

Section F: Environmental Health Tables

Blood Lead, 2002

Lead poisoning is a significant, preventable environmental health problem among children in the United States. Lead poisoning can cause learning, behavior, and health problems in young children. In adults, lead can cause high blood pressure, kidney damage, and damage to the reproductive organs. Exposure pathways include deteriorating lead paint; soil and dust; drinking water; “take-home lead” by way of parental occupations and hobbies; air; food; and possibly “traditional” medicines.

The Minnesota Department of Health (MDH) maintains an extensive blood lead surveillance system for the purpose of monitoring trends in blood lead levels in Minnesota. Independent laboratories and/or hospitals report blood lead analyses to the MDH. The data are used to help ensure that screening services are provided to high risk groups and that environmental and medical follow-up is provided to children with elevated blood lead levels. Lead program staff advise local health departments of elevated venous blood lead levels that require follow up. Health care providers and public health agencies educate families of children with blood lead levels of 10 micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$) or greater about the hazards of lead. Homes of children and pregnant women with venous blood lead levels of 20 $\mu\text{g}/\text{dL}$ or greater, or with levels of 15-19 $\mu\text{g}/\text{dL}$ that persist for 90 days, are inspected for lead hazards so that homes can be made lead safe and blood lead levels can be reduced.

In addition, MDH has developed guidelines for case management and clinical treatment in collaboration with local partners and physicians. The case management guidelines are targeted to local public health agencies and others who provide services to provide information on recommended activities related to elevated childhood lead cases. The clinical guidelines provide recommended treatment information to physicians who may not deal with many lead cases in their practice. This information, as well as other information on childhood lead poisoning, may be found at the MDH website at: www.health.state.mn.us/divs/eh/lead.

The results in **Environmental Health Table 1** represent submitted reports of blood lead tests of Minnesota children aged 0-72 months between January 1, 2002 and December 31, 2002. Some results of Minnesota patients tested in 2002 may not have been reported to the MDH. The table below shows the numbers of children 0-72 months of age tested in 2002 according to blood lead level.

For more information contact the Environmental Impacts Analysis Unit, Section of Environmental Surveillance and Assessment: Andrea Michael, 651/215-0891 or andrea.michael@health.state.mn.us.

Environmental Health Table 1: Number of Minnesota Children (0 to 72 Months of Age) Tested according to Blood Lead Levels in Micrograms per Deciliter (µg/dL) in 2002 by State and County

	Number of Children (0 to 72 Months)			
	10 to 14.9 µg/dL ²	15 to 19.9 µg/dL ¹	20 µg/dL or Greater ¹	Total Tested ²
State of Minnesota	1,150	136	187	53,176
Aitkin	2	0	0	91
Anoka	23	1	4	2,366
Becker	4	0	0	274
Beltrami	2	0	0	260
Benton	2	0	0	211
Big Stone	1	0	0	63
Blue Earth	5	0	1	457
Brown	4	0	0	267
Carlton	4	1	1	234
Carver	8	1	0	225
Cass	2	0	0	159
Chippewa	4	0	0	244
Chisago	2	0	0	238
Clay	3	0	0	439
Clearwater	0	0	0	30
Cook	0	0	0	26
Cottonwood	1	0	0	76
Crow Wing	1	0	0	584
Dakota	30	4	5	2,063
Dodge	1	0	0	98
Douglas	4	0	1	314
Faribault	3	1	0	169
Fillmore	4	2	3	259
Freeborn	10	2	3	409
Goodhue	7	2	2	404
Grant	0	0	0	80
Hennepin	431	56	87	15,589
Houston	3	1	0	131
Hubbard	2	0	0	79
Isanti	2	0	0	233
Itasca	5	0	0	396
Jackson	3	0	0	91
Kanabec	1	0	0	123
Kandiyohi	13	2	0	797
Kittson	0	0	0	25
Koochiching	1	0	0	28
Lac Qui Parle	2	0	0	114
Lake	1	1	0	116
Lake of the Woods	0	0	0	18
Le Sueur	4	0	0	178
Lincoln	1	1	0	51
Lyon	5	2	0	678
McLeod	5	0	0	360
Mahnomen	0	0	0	98
Marshall	1	0	0	47
Martin	3	1	0	189
Meeker	2	0	1	256
Mille Lacs	2	0	0	137
Morrison	4	0	0	409
Mower	6	0	3	363
Murray	1	0	0	89
Nicollet	2	0	0	236

