	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	4,125,823	nd	nd	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	4,125,823	nd	nd	WY98	Do.
				ETHALFLURALIN					
2,700	35	CA	Orestimba Cr.	rain	45	0.60	1.32	1993	NAWQA, 2000
4,400	40	NC	Pete Mitchell Swamp	rain	83	nd	nd	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	159	nd	nd	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	159	nd	nd	1994	Do.
16,100	30	GA	Lime Cr.	rain	611	0.0056	0.00092	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	1,071	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,332	0.025	0.0019	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,332	nd	nd	1994	Do.
62,300	12	ID	Rock Cr.	rain	1,030	0.062	0.0060	1993	Do.
65,800	66	ND	Turtle R.	rain	4,377	nd	nd	1993	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	43,902	nd	nd	1994	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	232,179	nd	nd	1993	Do.
				ETHOPROP					
3,500	18	NC	Devils Cradle Cr.	rain	48	nd	nd	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	208	0.97	0.47	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	101	0.0073	0.0072	1993	Do.
14,600	55	WA	Crab Cr. Lateral	rain	648	0.064	0.010	1993	Do.
37,700	40	WA	El 68 Wasteway	rain	647	0.052	0.0080	1993	Do.
126,100	22	OR	Pudding R.	rain	3,157	6.0	0.19	1993	Do.
229,400	22	ID	Teton R.	rain	4,337	nd	nd	1993	Do.
575,400	17	NC	Tar R.	rain	8,904	0.57	0.0064	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
3,858,500	80	MN	MN R.	rain	990	0.79	0.080	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	10	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	37,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	1,400	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	3,900	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	85,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	98,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	120,000	nd	nd	1991	Do.
				FONOFOS					
0.003	100	IA	SiC	sim	0.0067	0.00022	3.2	NA	Baker and others, 1978
0.003	100	IA	SiC	sim	0.0067	0.00038	5.6	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00014	2.1	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00013	2.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00020	3.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.000054	0.80	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.000081	1.2	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.000060	0.90	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00010	1.5	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.000067	1.0	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.00003	0.50	NA	Do.
0.003	100	IA	SiC	sim	0.0067	0.000054	0.80	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00012	1.8	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.000087	1.3	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00013	1.9	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.000087	1.3	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00013	1.9	NA	Do.
0.003	100	IA	SiS	sim	0.0067	0.00011	1.6	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	29	0.96	3.4	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	170	0.21	0.13	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	53	0.021	0.041	1993	Do.
14,600	55	WA	Crab Cr. Lateral	rain	262	nd	nd	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	210	nd	nd	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	210	nd	nd	1994	Do.
16,100	30	GA	Lime Cr.	rain	303	0.43	0.14	1993	Do.
24,600	76	IN	Sugar Cr.	rain	334	0.20	0.060	1992	Do.
24,600	76	IN	Sugar Cr.	rain	334	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	334	0.011	0.0034	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
27,300	24	GA	Aycocks Cr.	rain	551	nd	nd	1993	NAWQA, 2000
36,400	63	NE	Prairie Cr.	rain	1,172	0.15	0.013	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	615	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	615	nd	nd	1994	Do.
76,200	70	NE	Shell Cr.	rain	2,254	0.11	0.0048	1993	Do.
95,500	68	NE	Maple Cr.	rain	2,339	1.2	0.052	1993	Do.
126,100	22	OR	Pudding R.	rain	2,639	0.51	0.019	1993	Do.
575,400	17	NC	Tar R.	rain	6,332	nd	nd	1993	Do.
2,929,100	44	IN	White R.	rain	20,000	8.0	0.040	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	31,000	140	0.45	1991	Do.
6,926,700	61	IL	IL R.	rain	120,000	108	0.090	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	79,512	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	79,512	nd	nd	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	79,512	nd	nd	WY98	Do.
22,110,800	21	MO R.	Platte R.	rain	100,000	30	0.030	1991	Larson and others, 1995
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	65,000	72	0.11	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	160,000	16	0.010	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	270,000	54	0.020	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	660,000	132	0.020	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	940,000	nd	nd	1991	Do.
				LINDANE					
0.0125	100	France	SiL	rain	0.017	0.000000051	0.00030	1993	Patty and others, 1997
0.025	100	France	SiL	rain	0.034	0.00000020	0.00060	1993	Do.
				LINURON					
0.035	100	Italy	CL	rain	0.017	0.00048	2.8	1995	Balestra and others, 1996
0.035	100	Italy	CL	rain	0.028	0.00064	2.3	1995	Do.
0.045	100	LA	SiCL	rain	0.10	0.000040	0.040	1971	Willis and others, 1975
0.045	100	LA	SiCL	rain	0.10	0.000040	0.040	1971	Do.
0.045	100	LA	SiCL	rain	0.10	0.000040	0.040	1971	Do.
0.045	100	LA	SiCl	NA	0.10	0.000020	0.020	NA	Do.
0.045	100	LA	SiCl	NA	0.10	0.000040	0.040	NA	Do.
0.045	100	LA	SiCl	NA	0.10	0.00029	0.29	NA	Do.
0.55	100	OH	fine Si	rain	1.2	0.00000	0.00010	1991	Shipitalo and others, 1997
0.55	100	OH	fine Si	rain	1.2	0.0057	0.46	1993	Do.
0.59	100	OH	fine L	rain	1.3	0.00012	0.0090	1992	Do.
0.59	100	OH	fine L	rain	1.3	0.00013	0.010	1994	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.68	100	OH	fine L	rain	1.5	0.0000015	0.00010	1992	Shipitalo and others, 1997
0.68	100	OH	fine L	rain	1.5	nd	nd	1994	Do.
0.79	100	OH	fine L	rain	1.8	0.0018	0.10	1991	Do.
0.79	100	OH	fine L	rain	1.8	0.018	1.0	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	135	0.019	0.014	1993	NAWQA, 2000
11,600	28	PA	East Mahantango Cr.	rain	135	0.292	0.22	1994	Do.
14,100	49	PA	Mill Cr.	rain	165	nd	nd	1993	Do.
14,100	49	PA	Mill Cr.	rain	165	0.020	0.012	1994	Do.
14,600	87	IN	Kessinger Ditch	rain	174	0.062	0.036	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	174	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	318	0.36	0.11	1992	Do.
24,600	76	IN	Sugar Cr.	rain	318	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	318	0.11	0.034	1993	Do.
45,700	25	MD	Monocacy R.	rain	544	2.5	0.47	1994	Do.
2,929,100	44	IN	White R.	rain	44,000	4.4	0.010	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	540	nd	nd	1991	Do.
6,926,700	61	IL	IL R.	rain	86,000	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	3,700	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	15,000	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	270,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	55,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	240,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	630,000	nd	nd	1991	Do.
				MALATHION					
2,700	35	CA	Orestimba Cr.	rain	115	0.0093	0.0081	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	98	0.52	0.53	1993	Do.
14,600	55	WA	Crab Cr. Lateral	rain	301	0.053	0.018	1993	Do.
122,400	44	CA	Salt Slough	rain	4,420	2.0	0.045	1993	Do.
126,100	22	OR	Pudding R.	rain	1,660	0.75	0.045	1993	Do.
1,902,400	10	CA	San Joaquin R.	rain	20,727	3.4	0.017	1993	Do.
2,929,100	69	IN	White R.	rain	980	1.2	0.12	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	900	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	9,400	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	230	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	45,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	85,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	100,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	nd	nd	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
				METHYL PARATHION					
0.0017	100	NC	LS	NA	0.023	0.0000018	0.0080	NA	Sheets and others, 1972
0.0017	100	NC	LS	NA	0.023	0.0000055	0.024	NA	Do.
0.0017	100	NC	SL	NA	0.023	0.000030	0.13	NA	Do.
0.0017	100	NC	SL	NA	0.023	0.000057	0.25	NA	Do.
60	100	CA	fine textured	irrigation	25	0.00076	0.0030	NA	Spencer and Cliath, 1991
60	100	CA	fine textured	irrigation	126	0.40	0.32	NA	Do.
60	100	CA	fine textured	irrigation	34	0.10	0.31	NA	Do.
60	100	CA	fine textured	irrigation	61	0.098	0.16	NA	Do.
60	100	CA	fine textured	irrigation	75	0.13	0.17	NA	Do.
60	100	CA	fine textured	irrigation	8.4	0.00084	0.010	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	38	nd	nd	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	314	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	2,084	nd	nd	1993	Do.
45,700	25	MD	Monocacy R.	rain	998	0.073	0.0074	1994	Do.
76,200	70	NE	Shell Cr.	rain	4,008	nd	nd	1993	Do.
95,500	68	NE	Maple Cr.	rain	4,160	0.0010	0.000024	1993	Do.
122,400	44	CA	Salt Slough	rain	1,546	nd	nd	1993	Do.
213,100	16	TX	Chambers Cr.	rain	2,240	nd	nd	1994	Do.
2,929,100	44	IN	White R.	rain	80	nd	nd	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	8,500	8.5	0.10	1991	Do.
6,926,700	61	IL	IL R.	rain	9,400	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	140,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	15,000	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	19,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	120,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	150,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	160,000	nd	nd	1991	Do.
				METOLACHLOR					
0.0024	100	Ontario	L	rain	0.0080	0.000054	0.67	1986	Buttle and Harris, 1991
0.0024	100	Ontario	L	rain	0.0080	0.000014	0.18	1986	Do.
