

ENVIRONMENTAL

RADIATION

DATA

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Office of Radiation and Indoor Air

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Preface

Environmental Radiation Data (ERD) is compiled and published quarterly by the Office of Radiation and Indoor Air's National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama, and contains data from the Environmental Radiation Ambient Monitoring System (ERAMS). ERD is published in both hard-copy and electronic formats. Electronic reports are available online at www.epa.gov/narel.

The United States Environmental Protection Agency established ERAMS in 1973 with an emphasis on identifying trends in the accumulation of long-lived radionuclides in the environment. ERAMS is comprised of a nationwide network of sampling stations that provide air, precipitation, surface water, drinking water, and milk samples.

Sampling locations are selected to provide optimal population coverage while functioning to monitor fallout from nuclear devices and other forms of radioactive contamination of the environment. The radiation analyses performed on these samples include gross alpha and gross beta analyses, gamma analyses, and radionuclide-specific analyses for uranium, plutonium, strontium, iodine, radium, and tritium. This monitoring effort also provides ancillary information on natural background levels and on routine and accidental releases into the environment from stationary sources.

The radiochemical procedures used by NAREL to analyze the ERAMS samples are contained in the *Eastern Environmental Radiation Facility Radiochemistry Procedures Manual* (EPA 520/5-84-006). Station operation and sample collection are in accordance with procedures contained in the *ERAMS Manual* (EPA 520/5-84-007, 008, 009).

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Acknowledgments

All sampling for the Environmental Radiation Ambient Monitoring System (ERAMS) is performed by volunteer collectors who are frequently members of the health departments or related environmental agencies of their respective states. The National Air and Radiation Environmental Laboratory (NAREL) on behalf of the U.S. Environmental Protection Agency would like to acknowledge the time and effort of these volunteer collectors, who are so essential to the successful operation of ERAMS. The efforts of the sample collectors are especially appreciated during times of emergency operation when sampling frequencies are increased and schedules are sometimes demanding.

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Data Reporting Conventions

Every laboratory measurement involves uncertainty. When there is little or no radioactivity in a sample, one consequence of measurement uncertainty is the possibility of obtaining a measured value that is less than zero. Such a negative result occurs when random effects in the measurement process cause the measured value for the sample to be less than that of the blank or background, which is subtracted from it. From April 1991 to December 1995, negative results were reported as “not detected” or “ND,” and gamma analysis results that were less than their estimated measurement uncertainties were also reported as “ND.” In January 1996 both of these practices were discontinued. Although negative activities are physically impossible, the inclusion of negative results in the report allows better statistical analysis of the data.

Results of gamma analyses are still reported as “ND” when gamma-emitting radionuclides are not detected.

Measurement Uncertainty

Each measured value y is reported with an expanded uncertainty $U = k u_c(y)$, which is determined from the combined standard uncertainty $u_c(y)$ and the coverage factor $k = 2$. The interval from $y - U$ to $y + U$ is estimated to have a level of confidence of approximately 95%.

Significant Figures

Expanded uncertainties are reported to two significant figures. Measurement results are rounded to the corresponding number of decimal places.

Detection Capability

The minimum detectable concentrations (MDCs) for each radionuclide are shown in Table 1. The MDC is defined as the minimum concentration that gives a 95% probability of detection when the detection criteria are chosen to give only a 5% probability of false detection in a blank sample.

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Table 1**Reporting Units and Minimum Detectable Concentrations
for Radionuclide Analyses**

Radionuclide	Media	Reporting Unit	Minimum Detectable Concentration
Gross Alpha	Water	pCi/L	2
Gross Beta	Air	pCi/m ³	0.0015
	Water	pCi/L	2
	Precipitation	pCi/L	2
Tritium	Water	pCi/L	150
	Milk	pCi/L	150
* Plutonium-238,239/240	Air	aCi/m ³	0.75
	Water	pCi/L	0.1
† Uranium-234,235,238	Air	aCi/m ³	0.75
	Water	pCi/L	0.1
Radium-226	Water	pCi/L	0.02
Strontium-90	Milk	pCi/L	2
	Water	pCi/L	1
‡ Iodine-131	Milk (gamma)	pCi/L	4
	Water (gamma)	pCi/L	4
	Water	pCi/L	0.3
Cesium-137	Milk	pCi/L	5
	Water	pCi/L	5
‡ Barium-140	Milk	pCi/L	15
	Water	pCi/L	15
Potassium	Milk	g/L	0.06
	Water	g/L	0.06
Potassium-40	Water	pCi/L	50