	Number of Children (0 to 72 Months)			
	10 to 14.9 µg/dL ²	15 to 19.9 µg/dL ¹	20 µg/dL or Greater ¹	Total Tested ²
State of Minnesota	1,150	136	187	53,176
Nobles	10	1	1	364
Norman	2	0	0	35
Olmsted	11	0	3	817
Otter Tail	3	0	0	346
Pennington	0	0	0	102
Pine	3	0	0	265
Pipestone	0	0	0	33
Polk	1	1	0	101
Pope	3	0	0	92
Ramsey	336	31	54	8,713
Red Lake	1	0	0	21
Redwood	2	0	0	264
Renville	6	2	0	313
Rice	12	3	2	493
Rock	0	0	0	9
Roseau	0	0	0	28
St. Louis	46	9	2	1,677
Scott	2	1	0	428
Sherburne	3	0	0	422
Sibley	4	1	0	148
Stearns	7	0	3	777
Steele	2	1	4	352
Stevens	0	0	0	53
Swift	5	0	0	243
Todd	8	0	0	239
Traverse	0	0	0	22
Wabasha	5	0	0	177
Wadena	3	0	0	165
Waseca	1	1	0	171
Washington	16	1	1	1,014
Watonwan	2	2	1	182
Wilkin	1	0	0	42
Winona	9	1	4	395
Wright	4	1	1	664
Yellow Medicine	2	1	0	225
Unknown	13	1	0	2,913

Source: Minnesota Department of Health, Environmental Health Division

¹results of venous tests only

²venous, capillary, and unknown test types

Foodborne & Waterborne Disease Outbreaks, 2002

Biological or chemical agents may be present in food and water and can cause illness when ingested. The Minnesota Department of Health (MDH) investigates outbreaks of gastroenteritis, including foodborne and waterborne disease outbreaks. Epidemiologists in the Infectious Disease Epidemiology, Prevention and Control Division collaborate with sanitarians in the Environmental Health Division and with local public health agencies in these investigations.

A confirmed foodborne disease outbreak is defined as an incident in which two or more persons experience a similar illness after a common food or meal, and epidemiologic evaluation implicates the food or meal as the source of illness. Confirmed outbreaks may or may not be laboratory-confirmed. A probable foodborne disease outbreak is defined as an incident in which two or more persons experience a similar illness after ingestion of a common food or meal, and a specific food or meal is suspected, but person-to-person transmission or other exposures cannot be ruled out.

Waterborne disease outbreaks are similar to foodborne disease outbreaks, except that epidemiologic analysis implicates drinking water or recreational water as the source of illness. Nonfoodborne/nonwaterborne gastroenteritis outbreaks are related by time and place of exposure, but investigation results suggest that either person-to-person transmission occurred or a vehicle other than food or water (e.g., animal contact) is identified.

Environmental Health Table 2 shows the number of confirmed and probable foodborne outbreaks, waterborne outbreaks, and nonfoodborne/nonwaterborne gastroenteritis outbreaks identified by MDH in 2002.