0.0024	100	Ontario	L	rain	0.0080	0.000089	1.1	1986	Do.
0.0024	100	Ontario	L	rain	0.0080	0.000032	0.40	1986	Do.
0.0088	100	NC	SCL	sim	0.017	0.000067	0.40	1990	Myers and others, 1995
0.0088	100	NC	SCL	sim	0.017	0.00025	1.5	1990	Do.
0.0088	100	NC	SCL	sim	0.017	0.00018	1.1	1991	Do.
0.0088	100	NC	SCL	sim	0.017	0.00045	2.7	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.0088	100	NC	SCL	sim	0.017	0.00020	1.2	1990	Myers and others, 1995
0.0088	100	NC	SCL	sim	0.017	0.0015	9.0	1990	Do.
0.0088	100	NC	SCL	sim	0.017	0.00015	0.90	1991	Do.
0.0088	100	NC	SCL	sim	0.017	0.00072	4.3	1991	Do.
0.0088	100	NC	SCL	sim	0.017	0.00023	1.4	1990	Do.
0.0088	100	NC	SCL	sim	0.017	0.0013	8.0	1990	Do.
0.0088	100	NC	SCL	sim	0.017	0.00013	0.80	1991	Do.
0.0088	100	NC	SCL	sim	0.017	0.00030	1.8	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00024	0.80	1989	Webster and Shaw, 1996
0.0088	100	MS	SiC	rain, sim	0.030	0.00033	1.1	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00018	0.60	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00021	0.70	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00030	1.0	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00042	1.4	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00012	0.40	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00015	0.50	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00024	0.80	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00015	0.50	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00036	1.2	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.000090	0.30	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00030	1.0	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00054	1.8	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00018	0.60	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.000090	0.30	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00075	2.5	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00015	0.50	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.000090	0.30	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.0010	3.5	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.0013	4.3	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00012	0.40	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00006	0.20	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00018	0.60	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00030	1.0	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00024	0.80	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00012	0.40	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00042	1.4	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.000090	0.30	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00024	0.80	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.0088	100	MS	SiC	rain, sim	0.030	0.00030	1.0	1992	Webster and Shaw, 1996
0.0088	100	MS	SiC	rain, sim	0.030	0.00015	0.50	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00057	1.9	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00120	4.0	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.030	0.00036	1.2	1993	Do.
0.039	100	OH	SiC	rain	0.086	0.000045	0.052	1987	Logan and others, 1994
0.039	100	OH	SiC	rain	0.18	0.00016	0.090	1988	Do.
0.039	100	OH	SiC	rain	0.086	0.00015	0.17	1989	Do.
0.039	100	OH	SiC	rain	0.086	0.00002	0.022	1990	Do.
0.039	100	OH	SiC	rain	0.086	0.00011	0.13	1987	Do.
0.039	100	OH	SiC	rain	0.18	0.00053	0.30	1988	Do.
0.039	100	OH	SiC	rain	0.086	0.00011	0.13	1989	Do.
0.039	100	OH	SiC	rain	0.086	0.00021	0.24	1990	Do.
0.04	100	OH	SiC	rain	0.088	0.00006	0.07	1987	Logan and others, 1991
0.04	100	OH	SiC	rain	0.18	0.00016	0.09	1988	Do.
0.04	100	OH	SiC	rain	0.088	0.00015	0.17	1989	Do.
0.04	100	OH	SiC	rain	0.088	0.00013	0.15	1987	Do.
0.04	100	OH	SiC	rain	0.18	0.00054	0.31	1988	Do.
0.04	100	OH	SiC	rain	0.088	0.00070	0.79	1989	Do.
0.0486	100	VA	SL	rain, sim	0.051	0.00026	0.50	1990	Heatwole and others, 1997
0.0486	100	VA	SL	rain, sim	0.044	0.00053	1.2	1990	Heatwole and others, 1997
0.1	100	Ontario	CL	rain	0.17	0.00018	0.11	1991	Tan and others, 1993
0.1	100	Ontario	CL	rain	0.17	0.00018	0.11	1991	Do.
0.1068	100	Ontario	CL	rain	0.18	0.0021	1.2	1991	Ng and others, 1995
0.26	100	PA	SiCL	rain	0.57	0.00092	0.16	1985	Hall and others, 1991
0.26	100	PA	SiCL	rain	0.57	0.0014	0.25	1986	Do.
0.26	100	PA	SiCL	rain	0.57	0.000057	0.010	1987	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1988	Do.
0.26	100	PA	SiCL	rain	0.57	0.00034	0.060	1986	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1987	Do.
0.26	100	PA	SiCL	rain	0.57	nd	nd	1988	Do.
1.0	100	Ontario	CL	rain	2.6	0.0099	0.38	1987	Gaynor and others, 1995
1.0	100	Ontario	CL	rain	2.6	0.00099	0.038	1988	Do.
1.0	100	Ontario	CL	rain	2.6	0.063	2.4	1989	Do.
1.0	100	Ontario	CL	rain	2.1	0.0090	0.43	1990	Do.
1.6	100	LA	CL	rain	3.5	0.084	2.4	1987	Sabbagh and others, 1991
2.1	100	MS	SiL	rain	4.7	0.18	3.8	1990	Smith and others, 1995
2.1	100	MS	SiL	rain	4.7	0.52	11	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
2.1	100	MS	SiL	rain	4.7	0.0706	1.5	1992	Smith and others, 1995
2.1	100	MS	SiL	rain	4.7	0.0019	0.040	1993	Do.
2.1	100	MS	SiL	rain	4.7	0.40	8.6	1991	Do.
2.1	100	MS	SiL	rain	4.7	0.038	0.80	1992	Do.
2.1	100	MS	SiL	rain	4.7	0.0047	0.10	1993	Do.
3.0	100	LA	CL	rain	6.5	0.16	2.4	1987	Southwick and others, 1990
3.0	100	LA	CL	rain	6.5	0.069	1.1	1987	Do.
4.0	100	LA	CL	rain	8.6	0.10	1.2	1987	Bengtson and others, 1990
4.0	100	LA	CL	rain	8.6	0.21	2.4	1987	Do.
5.5	100	Ontario	L	rain	15	0.14	0.95	1987	Buttle, 1990
5.5	100	Ontario	L	rain	15	0.086	0.59	1987	Do.
5.5	100	Ontario	L	rain	15	0.017	0.12	1987	Do.
5.5	100	Ontario	L	rain	15	0.0029	0.020	1987	Do.
14.0	100	Ontario	CL	rain	34	0.0027	0.0080	1987	Frank and others, 1991
14.0	100	Ontario	CL	rain	36	0.00036	0.0010	1988	Do.
14.0	100	Ontario	CL	rain	36	0.0022	0.0060	1989	Do.
57.5	0	MN	Lake Harriet	rain	0.023	0.00039	1.7	1993	Wotzka and others, 1994
1,211	90	MO	Goodwater Cr. (loess, claypan)	rain	79	1.7	2.1	1993	Donald and others, 1998
1,211	90	MO	Goodwater Cr. (loess, claypan)	rain	105	3.9	3.7	1994	Do.
2,547	85	IA	NA	rain	1,300	2.3	0.18	1992	Jaynes and others, 1999
2,547	85	IA	NA	rain	1,150	18	1.6	1993	Do.
2,547	85	IA	NA	rain	930	0.76	0.082	1994	Do.
2,547	85	IA	NA	rain	1,100	2.9	0.26	1995	Do.
2,700	35	CA	Orestimba Cr.	rain	151	4.6	3.0	1993	NAWQA, 2000
3,147	90	MO	Goodwater Cr. (loess, claypan)	rain	474	32	6.8	1993	Donald and others, 1998
3,147	90	MO	Goodwater Cr. (loess, claypan)	rain	627	13	2.0	1994	Do.
3,327	85	NE	Recharge Lake (SL)	rain	665	1.5	0.23	1993	Ma and Spalding, 1997
3,327	85	NE	Recharge Lake (SL)	rain	665	1.7	0.25	1994	Do.
3,470	66	Ontario	Nissouri Cr. (L, SiL)	rain	3,100	4.7	0.15	1990	Ng and others, 1995
3,470	66	Ontario	Nissouri Cr. (L, SiL)	rain	3,650	3.7	0.10	1990	Ng and Clegg, 1997
3,500	18	NC	Devils Cradle Cr.	rain	108	0.14	0.13	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	250	1.9	0.75	1993	Do.
3,817	85	IA	NA	rain	2,150	3.4	0.16	1992	Jaynes and others, 1999
3,817	85	IA	NA	rain	1,500	20	1.3	1993	Do.
3,817	85	IA	NA	rain	2,200	1.5	0.070	1994	Do.
3,817	85	IA	NA	rain	2,100	4.2	0.20	1995	Do.
3,900	46	OR	Zollner Cr.	rain	509	3.0	0.59	1993	NAWQA, 2000
4,400	40	NC	Pete Mitchell Swamp	rain	764	1.9	0.25	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
5,130	85	IA	NA	rain	3,103	8.4	0.27	1992	Jaynes and others, 1999
5,130	85	IA	NA	rain	2,113	34	1.6	1993	Do.
5,130	85	IA	NA	rain	2,890	1.4	0.047	1994	Do.
5,130	85	IA	NA	rain	850	1.4	0.16	1995	Do.
7,250	90	MO	Goodwater Cr. (loess, claypan)	rain	1,085	50	4.6	1993	Donald and others, 1998
7,250	90	MO	Goodwater Cr. (loess, claypan)	rain	1,445	107	7.4	1994	Do.
11,600	28	PA	East Mahantango Cr.	rain	2,250	11	0.50	1993	NAWQA, 2000
11,600	28	PA	East Mahantango Cr.	rain	2,250	23	1.0	1994	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,795	0.24	0.013	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	1,795	0.030	0.0017	1994	Do.
14,100	49	PA	Mill Cr.	rain	5,374	5.2	0.096	1993	Do.
14,100	49	PA	Mill Cr.	rain	5,374	9.6	0.18	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	348	0.19	0.054	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	4,617	84	1.8	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	4,617	66	1.4	1994	Do.
15,200	23	Ontario	NA	rain	499	0.055	0.011	1991	Fischer and others, 1995
15,200	23	Ontario	NA	rain	526	0.17	0.032	1992	Do.
15,500	19	NY	Canajoharie Cr.	rain	625	3.3	0.53	1994	NAWQA, 2000
16,100	30	GA	Lime Cr.	rain	1,326	0.45	0.034	1993	Do.
24,600	76	IN	Sugar Cr.	rain	7,603	46	0.60	1992	Do.
24,600	76	IN	Sugar Cr.	rain	7,603	61	0.80	1994	Do.
24,600	76	IN	Sugar Cr.	rain	7,603	29	0.38	1993	Do.
24,700	49	WI	Duck Cr.	rain	4,302	113	2.6	1993	Do.
24,700	49	WI	Duck Cr.	rain	4,302	8.6	0.20	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	2,405	0.70	0.029	1993	Do.
36,400	63	NE	Prairie Cr.	rain	11,787	29	0.25	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	2,595	3.6	0.14	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	2,595	5.1	0.20	1994	Do.
45,700	25	MD	Monocacy R.	rain	7,562	60	0.79	1994	Do.
65,800	66	ND	Turtle R.	rain	920	0.088	0.0096	1993	Do.
76,200	70	NE	Shell Cr.	rain	23,521	40	0.17	1993	Do.
93,542	NA	Greece	C, SC, SiLC	irrigation	4,512	212	4.7	1988	Albanis, 1991
95,500	68	NE	Maple Cr.	rain	25,449	61	0.24	1993	NAWQA, 2000
122,400	44	CA	Salt Slough	rain	1,375	2.3	0.17	1993	Do.
126,100	22	OR	Pudding R.	rain	7,743	34	0.44	1993	Do.
143,000	83	IL	Sangamon R.	rain	19,000	165	0.87	1991	Battaglin and Goolsby, 1994
147,300	15	CO	Lonetree Cr.	rain	2,356	9.1	0.39	1993	NAWQA, 2000
177,400	26	OH	Grand R.	rain	7,160	nd	nd	1988	Richards and others, 1996

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
177,400	26	OH	Grand R.	rain	7,160	23	0.32	1989	Richards and others, 1996
177,400	26	OH	Grand R.	rain	7,160	45	0.63	1990	Do.
177,400	26	OH	Grand R.	rain	7,160	23	0.32	1993	Do.
180,400	37	WI	Milwaukee R.	rain	19,975	20	0.098	1993	NAWQA, 2000
183,100	4	OH	Cuyahoga R.	rain	5,290	30	0.57	1983	Richards and others, 1996
183,100	4	OH	Cuyahoga R.	rain	5,290	2.4	0.045	1984	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	13	0.24	1985	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	64	1.2	1986	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	68	1.3	1987	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	5.4	0.10	1988	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	50	0.95	1989	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	0.80	0.015	1990	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	86	1.6	1991	Do.
183,100	4	OH	Cuyahoga R.	rain	5,290	14	0.27	1993	Do.
213,100	16	TX	Chambers Cr.	rain	4,800	245	5.1	1994	NAWQA, 2000
240,700	29	MN	Wild Rice R.	rain	2,971	0.52	0.018	1993	Do.
269,900	67	MI	Raisin R.	rain	55,550	114	0.21	1983	Richards and others, 1996
269,900	67	MI	Raisin R.	rain	55,550	211	0.38	1984	Do.
269,900	67	MI	Raisin R.	rain	55,550	76	0.14	1985	Do.
269,900	67	MI	Raisin R.	rain	55,550	285	0.51	1986	Do.
269,900	67	MI	Raisin R.	rain	55,550	113	0.20	1987	Do.
269,900	67	MI	Raisin R.	rain	55,550	49	0.089	1988	Do.
269,900	67	MI	Raisin R.	rain	55,550	67	0.12	1992	Do.
269,900	67	MI	Raisin R.	rain	55,550	65	0.12	1993	Do.
312,000	66	NB	West Fork of the Big Blue R.	rain	39,000	589	1.5	1991	Battaglin and Goolsby, 1994
324,000	80	OH	Sandusky R.	rain	109,850	772	0.70	1983	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	109,850	777	0.71	1984	Do.
324,000	80	OH	Sandusky R.	rain	109,850	1,608	1.5	1985	Do.
324,000	80	OH	Sandusky R.	rain	109,850	1,779	1.6	1986	Do.
324,000	80	OH	Sandusky R.	rain	109,850	1,066	0.97	1987	Do.
324,000	80	OH	Sandusky R.	rain	109,850	64	0.058	1988	Do.
324,000	80	OH	Sandusky R.	rain	109,850	2,473	2.3	1989	Do.
324,000	80	OH	Sandusky R.	rain	109,850	3,648	3.3	1990	Do.
324,000	80	OH	Sandusky R.	rain	109,850	639	0.58	1991	Do.
324,000	80	OH	Sandusky R.	rain	109,850	586	0.53	1992	Do.
324,000	80	OH	Sandusky R.	rain	109,850	1,719	1.6	1993	Do.
575,400	17	NC	Tar R.	rain	34,220	62	0.18	1993	NAWQA, 2000
788,000	8	VA	Shenandoah R.	rain	19,421	157	0.81	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
788,000	8	ND	Shenandoah R.	rain	19,421	125	0.64	1994	NAWQA, 2000
911,300	9	NY	Mohawk R.	rain	16,563	103	0.62	1994	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	1,935	0.38	1983	Richards and others, 1996
1,639,500	76	OH	Maumee R.	rain	504,070	2,457	0.49	1984	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	1,544	0.31	1985	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	4,873	0.97	1986	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	3,962	0.79	1987	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	465	0.092	1988	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	6,086	1.2	1989	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	10,710	2.1	1990	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	7,956	1.6	1991	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	2,801	0.56	1992	Do.
1,639,500	76	OH	Maumee R.	rain	504,070	9,686	1.9	1993	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	79,243	48	0.060	1994	NAWQA, 2000
2,874,900	10	OR	Willamette R.	rain	36,220	1,111	3.1	WY96	Hooper and others, in press
2,874,900	10	OR	Willamette R.	rain	36,220	1,843	5.1	WY97	Do.
2,874,900	10	OR	Willamette R.	rain	36,220	479	1.3	WY98	Do.
2,929,100	44	IN	White R.	rain	430,000	2,795	0.65	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	534,193	4,522	0.85	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	534,193	5,852	1.1	1993	Do.
2,929,100	44	IN	White R.	rain	179,854	6,331	3.5	1994	Do.
3,858,500	80	MN	MN R.	rain	510,000	3,315	0.65	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	1,800,000	8,640	0.48	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	1,798,665	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	1,798,665	42,360	2.4	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	1,798,665	47,748	2.7	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	159,364	162	0.10	1993	NAWQA, 2000
10,445,470	5	OH R.	TN R.	rain	112,125	nd	nd	WY96	Hooper and others, in press
10,445,470	5	OH R.	TN R.	rain	112,125	2,278	2.0	WY97	Do.
10,445,470	5	OH R.	TN R.	rain	112,125	1,800	1.6	WY98	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	399,847	nd	nd	WY96	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	399,847	8,842	2.2	WY97	Do.
16,058,000	6	OH R.	OH R. at Greenup Dam, KY	rain	399,847	4,395	1.1	WY98	Do.
22,110,800	21	MO R.	Platte R.	rain	440,000	4,092	0.93	1991	Larson and others, 1995
22,110,830	17	MO R.	Platte R.	rain	1,142,547	30,846	2.7	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	1,142,547	3,322	0.29	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	1,142,547	8,477	0.74	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	1,140,968	3,552	0.31	1993	NAWQA, 2000

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	1,700,000	7,650	0.45	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	2,051,786	14,430	0.70	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	2,051,786	8,251	0.40	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	2,051,786	5,817	0.28	WY98	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,369,358	24,076	1.8	WY96	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,369,358	33,006	2.4	WY97	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	1,369,358	18,523	1.4	WY98	Do.
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	590,901	658	0.11	WY96	Do.
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	590,901	3,341	0.57	WY97	Do.
40,996,592	17	MS R.	AR R. below Little Rock, AR	rain	590,901	2,334	0.40	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,962,081	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,962,081	51,128	0.64	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	7,962,081	81,104	1.0	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	3,400,000	23,120	0.68	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	3,980,544	89,731	2.3	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	3,980,544	156,774	3.9	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	3,980,544	127,964	3.2	WY98	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,569,734	11,645	0.74	WY96	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,569,734	6,621	0.42	WY97	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,569,734	5,590	0.36	WY98	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	3,500,000	25,900	0.74	1991	Larson and others, 1995
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	5,210,157	55,596	1.1	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	5,210,157	29,965	0.58	WY97	Do.