For further information, contact the Acute Disease Investigation and Control Section, Infectious Disease Epidemiology, Prevention and Control Division: Ellen Swanson, 612/676-5414 or ellen.swanson@health.state.mn.us

Environmental Health Table 2: Foodborne and Waterborne Disease Outbreaks in Minnesota by State and County, 2002

	Confirmed Foodborne	Probable Foodborne	Confirmed Waterborne	Probable Waterborne	Nonfoodborne/ Nonwaterborne	Total
State of Minnesota	46*	16	5	0	57	124
Aitkin	0	0	0	0	1	1
Anoka	6	1	0	0	3	10
Becker	0	0	0	0	0	0
Beltrami	1	0	0	0	1	2
Benton	0	0	0	0	0	0
Big Stone	0	0	0	0	0	0
Blue Earth	0	0	1	0	0	1
Brown	0	1	0	0	0	1
Carlton	0	0	0	0	1	1
Carver	0	0	0	0	2	2
Cass	0	0	0	0	0	0
Chippewa	0	0	0	0	1	1
Chisago	0	1	0	0	1	2
Clay	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0
Cook	0	0	0	0	0	0
Cottonwood	0	0	0	0	0	0
Crow Wing	2	0	0	0	0	2
Dakota	1	1	0	0	2	4
Dodge	0	0	0	0	1	1
Douglas	0	1	0	0	0	1
Faribault	0	0	0	0	0	0
Fillmore	1	0	0	0	1	2
Freeborn	1	1	0	0	0	2
Goodhue	0	0	0	0	2	2
Grant	0	0	0	0	0	0
Hennepin	15	8	1	0	10	34
Houston	0	0	0	0	1	1
Hubbard	0	0	0	0	0	0
Isanti	0	0	0	0	0	0
Itasca	0	0	0	0	0	0
Jackson	0	0	0	0	1	1
Kanabec	0	0	0	0	0	0
Kandiyohi	0	0	0	0	0	0
Kittson	0	0	0	0	1	1
Koochiching	0	0	0	0	0	0
Lac Qui Parle	0	0	0	0	0	0
Lake	0	0	0	0	0	0
Lake of the Woods	0	0	0	0	0	0
Le Sueur	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0
Lyon	0	0	0	0	0	0
McLeod	0	0	0	0	1	1
Mahnomen	0	0	0	0	0	0
Marshall	0	0	0	0	0	0
Martin	0	0	0	0	2	2
Meeker	0	0	0	0	0	0
Mille Lacs	0	0	0	0	0	0
Morrison	1	0	0	0	0	1
Mower	0	0	0	0	0	0

	Confirmed Foodborne	Probable Foodborne	Confirmed Waterborne	Probable Waterborne	Nonfoodborne/Nonwaterborne	Total
State of Minnesota	46*	16	5	0	57	124
Murray	0	0	0	0	0	0
Nicollet	1	0	0	0	0	1
Nobles	1	0	0	0	0	1
Norman	0	0	0	0	0	0
Olmsted	6	0	0	0	1	7
Otter Tail	0	0	2	0	0	2
Pennington	0	0	0	0	0	0
Pine	0	0	0	0	0	0
Pipestone	0	0	0	0	0	0
Polk	0	0	0	0	0	0
Pope	0	0	0	0	1	1
Ramsey	8	0	0	0	10	18
Red Lake	0	0	0	0	0	0
Redwood	0	0	0	0	0	0
Renville	0	0	0	0	1	1
Rice	2	0	0	0	0	2
Rock	0	0	0	0	0	0
Roseau	0	0	0	0	1	1
St. Louis	2	1	0	0	0	3
Scott	3	0	0	0	1	4
Sherburne	0	0	0	0	0	0
Sibley	0	0	0	0	0	0
Stearns	0	0	0	0	2	2
Steele	0	0	0	0	0	0
Stevens	0	0	0	0	0	0
Swift	0	0	0	0	0	0
Todd	0	0	0	0	0	0
Traverse	0	0	0	0	1	1
Wabasha	0	0	0	0	0	0
Wadena	0	0	1	0	0	1
Waseca	0	0	0	0	1	1
Washington	0	1	0	0	0	1
Watonwan	0	0	0	0	0	0
Wilkin	0	0	0	0	0	0
Winona	0	0	0	0	3	3
Wright	0	0	0	0	3	3
Yellow Medicine	0	0	0	0	0	0

Source: Minnesota Department of Health, Infectious Disease Epidemiology, Prevention and Control Division

* Numbers in column add up to 51 because 44 of the 46 confirmed foodborne outbreaks involved single counties but two involved multiple counties.