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	5,210,157	41,573	0.80	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	11,000,000	58,300	0.53	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	13,671,569	162,604	1.2	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	13,671,569	69,945	0.51	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	13,671,569	125,638	0.92	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	128,000	0.80	1991	Larson and others, 1995
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	25,600	0.16	1987	Pereira and Rostad, 1990
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	212,800	1.3	1989	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	76,000	0.48	1992	Clark and others, 1999
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	215,000	1.3	1993	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	125,000	0.78	1994	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	161,000	1.0	1995	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	240,000	1.5	1996	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	16,000,000	178,000	1.1	1997	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	19,757,464	305,868	1.5	WY96	Hooper and others, in press

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	19,757,464	262,237	1.3	WY97	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	19,757,464	246,464	1.2	WY98	Do.
				METRIBUZIN					
0.0041	100	WA	SiL	rain	0.0018	0.000073	4.0	1978	Brown and others, 1985
0.0041	100	WA	SiL	rain	0.0018	0.00010	5.2	1978	Do.
0.0081	100	WA	SiL	rain	0.0035	0.00018	5.1	1978	Do.
0.0081	100	WA	SiL	rain	0.0041	0.000019	0.45	1979	Do.
0.0081	100	WA	SiL	rain	0.0045	0.000019	0.41	1979	Do.
0.0081	100	WA	SiL	rain	0.0035	0.00011	3.2	1978	Do.
0.0081	100	WA	SiL	rain	0.0041	0.0000020	0.050	1979	Do.
0.0081	100	WA	SiL	rain	0.0044	0.0000037	0.085	1979	Do.
0.0081	100	WA	SiL	rain	0.0045	0.000017	0.37	1979	Do.
0.0081	100	WA	SiL	rain	0.0045	0.0000047	0.10	1981	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000060	1.7	1989	Webster and Shaw, 1996
0.0088	100	MS	SiC	rain, sim	0.0035	0.000056	1.6	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000032	0.90	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000049	1.4	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000077	2.2	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000053	1.5	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000032	0.90	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000028	0.80	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000049	1.4	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000030	0.80	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000022	0.60	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000026	0.70	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000067	1.8	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000041	1.1	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000033	0.90	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000015	0.40	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.00023	6.1	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000044	1.2	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000018	0.50	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.00029	7.8	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.00044	12	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000025	0.70	1989	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000018	0.50	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000025	0.70	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.0088	100	MS	SiC	rain, sim	0.0035	0.000049	1.4	1989	Webster and Shaw, 1996
0.0088	100	MS	SiC	rain, sim	0.0035	0.000077	2.2	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000021	0.60	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000067	1.9	1990	Do.
0.0088	100	MS	SiC	rain, sim	0.0035	0.000021	0.60	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000037	1.0	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000055	1.5	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000033	0.90	1993	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000085	2.3	1991	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.00025	6.8	1992	Do.
0.0088	100	MS	SiC	rain, sim	0.0037	0.000078	2.1	1993	Do.
0.016	100	WA	SiL	rain	0.0072	0.00024	3.3	1978	Brown and others, 1985
0.016	100	WA	SiL	rain	0.0072	0.00028	3.8	1978	Do.
0.016	100	WA	SiL	rain	0.0078	0.000018	0.23	1979	Do.
0.016	100	WA	SiL	rain	0.0090	0.0000027	0.031	1979	Do.
0.016	100	WA	SiL	rain	0.0090	0.000091	1.0	1981	Do.
0.016	100	WA	SiL	rain	0.0090	0.0000011	0.013	1981	Do.
0.016	100	WA	SiL	rain	0.0083	0.0000078	0.094	1979	Do.
0.016	100	WA	SiL	rain	0.0090	0.0000037	0.041	1981	Do.
0.016	100	KY	SiL	rain	0.024	0.00020	0.85	1995	Malone and others, 1996
0.016	100	KY	SiL	rain	0.024	0.00015	0.64	1995	Do.
0.016	100	KY	SiL	rain	0.024	0.0000024	0.010	1995	Do.
0.039	100	OH	SiC	rain	0.023	0.000012	0.052	1987	Logan and others, 1994
0.039	100	OH	SiC	rain	0.023	0.000012	0.050	1988	Do.
0.039	100	OH	SiC	rain	0.023	0.000035	0.15	1989	Do.
0.039	100	OH	SiC	rain	0.023	0.0000023	0.010	1990	Do.
0.039	100	OH	SiC	rain	0.023	0.000049	0.21	1987	Do.
0.039	100	OH	SiC	rain	0.023	0.000089	0.38	1988	Do.
0.039	100	OH	SiC	rain	0.023	0.00061	2.6	1989	Do.
0.039	100	OH	SiC	rain	0.023	0.000063	0.27	1990	Do.
0.04	100	OH	SiC	rain	0.017	0.000012	0.074	1987	Logan and others, 1991
0.04	100	OH	SiC	rain	0.022	0.000020	0.088	1988	Do.
0.04	100	OH	SiC	rain	0.022	0.000035	0.16	1989	Do.
0.04	100	OH	SiC	rain	0.017	0.000051	0.31	1987	Do.
0.04	100	OH	SiC	rain	0.022	0.000090	0.40	1988	Do.
0.04	100	OH	SiC	rain	0.022	0.00027	1.2	1989	Do.
0.10	100	Ontario	CL	rain	0.050	0.00011	0.22	1991	Tan and others, 1993
0.10	100	Ontario	CL	rain	0.050	0.00011	0.22	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.20	100	MS	SL	NA	0.11	0.0024	2.1		Wauchope, 1978
0.20	100	MS	SL	NA	0.11	0.0010	0.90		Do.
0.55	100	OH	fine Si	rain	1.8	0.00018	0.010	1992	Shipitalo and others, 1997
0.55	100	OH	fine Si	rain	1.8	0.0000037	0.00020	1994	Do.
0.59	100	OH	fine L	rain	2.0	0.000012	0.00060	1991	Do.
0.59	100	OH	fine L	rain	1.3	0.010	0.79	1993	Do.
0.68	100	OH	fine L	rain	2.3	nd	nd	1991	Do.
0.68	100	OH	fine L	rain	1.5	0.00030	0.020	1993	Do.
0.79	100	OH	fine L	rain	2.7	0.0021	0.080	1992	Do.
0.79	100	OH	fine L	rain	1.8	0.0039	0.22	1994	Do.
2.1	100	MS	SiL	rain	0.88	0.034	3.9	1990	Smith and others, 1995
2.1	100	MS	SiL	rain	0.88	0.20	23	1991	Do.
2.1	100	MS	SiL	rain	0.88	0.013	1.5	1992	Do.
2.1	100	MS	SiL	rain	0.88	0.00035	0.040	1993	Do.
2.1	100	MS	SiL	rain	0.88	0.17	20	1991	Do.
2.1	100	MS	SiL	rain	0.88	0.044	5.0	1992	Do.
2.1	100	MS	SiL	rain	0.88	0.002	0.20	1993	Do.
5.0	100	IA	SiL	rain	2.8	0.020	0.72	1976	Johnson and Baker, 1982
5.6	100	IA	SiL	rain	3.1	0.023	0.72	1976	Baker and others, 1979
6.4	100	IA	SiL	rain	3.6	0.016	0.45	1978	Johnson and Baker, 1982
3,900	46	OR	Zollner Cr.	rain	52	0.86	1.7	1993	NAWQA, 2000
5,055	75	IA	Four-Mile Cr. (SiL)	rain	2,831	1.1	0.040	1976	Baker and others, 1979
14,600	55	WA	Crab Cr. Lateral	rain	485	0.15	0.030	1993	NAWQA, 2000
37,700	40	WA	El 68 Wasteway	rain	605	1.0	0.17	1993	Do.
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	1,012	0.54	0.053	1976	Frank and others, 1982
143,000	83	IL	Sangamon R.	rain	4,200	6.7	0.16	1991	Battaglin and Goolsby, 1994
177,400	26	OH	Grand R.	rain	620	0.020	0.0032	1988	Richards and others, 1996
177,400	26	OH	Grand R.	rain	620	10	1.6	1989	Do.
177,400	26	OH	Grand R.	rain	620	nd	nd	1990	Do.
177,400	26	OH	Grand R.	rain	620	nd	nd	1993	Do.
183,100	4	OH	Cuyahoga R.	rain	410	14	3.3	1983	Do.
183,100	4	OH	Cuyahoga R.	rain	410	8.2	2.0	1984	Do.
183,100	4	OH	Cuyahoga R.	rain	410	0.10	0.024	1985	Do.
183,100	4	OH	Cuyahoga R.	rain	410	47	11	1986	Do.
183,100	4	OH	Cuyahoga R.	rain	410	5.7	1.4	1987	Do.
183,100	4	OH	Cuyahoga R.	rain	410	nd	nd	1988	Do.
183,100	4	OH	Cuyahoga R.	rain	410	11	2.8	1989	Do.
183,100	4	OH	Cuyahoga R.	rain	410	106	26	1990	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
183,100	4	OH	Cuyahoga R.	rain	410	50	12	1991	Richards and others, 1996
183,100	4	OH	Cuyahoga R.	rain	410	nd	nd	1993	Do.
229,400	22	ID	Teton R.	rain	3,913	nd	nd	1993	NAWQA, 2000
269,900	67	MI	Raisin R.	rain	8,630	89	1.0	1983	Richards and others, 1996
269,900	67	MI	Raisin R.	rain	8,630	21	0.24	1984	Do.
269,900	67	MI	Raisin R.	rain	8,630	22	0.25	1985	Do.
269,900	67	MI	Raisin R.	rain	8,630	220	2.5	1986	Do.
269,900	67	MI	Raisin R.	rain	8,630	230	2.7	1987	Do.
269,900	67	MI	Raisin R.	rain	8,630	0.40	0.0046	1988	Do.
269,900	67	MI	Raisin R.	rain	8,630	6.9	0.080	1992	Do.
269,900	67	MI	Raisin R.	rain	8,630	0.30	0.0035	1993	Do.
312,000	66	NB	West Fork of the Big Blue R.	rain	1,900	35	1.8	1991	Battaglin and Goolsby, 1994
324,000	80	OH	Sandusky R.	rain	22,820	217	0.95	1983	Richards and others, 1996
324,000	80	OH	Sandusky R.	rain	22,820	93	0.41	1984	Do.
324,000	80	OH	Sandusky R.	rain	22,820	274	1.2	1985	Do.
324,000	80	OH	Sandusky R.	rain	22,820	414	1.8	1986	Do.
324,000	80	OH	Sandusky R.	rain	22,820	208	0.91	1987	Do.
324,000	80	OH	Sandusky R.	rain	22,820	1.80	0.0079	1988	Do.
324,000	80	OH	Sandusky R.	rain	22,820	224	0.98	1989	Do.
324,000	80	OH	Sandusky R.	rain	22,820	540	2.4	1990	Do.
324,000	80	OH	Sandusky R.	rain	22,820	128	0.56	1991	Do.
324,000	80	OH	Sandusky R.	rain	22,820	120	0.53	1992	Do.
324,000	80	OH	Sandusky R.	rain	22,820	242	1.1	1993	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	1,179	1.2	1983	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	1,478	1.5	1984	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	662	0.65	1985	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	2,085	2.1	1986	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	634	0.63	1987	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	62	0.061	1988	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	689	0.68	1989	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	2,144	2.1	1990	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	1,612	1.6	1991	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	456	0.45	1992	Do.
1,639,500	76	OH	Maumee R.	rain	101,150	1,903	1.9	1993	Do.
2,929,100	44	IN	White R.	rain	54,000	124	0.23	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	32,000	74	0.23	1991	Do.
6,926,700	61	IL	IL R.	rain	140,000	294	0.21	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	38,000	87	0.23	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	72,000	65	0.090	1991	Larson and others, 1995
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	400,000	1,640	0.41	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	210,000	693	0.33	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	610,000	610	0.10	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	1,300,000	4,680	0.36	1991	Do.
				MOLINATE					
2,700	35	CA	Orestimba Cr.	rain	78	0.10	0.13	1993	NAWQA, 2000
93,542		Greece	C, SC, SiLC	irrigation	7,708	748	9.7	1988	Albanis, 1991
122,400	44	CA	Salt Slough	rain	1,462	32	2.2	1993	NAWQA, 2000
				NAPROPAMIDE					
2,700	35	CA	Orestimba Cr.	rain	53	0.53	1.0	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	59	1.3	2.2	1993	Do.
122,400	44	CA	Salt Slough	rain	1,597	0.60	0.038	1993	Do.
				PARATHION					
60	100	CA	fine textured	irrigation	50	0.0100	0.020	NA	Spencer and Cliath, 1991
60	100	CA	fine textured	irrigation	252	1.1	0.44	NA	Do.
60	100	CA	fine textured	irrigation	67	0.34	0.51	NA	Do.
60	100	CA	fine textured	irrigation	124	0.39	0.31	NA	Do.
60	100	CA	fine textured	irrigation	151	0.51	0.34	NA	Do.
60	100	CA	fine textured	irrigation	17	0.010	0.060	NA	Do.
90	NA	Germany	Ohebach R.	rain	0.91	nd	nd	1994	Liess and others, 1999
284	40	Italy	Cesena Basin	rain	14	0.18	1.3	NA	Sandroni and others, 1996
16,100	30	GA	Lime Cr.	rain	342	nd	nd	1993	NAWQA, 2000
27,300	24	GA	Aycocks Cr.	rain	536	nd	nd	1993	Do.
3,858,500	80	MN	MN R.	rain	3,300	nd	nd	1991	Larson and others, 1995
22,110,800	21	MO R.	Platte R.	rain	110,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	4,300	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	80	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	360,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	580,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	650,000	nd	nd	1991	Do.
				PEBULATE					
2,700	35	CA	Orestimba Cr.	rain	29	0.86	3.0	1993	NAWQA, 2000
3,500	18	NC	Devils Cradle Cr.	rain	69	0.00019	0.00027	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
4,400	40	NC	Pete Mitchell Swamp	rain	77	nd	nd	1993	NAWQA, 2000
122,400	44	CA	Salt Slough	rain	1,548	0.55	0.035	1993	Do.
575,400	17	NC	Tar R.	rain	6,882	nd	nd	1993	Do.
				PENDIMETHALIN					
0.001	100	Greece	SCL	rain	0.0015	0.00000065	0.043	1990	Albanis and Manos, 1995
0.001	100	Greece	SCL	rain	0.0015	0.00000072	0.048	1990	Do.
0.001	100	Greece	SCL	rain	0.0015	0.00000078	0.052	1991	Do.
0.001	100	Greece	SCL	rain	0.0015	0.00000087	0.058	1991	Do.
0.003	100	GA	CL	sim	0.0051	0.00000051	0.010	1993	Smith and Bridges, 1996
0.012	100	PA	C	rain	0.020	nd	nd	1988	Harrison and others, 1993
2,700	35	CA	Orestimba Cr.	rain	45	0.025	0.055	1993	NAWQA, 2000
3,500	18	NC	Devils Cradle Cr.	rain	73	0.0035	0.0048	1993	Do.
3,700	21	VA	Muddy Cr.	rain	74	nd	nd	1993	Do.
3,900	46	OR	Zollner Cr.	rain	90	0.0082	0.0091	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	281	0.011	0.0041	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	581	0.060	0.010	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	581	0.18	0.030	1994	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	505	0.019	0.0038	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	505	nd	nd	1994	Do.
14,100	49	PA	Mill Cr.	rain	1,717	0.090	0.0052	1993	Do.
14,100	49	PA	Mill Cr.	rain	1,717	0.27	0.016	1994	Do.
14,600	55	WA	Crab Cr. Lateral	rain	328	0.14	0.042	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	1,508	0.63	0.042	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	1,508	0.53	0.035	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	1,301	nd	nd	1994	Do.
16,100	30	GA	Lime Cr.	rain	995	0.015	0.0015	1993	Do.
24,600	76	IN	Sugar Cr.	rain	2,714	0.15	0.0056	1992	Do.
24,600	76	IN	Sugar Cr.	rain	2,714	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	2,714	0.12	0.0045	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,293	0.16	0.012	1993	Do.
24,700	49	WI	Duck Cr.	rain	1,293	0.0085	0.00066	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	1,809	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	625	0.025	0.0040	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,687	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,687	nd	nd	1994	Do.
45,700	25	MD	Monocacy R.	rain	1,661	0.015	0.00093	1994	Do.
56,600	56	MN	Snake R.	rain	676	nd	nd	1993	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
65,800	66	ND	Turtle R.	rain	761	nd	nd	1993	NAWQA, 2000
76,200	70	NE	Shell Cr.	rain	2,893	0.85	0.029	1993	Do.
95,500	68	NE	Maple Cr.	rain	4,344	2.6	0.061	1993	Do.
122,400	44	CA	Salt Slough	rain	5,026	nd	nd	1993	Do.
126,100	22	OR	Pudding R.	rain	1317	0.10	0.0078	1993	Do.
180,400	37	WI	Milwaukee R.	rain	5,872	0.68	0.012	1993	Do.
240,700	29	MN	Wild Rice R.	rain	2,722	nd	nd	1993	Do.
575,400	17	NC	Tar R.	rain	16,420	0.34	0.0021	1993	Do.
911,300	9	NY	Mohawk R.	rain	34,222	nd	nd	1994	Do.
1,713,100	56	ND	Red R. of the North above Fargo	rain	57,793	nd	nd	1994	Do.
2,929,100	44	IN	White R.	rain	41,000	25	0.060	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	168,230	17	0.010	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	168,230	27	0.016	1993	Do.
2,929,100	44	IN	White R.	rain	30,602	nd	nd	1994	Do.
3,858,500	80	MN	MN R.	rain	160,000	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	290,000	nd	nd	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	678,255	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	678,255	57	0.0084	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	678,255	165	0.024	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	130,463	nd	nd	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	92,000	nd	nd	1991	Larson and others, 1995
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	330,000	nd	nd	1991	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	732,776	nd	nd	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	732,776	nd	nd	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	732,776	nd	nd	WY98	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	353,432	50	0.014	WY96	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	353,432	53	0.015	WY97	Do.
25,123,000	8	OH R.	OH R. at Cannelton Dam, KY	rain	353,432	22	0.0061	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	2,785,536	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	2,785,536	nd	nd	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	2,785,536	202	0.0073	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	480,000	nd	nd	1991	Larson and others, 1995
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,331,621	nd	nd	WY96	Hooper and others, in press
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,331,621	224	0.017	WY97	Do.