Hazardous Substances Emergency Events Surveillance, 2002

Hazardous materials are released daily throughout Minnesota as a result of industrial, agricultural, and domestic spills of acids, ammonia, and other chemicals. Many of these releases cause injuries and force evacuations. The Hazardous Substances Emergency Events Surveillance (HSEES) program maintains a database of acute hazardous material releases in Minnesota. The HSEES program is currently active in fourteen other states, and is conducted under a cooperative agreement with the U.S. Agency for Toxic Substances and Disease Registry.

The HSEES program collects data on acute, emergency hazardous material releases. The program does not include petroleum products such as diesel fuel or propane, nor does the program include releases permitted by the Minnesota Pollution Control Agency. Chronic releases, such as a several-month leak from an acid holding tank, are also excluded from the program.

The Minnesota Department of Health (MDH) receives reports of hazardous material releases from several sources, including the Minnesota Duty Officer, the United States Coast Guard's National Response Center, and other state agencies. Upon receipt of this initial report, the MDH calls the responsible party and obtains information to complete an extensive questionnaire. Information gathered includes the number of people who were evacuated, injured, or decontaminated; the identity of the materials spilled; and how much was spilled. Data on long-term health effects from chemical exposures are not collected. The MDH follow-up procedure has the advantage of providing more complete and accurate information than may have been available at the time of original notification of the release.

HSEES data identify the chemicals that were released, the day of the week on which the release occurred, the time of day at which the release occurred, and list the number of injuries by chemical and the number of evacuations by chemical. Maps can be generated showing the locations of spills with respect to municipalities; rivers and lakes; and roads.

For the purpose of the HSEES program, a person is considered injured if that person develops symptoms within 24 hours of exposure to a hazardous substance. Symptoms range from minor ailments, such as throat irritation, to death. The program does not differentiate between injuries caused directly by exposure to hazardous materials and injuries caused indirectly by the release, such as burns from a fire caused by the hazardous materials.

HSEES data can be used in emergency management planning and training. A region's agricultural and industrial activities determine the types of hazardous material releases which are likely to occur within that region. Thus, regional differences require different strategies for planning and training. Comparisons can be made between a rural county and other rural counties, and between an urban county and other urban counties.

During 2002, a total of 356 events occurred in Minnesota, resulting in 376 chemicals released, 25 evacuations and 85 injured people. For the nine urban counties, there were 175 events, 188 chemicals released, 7 victims, and 9 evacuations. For the 78 primarily agricultural counties, there were 181 events, 188 chemicals released, 78 victims, and 16 evacuations. **Environmental Health Table 3** provides the number of hazardous material releases in each county and the average number of events, injuries, evacuations, and chemicals released per event for urban counties and primarily agricultural counties.

For further information contact the Site Assessment and Consultation Unit: Nancy Rice, HSEES Coordinator, 651/215-0918 or SACWeb@health.state.mn.us.

Environmental Health Table 3: Average Hazardous Material Releases, Injuries, Evacuations, and Chemicals per Event for 2002 in Minnesota by State and County*