52,602,900	9	OH R.	OH R. near Grand Chain, IL	rain	1,331,621	438	0.033	WY98	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	810,000	81	0.010	1991	Larson and others, 1995
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	2,100,000	nd	nd	1991	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	4,273,561	nd	nd	WY96	Hooper and others, in press

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	4,273,561	nd	nd	WY97	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	4,273,561	535	0.013	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	3,700,000	nd	nd	1991	Larson and others, 1995
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	6,599,144	1,261	0.019	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	6,599,144	1,416	0.021	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	6,599,144	158	0.0024	WY98	Do.
				PERMETHRIN					
0.055	100	LA	SiCL	rain	0.0062	0.000000031	0.00050	1976	Carroll and others, 1981
0.055	100	LA	SiCL	rain	0.0062	0.0000018	0.029	1977	Do.
60	100	CA	fine textured	irrigation	43	0.068	0.160	NA	Spencer and Cliath, 1991
60	100	CA	fine textured	irrigation	31	nd	nd	NA	Do.
60	100	CA	fine textured	irrigation	73	0.020	0.028	NA	Do.
60	100	CA	fine textured	irrigation	6.0	nd	nd	NA	Do.
60	100	CA	fine textured	irrigation	31	nd	nd	NA	Do.
60	100	CA	fine textured	irrigation	36	0.032	0.090	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	45	nd	nd	1993	NAWQA, 2000
				PHORATE					
4,400	40	NC	Pete Mitchell Swamp	rain	63	nd	nd	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	318	nd	nd	1993	Do.
16,100	30	GA	Lime Cr.	rain	397	nd	nd	1993	Do.
24,700	49	WI	Duck Cr.	rain	255	nd	nd	1993	Do.
24,700	49	WI	Duck Cr.	rain	255	nd	nd	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	480	nd	nd	1993	Do.
36,400	63	NE	Prairie Cr.	rain	378	nd	nd	1993	Do.
37,700	40	WA	El 68 Wasteway	rain	388	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,186	nd	nd	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	1,186	nd	nd	1994	Do.
65,800	66	ND	Turtle R.	rain	778	nd	nd	1993	Do.
229,400	22	ID	Teton R.	rain	11,068	nd	nd	1993	Do.
2,929,100	44	IN	White R.	rain	520	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	670	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	47,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	320	nd	nd	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	6,600	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	100,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	120,000	nd	nd	1991	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	190,000	nd	nd	1991	Larson and others, 1995
				PRONAMIDE					
3,900	46	OR	Zollner Creek	rain	66	0.013	0.020	1993	NAWQA, 2000
				PROPACHLOR					
0.002	100	IA	SL	sim	0.0038	0.00023	6.1	NA	Baker and others, 1982
0.002	100	IA	SL	sim	0.0038	0.00010	2.8	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.000076	2.0	NA	Do.
0.002	100	IA	SL	sim	0.0038	0.000029	0.76	NA	Do.
0.3	100	IA	SiS	sim	0.75	0.0019	0.25	NA	Baker and others, 1979
0.3	100	IA	SiS	sim	0.75	0.00045	0.060	NA	Do.
0.3	100	IA	SiS	sim	0.75	0.00015	0.020	NA	Do.
1.0	100	IA	SiL	NA	6.7	0.21	3.1	NA	Ritter and others, 1994
5.0	100	IA	SiL	rain	11	0.024	0.22	1976	Johnson and Baker, 1982
6.4	100	IA	SiL	rain	14	0.036	0.25	1978	Do.
7.6	100	IA	SiL	rain	17	0.036	0.21	1976	Baker and others, 1979
5,055	75	IA	Four-Mile Cr. (SiL)	rain	11,323	16	0.14	1976	Do.
36,400	63	NE	Prairie Cr.	rain	956	0.18	0.019	1993	NAWQA, 2000
76,200	70	NE	Shell Cr.	rain	1,616	0.93	0.058	1993	Do.
95,500	68	NE	Maple Cr.	rain	1,850	0.79	0.043	1993	Do.
3,858,500	80	MN	MN R.	rain	22,000	440	2.0	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	35,000	32	0.090	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	70,000	63	0.090	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	66,000	nd	nd	1991	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	222,771	nd	nd	WY97	Hooper and others, in press
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	515,804	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	515,804	38	0.0073	WY97	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	19,000	1.9	0.010	1991	Larson and others, 1995
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	1,100,000	2,200	0.20	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	1,400,000	700	0.050	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	1,800,000	nd	nd	1991	Do.
				PROPANIL					
93,542		Greece	C, SC, SLC	irrigation	2,527	162	6.4	1988	Albanis, 1991
				PROPARGITE					
2,700	35	CA	Orestimba Cr.	rain	926	52	5.6	1993	NAWQA, 2000

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
3,900	46	OR	Zollner Cr.	rain	264	nd	nd	1993	NAWQA, 2000
14,600	55	WA	Crab Cr. Lateral	rain	820	0.50	0.061	1993	Do.
16,100	30	GA	Lime Cr.	rain	242	nd	nd	1993	Do.
27,300	24	GA	Aycocks Cr.	rain	467	nd	nd	1993	Do.
37,700	40	WA	El 68 Wasteway	rain	862	36	4.2	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	521	0.41	0.080	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	521	nd	nd	1994	Do.
45,700	25	MD	Monocacy R.	rain	1,558	nd	nd	1994	Do.
122,400	44	CA	Salt Slough	rain	23,324	1.6	0.0070	1993	Do.
126,100	22	OR	Pudding R.	rain	3,829	nd	nd	1993	Do.
361,900	4	CA	Merced R.	rain	13,141	1.7	0.013	1993	Do.
361,900	4	CA	Merced R.	rain	13,141	1.8	0.014	1992	Do.
638,000	52	WA	Palouse R.	rain	9,168	nd	nd	1993	Do.
1,902,400	10	CA	San Joaquin R.	rain	124,407	261	0.21	1993	Do.
2,929,100	44	IN	White R.	rain	11,000	6.6	0.060	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	47,000	nd	nd	1991	Do.
6,926,700	61	IL	IL R.	rain	73,000	nd	nd	1991	Do.
22,110,800	21	MO R.	Platte R.	rain	66,000	nd	nd	1991	Do.
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	64,000	51	0.080	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	130,000	nd	nd	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	300,000	150	0.050	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	490,000	nd	nd	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	800,000	nd	nd	1991	Do.
				SIMAZINE					
0.12	100	France	SiL	rain	0.060	0.00075	1.3	1995	Lennartz and others, 1997
0.26	100	MD	L	rain	0.57	0.0021	0.36	1979	Glenn and Angle, 1997
0.26	100	MD	L	rain	0.57	nd	nd	1981	Do.
0.26	100	MD	L	rain	0.57	nd	nd	1982	Do.
0.26	100	PA	SiCL	rain	0.44	0.0027	0.62	1985	Hall and others, 1991
0.26	100	PA	SiCL	rain	0.44	0.0023	0.51	1986	Do.
0.26	100	PA	SiCL	rain	0.44	0.00013	0.030	1987	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1988	Do.
0.26	100	PA	SiCL	rain	0.44	0.00080	0.18	1986	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1987	Do.
0.26	100	PA	SiCL	rain	0.44	nd	nd	1988	Do.
0.34	100	France	SiL	rain	0.10	0.00081	0.79	1995	Lennartz and others, 1997
0.37	100	MD	L	rain	0.81	0.0042	0.52	1979	Glenn and Angle, 1997

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.37	100	MD	L	rain	0.81	0.0000033	0.00041	1981	Glenn and Angle, 1997
0.37	100	MD	L	rain	0.81	0.0000051	0.00063	1982	Do.
1.0	100	OH	NA	rain	1.7	0.035	2.1	1970	Triplett and others, 1978
1.0	100	OH	NA	rain	2.2	0.085	3.8	1970	Do.
1.0	100	OH	NA	rain	3.4	nd	nd	1970	Do.
1.0	100	OH	NA	rain	4.5	0.076	1.7	1970	Do.
1.0	100	OH	NA	rain	2.2	0.12	5.4	1970	Do.
1.0	100	OH	NA	rain	1.1	0.00067	0.06	1970	Do.
1.0	100	OH	NA	rain	1.1	0.00045	0.04	1970	Do.
1.0	100	OH	NA	rain	4.5	0.0031	0.07	1970	Do.
1.0	100	OH	NA	rain	2.2	0.0063	0.28	1970	Do.
1.0	100	OH	NA	rain	1.8	0.0025	0.14	1970	Do.
2.7	100	OH	NA	NA	6.0	0.21	3.5	NA	Wauchope, 1978
118	0	Japan	golf course	rain	12	0.12	1.0	1989	Sudo and Kunimatsu, 1992
2,700	35	CA	Orestimba Cr.	rain	178	4.8	2.7	1993	NAWQA, 2000
3,700	21	VA	Muddy Cr.	rain	47	0.90	1.9	1993	Do.
3,900	46	OR	Zollner Cr.	rain	110	7.4	6.7	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	152	1.1	0.73	1993	Do.
11,600	28	PA	East Mahantango Cr.	rain	152	2.7	1.8	1994	Do.
14,100	49	PA	Mill Cr.	rain	444	15	3.5	1993	Do.
14,100	49	PA	Mill Cr.	rain	444	44	9.9	1994	Do.
16,000	95	England	R. Granta (C)	rain	739	4.7	0.64	1987	Gomme and others, 1991
45,700	25	MD	Monocacy R.	rain	1,810	26	1.4	1994	NAWQA, 2000
47,072	51	Ontario	average of 11 rivers (C, L, S)	rain	1,389	0.97	0.070	1976	Frank and others, 1982
93,542	NA	Greece	C, SC, SiLC	irrigation	7,760	23	0.30	1988	Albanis, 1991
122,400	44	CA	Salt Slough	rain	8,722	5.8	0.066	1993	NAWQA, 2000
126,100	22	OR	Pudding R.	rain	2,317	71	3.1	1993	Do.
143,000	83	IL	Sangamon R.	rain	1,900	6.8	0.36	1991	Battaglin and Goolsby, 1994
399,840	47	Ontario	Saugeen R.	rain	100	0.35	0.35	1975	Frank 1981
399,840	47	Ontario	Saugeen R.	rain	100	2.8	2.8	1976	Frank 1981
679,000	54	Ontario	Grand R.	rain	1,240	14	1.1	1975	Frank 1981
679,000	54	Ontario	Grand R.	rain	1,240	36	2.9	1976	Frank 1981
1,902,400	10	CA	San Joaquin R.	rain	26,790	206	0.77	1993	NAWQA, 2000
2,929,100	44	IN	White R.	rain	9,500	475	5.0	1991	Larson and others, 1995
3,858,500	80	MN	MN R.	rain	960	50	5.2	1991	Do.
6,926,700	61	IL	IL R.	rain	67,000	650	0.97	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	88,394	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	88,394	6,022	6.8	WY97	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
7,571,606	58	OH R.	Wabash R.	rain	88,394	8,363	9.5	WY98	Hooper and others, in press
22,110,800	21	MO R.	Platte R.	rain	4,600	110	2.4	1991	Larson and others, 1995
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	3,900	410	11	1991	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	220,000	8,580	3.9	1991	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	52,000	728	1.4	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	170,000	2,720	1.6	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	10,120	2.2	1991	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	5,980	1.3	1987	Pereira and Rostad, 1990
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	68,080	15	1989	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	16,000	12	1992	Clark and others, 1999
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	54,000	5.4	1993	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	25,000	9.8	1994	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	45,000	8.0	1995	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	37,000	5.0	1996	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	460,000	23,000	12	1997	Do.
				TERBACIL					
14,600	55	WA	Crab Cr. Lateral	rain	249	1.8	0.73	1993	NAWQA, 2000
				TERBUFOS					
0.003	100	IL	SiL	sim	0.0098	0.00015	1.5	1985	Felsot, 1988
0.003	100	IL	SiL	sim	0.0098	0.00036	3.7	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.000059	0.60	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.000068	0.70	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.000010	0.10	1985	Do.
0.003	100	IL	SiL	sim	0.0034	0.00027	7.9	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.00013	1.3	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.00026	2.7	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.000020	0.20	1985	Do.
0.003	100	IL	SiL	sim	0.0098	0.000049	0.50	1985	Do.
0.003	100	IL	SiL	sim	0.0034	0.000020	0.60	1987	Kenimer and others, 1997
0.003	100	IL	SiL	sim	0.0034	0.000010	0.30	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.000013	0.40	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.0000034	0.10	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.000020	0.60	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.0000067	0.20	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.000040	1.2	1987	Do.
0.003	100	IL	SiL	sim	0.0034	0.0000034	0.10	1987	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
3,700	21	VA	Muddy Cr.	rain	138	nd	nd	1993	NAWQA, 2000
4,400	40	NC	Pete Mitchell Swamp	rain	120	nd	nd	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	230	nd	nd	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	230	nd	nd	1994	Do.
14,100	49	PA	Mill Cr.	rain	146	nd	nd	1993	Do.
14,100	49	PA	Mill Cr.	rain	146	nd	nd	1994	Do.
14,600	87	IN	Kessinger Ditch	rain	353	nd	nd	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	353	nd	nd	1994	Do.
15,500	19	NY	Canajoharie Cr.	rain	517	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	562	nd	nd	1992	Do.
24,600	76	IN	Sugar Cr.	rain	562	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	562	0.0088	0.0016	1993	Do.
24,700	49	WI	Duck Cr.	rain	591	nd	nd	1993	Do.
24,700	49	WI	Duck Cr.	rain	591	nd	nd	1994	Do.
36,400	63	NE	Prairie Cr.	rain	2,222	nd	nd	1993	Do.
56,600	56	MN	Snake R.	rain	976	nd	nd	1993	Do.
62,300	12	ID	Rock Cr.	rain	673	nd	nd	1993	Do.
65,800	66	ND	Turtle R.	rain	729	nd	nd	1993	Do.
76,200	70	NE	Shell Cr.	rain	4,269	nd	nd	1993	Do.
95,500	68	NE	Maple Cr.	rain	4,434	0.0010	0.000023	1993	Do.
147,300	15	CO	Lonetree Cr.	rain	4,608	0.43	0.0094	1993	Do.
180,400	37	WI	Milwaukee R.	rain	2,635	nd	nd	1993	Do.
213,100	16	TX	Chambers Cr.	rain	2,532	nd	nd	1994	Do.
788,000	8	VA	Shenandoah R.	rain	8,947	nd	nd	1993	Do.
788,000	8	ND	Shenandoah R.	rain	8,947	nd	nd	1994	Do.
911,300	9	NY	Mohawk R.	rain	13,551	nd	nd	1994	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	19,912	nd	nd	1994	Do.
2,929,100	44	IN	White R.	rain	42,000	nd	nd	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	41,283	nd	nd	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	41,283	nd	nd	1993	Do.
2,929,100	44	IN	White R.	rain	41,283	nd	nd	1994	Do.
3,858,500	80	MN	MN R.	rain	56,000	28	0.050	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	150,000	nd	nd	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	152,324	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	152,324	nd	nd	WY97	Do.
7,571,606	58	OH R.	Wabash R.	rain	152,324	nd	nd	WY98	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	109,270	nd	nd	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	260,000	nd	nd	1991	Larson and others, 1995

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
22,110,830	17	MO R.	Platte R.	rain	308,697	nd	nd	WY96	Hooper and others, in press
22,110,830	17	MO R.	Platte R.	rain	308,697	nd	nd	WY97	Do.
22,110,830	17	MO R.	Platte R.	rain	308,697	nd	nd	WY98	Do.
22,149,600	17	MO R.	Platte R.	rain	304,211	nd	nd	1993	NAWQA, 2000
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	130,000	nd	nd	1991	Larson and others, 1995
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	218,254	nd	nd	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	218,254	nd	nd	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	218,254	nd	nd	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	832,202	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	832,202	nd	nd	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	832,202	nd	nd	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	280,000	nd	nd	1991	Larson and others, 1995
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	640,000	nd	nd	1991	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	1,300,000	nd	nd	1991	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	1,759,688	nd	nd	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	1,759,688	nd	nd	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	1,759,688	nd	nd	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	2,000,000	nd	nd	1991	Larson and others, 1995
				THIOBENCARB					
				(no studies found)					
				TRIALLATE					
14,600	55	WA	Crab Cr. Lateral	rain	417	nd	nd	1993	NAWQA, 2000
37,700	40	WA	El 68 Wasteway	rain	1,117	nd	nd	1993	Do.
56,600	56	MN	Snake R.	rain	1,786	0.76	0.042	1993	Do.
65,800	66	ND	Turtle R.	rain	2,108	0.096	0.0045	1993	Do.
118,800	39	WA	Crab Cr.	rain	4,237	0.75	0.018	1993	Do.
229,400	22	ID	Teton R.	rain	4,451	1.7	0.039	1993	Do.
240,700	29	MN	Wild Rice R.	rain	4,163	7.9	0.19	1993	Do.
638,000	52	WA	Palouse R.	rain	31,984	32	0.10	1993	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	25,647	6.7	0.026	1994	Do.
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	218,425	65	0.030	1993	Do.
				TRIFLURALIN					
0.0017	100	NC	LS	NA	0.0019	0.0000091	0.48	NA	Sheets and others, 1972
0.0017	100	NC	LS	NA	0.0019	0.0000051	0.27	NA	Do.
0.0017	100	NC	SL	NA	0.0019	0.0000088	0.46	NA	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
0.0017	100	NC	SL	NA	0.0019	0.000014	0.76	NA	Sheets and others, 1972
0.045	100	LA	SiCL	rain	0.063	0.0000025	0.0040	1971	Willis and others, 1975
0.045	100	LA	SiCL	rain	0.063	nd	nd	1971	Do.
0.045	100	LA	SiCL	rain	0.063	0.00025	0.40	1971	Do.
0.20	100	MS	SL	NA	0.17	0.00020	0.12	NA	Wauchope, 1978
0.20	100	MS	SL	NA	0.17	0.00007	0.040	NA	Do.
0.20	100	LA	SiCl	NA	0.28	nd	nd	NA	Willis and others, 1975
0.20	100	LA	SiCl	NA	0.28	nd	nd	NA	Do.
0.20	100	LA	SiCl	NA	0.28	0.00011	0.040	NA	Do.