	Events/County	Injuries/County	Evacuations/County	Chemicals/Event
Urban Counties	19.4	0.8	1.0	1.1
Agricultural Counties	2.3	1.0	0.2	1.0
	Events	Injuries	Evacuations	Chemicals/Event
State of Minnesota	256	85	25	1.1
Aitkin	0	0	0	0.0
Anoka	9	0	1	1.0
Becker	1	0	0	1.0
Beltrami	0	0	0	0.0
Benton	5	0	0	1.0
Big Stone	2	0	0	1.0
Blue Earth	4	0	0	1.0
Brown	3	0	1	1.0
Carlton	14	0	0	1.4
Carver	6	0	0	1.2
Cass	0	0	0	0.0
Chippewa	0	0	0	0.0
Chisago	1	0	0	1.0
Clay	5	0	0	1.0
Clearwater	0	0	0	0.0
Cook	0	0	0	0.0
Cottonwood	1	0	0	1.0
Crow Wing	2	0	0	1.0
Dakota	39	1	3	1.3
Dodge	2	0	0	1.0
Douglas	0	0	0	0.0
Faribault	2	0	0	1.0
Fillmore	4	0	0	1.0
Freeborn	2	0	0	1.0
Goodhue	3	0	0	1.0
Grant	1	0	0	1.0
Hennepin	33	3	4	1.0
Houston	0	0	0	0.0
Hubbard	0	0	0	0.0
Isanti	3	0	0	1.0
Itasca	11	1	0	1.0
Jackson	3	0	0	1.0
Kanabec	0	0	0	0.0
Kandiyohi	2	44	0	1.0
Kittson	1	0	0	1.0
Koochiching	2	0	0	1.0
Lac Qui Parle	1	0	0	1.0
Lake	0	0	0	0.0
Lake of the Woods	0	0	0	0.0
Le Sueur	4	1	0	1.0
Lincoln	0	0	0	0.0
Lyon	10	0	1	1.0
McLeod	7	0	4	1.0
Mahnomen	0	0	0	0.0
Marshall	2	0	0	1.0
Martin	4	0	0	1.0
Meeker	1	0	0	1.0
Mille Lacs	1	0	0	1.0
Morrison	1	0	0	1.0
Mower	3	0	0	1.0

	Events/County	Injuries/County	Evacuations/County	Chemicals/Event
Urban Counties	19.4	0.8	1.0	1.1
Agricultural Counties	2.3	1.0	0.2	1.0
	Events	Injuries	Evacuations	Chemicals/Event
State of Minnesota	256	85	25	1.1
Murray	1	0	0	1.0
Nicollet	2	0	0	1.0
Nobles	1	1	0	1.0
Norman	0	0	0	0.0
Olmsted	18	1	0	1.0
Otter Tail	4	0	0	1.0
Pennington	2	3	1	1.0
Pine	0	0	0	0.0
Pipestone	2	0	0	1.0
Polk	3	2	0	1.0
Pope	1	0	0	1.0
Ramsey	30	0	1	1.0
Red Lake	0	0	0	0.0
Redwood	0	0	0	0.0
Renville	4	0	0	1.0
Rice	6	1	1	1.0
Rock	0	0	0	0.0
Roseau	2	0	0	1.0
St. Louis	7	2	0	1.0
Scott	2	0	0	1.0
Sherburne	7	0	1	1.0
Sibley	3	0	0	1.0
Stearns	9	1	2	1.1
Steele	8	0	0	1.0
Stevens	0	0	0	0.0
Swift	1	0	0	1.0
Todd	0	0	0	0.0
Traverse	0	0	0	0.0
Wabasha	1	0	0	1.0
Wadena	0	0	0	0.0
Waseca	4	21	1	1.0
Washington	31	0	0	1.0
Watonwan	3	0	1	1.0
Wilkin	2	0	0	1.0
Winona	2	3	1	1.0
Wright	5	0	2	1.0
Yellow Medicine	0	0	0	0.0

Source: Minnesota Department of Health, Environmental Health Division
*2002 Preliminary data

Urban counties: Anoka, Carver, Dakota, Hennepin, Olmsted, Ramsey, Scott, St. Louis,
& Washington counties

Agricultural counties: Counties other than urban counties

Radioactivity and Radiation, 1998 - 2002

Median values for strontium-90 in 2002 for samples taken at each of the seven sites did not exceed National Primary Drinking Water Regulations (40 CFR 141) for strontium-90 of 8 pCi per liter (See Table 5). There is no specific standard for strontium-90 in milk, so the standard for strontium-90 in drinking water is used. Median values for strontium-90 also were well within recommended safe levels according to the U.S. Food and Drug Administration (FDA) emergency guidelines for milk. The FDA recommends that during an emergency, protective actions be taken only when levels exceed 4,000 pCi per liter (Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies, Food and Drug Administration, August 13, 1998).