0.20	100	MS	SiL	NA	0.22	0.00040	0.18	NA	Wauchope, 1978
0.20	100	MS	Sil	NA	0.22	0.00040	0.18	NA	Do.
0.34	100	GA	LS	rain, sim	0.38	0.00065	0.17	1974	Rohde and others, 1980
0.34	100	GA	LS	rain, sim	0.38	0.00011	0.030	1975	Do.
1.26	100	GA	SL/SC	NA	1.4	0.0028	0.20	NA	Wauchope, 1978
1.26	100	GA	SL/SC	NA	1.4	0.0034	0.24	NA	Do.
1.3	100	GA	NA	rain	1.5	0.0029	0.20	NA	Leonard and others, 1979
1.3	100	GA	NA	rain	1.5	0.0029	0.20	NA	Do.
1.4	100	OR	NA	rain	1.2	nd	nd	NA	Hickman and others, 1983
2.0	100	SC	landscape fabric/plastic sheet	irrigation	5.4	0.016	0.30	1992	Wilson and others, 1996
2.0	100	SC	landscape plastic/plastic sheet	irrigation	5.4	0.060	1.1	1993	Do.
2.7	100	GA	NA	rain	3.0	0.0030	0.10	NA	Leonard and others, 1979
2.7	100	GA	NA	rain	3.0	0.0091	0.30	NA	Do.
2.71	100	GA	SL	NA	3.0	0.0036	0.12	NA	Wauchope, 1978
2.71	100	GA	SL	NA	3.0	0.0079	0.26	NA	Do.
6.0	100	OR	NA	rain	5.0	0.045	0.90	NA	Hickman and others, 1983
18.7	100	MS	SiL	rain	21	0.036	0.17	1973	Willis and others, 1983
18.7	100	MS	SiL	rain	21	0.0021	0.010	1974	Do.
18.7	100	MS	SiL	rain	21	0.044	0.21	1975	Do.
18.7	100	MS	SiL	rain	21	0.027	0.13	1976	Do.
18.7	100	MS	SiL	rain	21	0.025	0.12	1977	Do.
18.7	100	MS	SiL	rain	21	0.042	0.20	1978	Do.
60	100	CA	fine textured	irrigation	66	0.19	0.29	NA	Spencer and Cliath, 1991
60	100	CA	fine textured	irrigation	58	0.081	0.14	NA	Do.
2,700	35	CA	Orestimba Cr.	rain	198	1.1	0.57	1993	NAWQA, 2000
3,900	46	OR	Zollner Cr.	rain	112	0.061	0.054	1993	Do.
4,400	40	NC	Pete Mitchell Swamp	rain	188	0.030	0.016	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	141	nd	nd	1993	Do.
13,300	47	WI	North Branch Milwaukee R.	rain	141	nd	nd	1994	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
14,600	55	WA	Crab Cr. Lateral	rain	217	0.093	0.043	1993	NAWQA, 2000
14,600	87	IN	Kessinger Ditch	rain	359	0.11	0.030	1993	Do.
14,600	87	IN	Kessinger Ditch	rain	359	0.051	0.014	1994	Do.
16,100	30	GA	Lime Cr.	rain	494	0.0058	0.0012	1993	Do.
24,600	76	IN	Sugar Cr.	rain	620	0.80	0.13	1992	Do.
24,600	76	IN	Sugar Cr.	rain	620	nd	nd	1994	Do.
24,600	76	IN	Sugar Cr.	rain	620	0.29	0.046	1993	Do.
24,700	49	WI	Duck Cr.	rain	252	0.041	0.016	1993	Do.
24,700	49	WI	Duck Cr.	rain	252	nd	nd	1994	Do.
27,300	24	GA	Aycocks Cr.	rain	651	nd	nd	1993	Do.
30,200	20	MAN	Ochre R.	rain	984	0.12	0.012	1984	Muir and Grift, 1987
36,400	63	NE	Prairie Cr.	rain	673	0.0018	0.00027	1993	NAWQA, 2000
42,000	30	GA	Tucsawhatchee Cr.	rain	3,171	0.032	0.0010	1993	Do.
42,000	30	GA	Tucsawhatchee Cr.	rain	3,171	nd	nd	1994	Do.
56,600	56	MN	Snake R.	rain	1,576	0.011	0.00067	1993	Do.
64,800	33	MAN	Turtle R.	rain	1,088	0.037	0.0034	1984	Muir and Grift, 1987
65,800	66	ND	Turtle R.	rain	5,277	0.042	0.00079	1993	NAWQA, 2000
76,200	70	NE	Shell Cr.	rain	3,376	1.3	0.040	1993	Do.
93,542	NA	Greece	C, SC, SiCL	irrigation	13,000	65	0.50	1988	Albanis, 1992
95,500	68	NE	Maple Cr.	rain	5,251	1.4	0.026	1993	NAWQA, 2000
122,400	44	CA	Salt Slough	rain	15,699	2.5	0.016	1993	Do.
126,100	22	OR	Pudding R.	rain	1,729	0.074	0.0043	1993	Do.
213,100	16	TX	Chambers Cr.	rain	6,091	1.9	0.031	1994	Do.
240,700	29	MN	Wild Rice R.	rain	3,963	1.0	0.026	1993	Do.
361,900	4	CA	Merced R.	rain	7,079	1.2	0.017	1993	Do.
361,900	4	CA	Merced R.	rain	7,079	0.89	0.013	1992	Do.
575,400	17	NC	Tar R.	rain	9,944	0.51	0.0051	1993	Do.
638,000	52	WA	Palouse R.	rain	7,916	0.15	0.0019	1993	Do.
1,713,100	56	MN/ND	Red R. of the North above Fargo	rain	128,185	9.1	0.0071	1994	Do.
1,902,400	10	CA	San Joaquin R.	rain	54,520	7.8	0.014	1993	Do.
2,929,100	44	WH R	White R.	rain	79,000	nd	nd	1991	Larson and others, 1995
2,929,100	44	IN	White R.	rain	37,765	20	0.053	1992	NAWQA, 2000
2,929,100	44	IN	White R.	rain	37,765	9.3	0.025	1993	Do.
2,929,100	44	IN	White R.	rain	40,168	7.7	0.019	1994	Do.
3,858,500	80	MN R.	MN R.	rain	510,000	nd	nd	1991	Larson and others, 1995
6,926,700	61	IL	IL R.	rain	630,000	63	0.010	1991	Do.
7,571,606	58	OH R.	Wabash R.	rain	165,182	nd	nd	WY96	Hooper and others, in press
7,571,606	58	OH R.	Wabash R.	rain	165,182	54	0.033	WY97	Do.

Table 2. Summary of data from the scientific literature, the National Water-Quality Assessment Program, and the National Stream-Quality Accounting Network Program for the pesticides listed in table 1—*Continued*

Basin or field plot area (ha)	Row crop area (%)	State, country, or river basin	Watershed name or soil type	Precipitation type	Mass use		Annual load as percent of use (%)	Year	Reference
					Basin (kg)	Runoff or stream (kg)			
7,571,606	58	OH R.	Wabash R.	rain	165,182	43	0.026	WY98	Hooper and others, in press
9,208,600	51	MN/ND	Red R. of the North at Pembina	rain	480,462	19	0.0039	1993	NAWQA, 2000
22,110,800	21	MO R.	Platte R.	rain	240,000	24	0.010	1991	Larson and others, 1995
22,170,400	24	MS R.	MS R. at Clinton, IA	rain	810,000	nd	nd	1991	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	569,438	nd	nd	WY96	Hooper and others, in press
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	569,438	nd	nd	WY97	Do.
22,170,400	32	MS R.	MS R. at Clinton, IA	rain	569,438	nd	nd	WY98	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,664,053	nd	nd	WY96	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,664,053	47	0.0028	WY97	Do.
44,366,700	31	MS R.	MS R. at Grafton, IL	rain	1,664,053	18	0.0011	WY98	Do.
52,602,900	16	OH R.	OH R. near Grand Chain, IL	rain	750,000	nd	nd	1991	Larson and others, 1995
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,087,103	139	0.013	WY96	Hooper and others, in press
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,087,103	51	0.0047	WY97	Do.
83,605,200	6	MO R.	MO R. at Omaha, NE	rain	1,087,103	63	0.0058	WY98	Do.
135,767,800	10	MO R.	MO R. at Hermann, MO	rain	2,400,000	240	0.010	1991	Larson and others, 1995
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,840,771	129	0.0070	WY96	Hooper and others, in press
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,840,771	158	0.0086	WY97	Do.
135,767,800	7	MO R.	MO R. at Hermann, MO	rain	1,840,771	88	0.0048	WY98	Do.
184,718,800	18	MS R.	MS R. at Thebes, IL	rain	5,400,000	nd	nd	1991	Larson and others, 1995
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,594,687	nd	nd	WY96	Hooper and others, in press
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,594,687	449	0.012	WY97	Do.
184,718,800	8	MS R.	MS R. at Thebes, IL	rain	3,594,687	138	0.0039	WY98	Do.
315,621,500	15	MS R.	MS R. at Baton Rouge, LA	rain	8,500,000	nd	nd	1991	Larson and others, 1995
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	5,808,596	1,727	0.030	WY96	Hooper and others, in press
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	5,808,596	1,853	0.032	WY97	Do.
315,621,544	7	MS R.	MS and Atchafalaya R.	rain	5,808,596	500	0.0086	WY98	Do.