Strontium-90 is a fallout product of atmospheric weapons testing. The average strontium-90 level has been fluctuating, but slowly decreasing. The physical half life is 28 years.

For further information contact the Radiation Control Unit, Section of Asbestos, Indoor Air, Lead and Radiation: Tim Donakowski, 651/643-2128 or timothy.donakowski@health.state.mn.us

Environmental Health Table 4: Median Strontium-90 Levels (pCi/L) in Pasteurized Milk by Minnesota Site and Year

	1998	1999	2000	2001	2002
St. Cloud/Little Falls	0.8	0.9	1.4	1.8	1.0
Duluth	1.9	1.6	1.8	1.9	1.9
Bemidji	0.9	0.9	0.8	1.0	0.9
Rochester	0.9	0.8	0.8	1.0	0.9
Hastings	1.2	0.9	1.1	1.2	0.9
Norwood	0.7	0.9	0.8	0.8	0.9
St. Paul	1.1	0.8	1.1	1.1	0.9
Average (Median)	0.9	0.9	1.1	1.1	0.9

Source: Minnesota Department of Health, Environmental Health Division

Potassium-40 (K-40) was found in all milk samples, ranging from about 1000 to 1500 pCi per liter. Potassium-40 is a naturally occurring radionuclide present at the earth's creation (physical half life of 1.3 billion years). No other nuclides were detected.

Radon Levels Prior to October 2002

Radon is a naturally-occurring radioactive gas that is the second leading cause of lung cancer in the United States. Since radon is a gas, it can easily enter homes and other buildings. While in outdoor air radon is diluted to very low levels, radon trapped inside homes may accumulate to dangerous levels. The United States Environmental Protection Agency (EPA) estimates that, nationwide, 1 in 15 homes has elevated radon levels; however, the proportion of homes in Minnesota with elevated radon levels is thought to be much higher: 1 in 3 homes.

The EPA recommends that all homes be tested for radon; however, testing is voluntary. Results of testing are confidential; laboratories report results directly to the homeowner. Laboratories also report radon results to the MDH by zip code without addresses or other identifiers. The MDH uses these data to identify regional trends in home radon levels within the state.

The purpose of the following table is to provide the general public with information regarding radon levels in their area. It is important to point out, however, that even if the county wherein an individual resides shows relatively low levels of radon, it is still recommended that the home is tested. Radon levels can fluctuate due to a number of factors, and tests in a given area may not be indicative of the level of radon in an individual home.

The data presented in **Environmental Health Table 5** are not from a random sampling effort and may not be representative. Consequently, comparisons between counties are not valid. The county totals likely include multiple tests on single homes as well as blanks and spike samples. All data are from alpha track detectors analyzed prior to October 2002. Radon test data are no longer available by county. For localized radon data please contact the Minnesota Department of Health's Indoor Air Program as noted below.

Test results are reported in picoCuries/Liter (pCi/L), a measurement of radiation. The U.S. Environmental Protection Agency has set a recommended action level at 4.0 pCi/L. If a home is found to contain radon levels in excess of 4.0 pCi/L, it is recommended that steps be taken to reduce the level of radon in the home.

For more information, contact the Minnesota Department of Health's Indoor Air Program at 651/215-0909 or 800/798-9050.

Environmental Health Table 5: Radon Test Data¹ in Minnesota by State and County (from alpha track detectors analyzed prior to October 2002)

	Total Tested	Number <4 pCi/L	Number ≥4 pCi/L	Percent ≥4 pCi/L
State of Minnesota	27,887	17,769	10,118	36.3
Aitkin	31	23	8	25.8
Anoka	784	657	127	16.2
Becker	51	32	19	37.3
Beltrami	186	133	53	28.5
Benton	22	18	4	18.2
Big Stone	46	26	20	43.5
Blue Earth	275	102	173	62.9
Brown	88	35	53	60.2
Carlton	91	67	24	26.4
Carver	333	196	137	41.1
Cass	75	58	17	22.7
Chippewa	31	8	23	74.2
Chisago	109	81	28	25.7
Clay	140	52	88	62.9
Clearwater	175	114	61	34.9
Cook	39	16	23	59.0
Cottonwood	95	41	54	56.8
Crow Wing	141	111	30	21.3
Dakota	2,294	1,497	797	34.7
Dodge	30	18	12	40.0
Douglas	103	53	50	48.5
Faribault	77	44	33	42.9
Fillmore	73	35	38	52.1
Freeborn	124	56	68	54.8
Goodhue	165	73	92	55.8
Grant	31	10	21	67.7
Hennepin	9,264	6,032	3,232	34.9
Houston	63	22	41	65.1
Hubbard	43	32	11	25.6
Isanti	75	62	13	17.3
Itasca	130	94	36	27.7
Jackson	266	136	130	48.9
Kanabec	29	9	20	69.0
Kandiyohi	154	73	81	52.6
Kittson	60	39	21	35.0
Koochiching	43	32	11	25.6
Lac Qui Parle	31	13	18	58.1
Lake	53	47	6	11.3
Lake of the Woods	19	16	3	15.8
Le Sueur	84	39	45	53.6
Lincoln	55	16	39	70.9
Lyon	137	40	97	70.8
McLeod	95	35	60	63.2
Mahnomen	18	10	8	44.4
Marshall	52	26	26	50.0
Martin	78	32	46	59.0
Meeker	54	31	23	42.6
Mille Lacs	53	49	4	7.5
Morrison	100	67	33	33.0
Mower	146	96	50	34.2
Murray	68	25	43	63.2
Nicollet	140	69	71	50.7
Nobles	347	129	218	62.8

	Total Tested	Number <4 pCi/L	Number ≥4 pCi/L	Percent ≥4 pCi/L
State of Minnesota	27,887	17,769	10,118	36.3
Norman	50	28	22	44.0
Olmsted	763	370	393	51.5
Otter Tail	185	101	84	45.4
Pennington	87	47	40	46.0
Pine	53	44	9	17.0
Pipestone	49	23	26	53.1
Polk	96	44	52	54.2
Pope	32	23	9	28.1
Ramsey	3,762	2,942	820	21.8
Red Lake	14	9	5	35.7
Redwood	82	32	50	61.0
Renville	64	25	39	60.9
Rice	453	207	246	54.3
Rock	50	15	35	70.0
Roseau	38	30	8	21.1
St. Louis	890	740	150	16.9
Scott	782	426	356	45.5
Sherburne	145	81	64	44.1
Sibley	16	6	10	62.5
Stearns	460	258	202	43.9
Steele	294	125	169	57.5
Stevens	192	80	112	58.3
Swift	23	19	4	17.4
Todd	73	54	19	26.0
Traverse	21	9	12	57.1
Wabasha	57	22	35	61.4
Wadena	37	29	8	21.6
Waseca	86	42	44	51.2
Washington	1,108	775	333	30.1
Watonwan	54	27	27	50.0
Wilkin	21	11	10	47.6
Winona	365	196	169	46.3
Wright	176	84	92	52.3
Yellow Medicine	43	18	25	58.1

Source: Minnesota Department of Health Environmental Health Division

¹Test Results in picoCuries/Liter (pCi/L)