* The MDC for air is based on an assumed total sample volume of 120,000 m³. Measurement by alpha spectrometry includes combined activities of ²³⁹Pu and ²⁴⁰Pu, since the relative contributions of these two isotopes cannot be determined.

† The MDC for air is based on an assumed total sample volume of 120,000 m³.

‡ Activity as of the day of counting.

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1. Air Program

Airborne Particulates and Precipitation

Gross beta radioactivity measurements and certain specific analyses are performed on air particulates and precipitation samples as indicator measurements in assessing the general (national) impact of all contributing sources on environmental levels of radiation.

Airborne particulates are collected continuously at field stations representing wide geographic coverage, including present and potential sources of environmental radioactivity. Sampling sites are located throughout the United States.

Filters (10-cm diameter synthetic fiber) from air samplers are changed twice weekly and field measurements are made with a G-M survey meter at 5 hours after collection to allow for decay of natural radon isotopes and their progeny. Field estimates are reported to appropriate EPA officials by telephone or mail depending on the activity levels found.

The filters are sent to NAREL for more sensitive analyses in a low background beta counter. Gamma scans are performed on all filters showing gross beta counts greater than 1 pCi/m³. The laboratory obtained values are usually lower than the field estimates due to the decay of naturally occurring radionuclides between the times of the two measurements.

Precipitation samples are collected at most field stations collecting air filters. These samples are also sent to NAREL where they are composited monthly for gamma scans, tritium, and gross beta activity measurements.

A compilation of individual measurements is available from the National Air and Radiation Environmental Laboratory, 540 South Morris Avenue, Montgomery, AL 36115-2601.

Table 2
Gross Beta in Airborne Particulates
January 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
AK: Fairbanks	2	0.0	0.0	0.0	0.038	0.032	0.035
AL: Montgomery	4	0.0	0.0	0.0	0.016	0.013	0.014
AR: Little Rock	7	0.2	0.0	0.1	0.029	0.003	0.018
AZ: Phoenix	4	1.5	0.3	0.6	0.028	0.015	0.021
CA: Berkeley	7	0.3	0.0	0.1	0.013	0.002	0.005
CA: Los Angeles	8	0.3	0.0	0.1	0.014	0.003	0.007
CO: Denver	8	0.4	0.1	0.2	0.032	0.004	0.013
CT: Hartford	8	0.1	0.0	0.1	0.012	0.003	0.008
DE: Wilmington	8	0.1	0.0	0.1	0.014	0.005	0.010
FL: Jacksonville	3	0.0	0.0	0.0	0.009	0.003	0.007
FL: Miami	4	0.0	0.0	0.0	0.009	0.003	0.006
HI: Honolulu	8	0.2	0.1	0.1	0.006	0.003	0.004
IA: Iowa City	9	0.3	0.0	0.2	0.038	0.010	0.024
ID: Boise	9	0.2	0.1	0.2	0.021	0.004	0.007
ID: Idaho Falls	2				0.014	0.011	0.013
IN: Indianapolis	8	0.2	0.0	0.1	0.029	0.003	0.019
KS: Topeka	8	0.6	0.0	0.3	0.033	0.013	0.022
ME: Augusta	7	0.1	0.0	0.0	0.014	0.005	0.010
MI: Lansing	8	0.1	0.0	0.1	0.027	0.006	0.015
MN: Welch	11	0.1	0.0	0.1	0.031	0.006	0.017
MS: Jackson	8	0.1	0.0	0.1	0.021	0.002	0.011
NC: Charlotte	5	0.0	0.0	0.0	0.012	0.007	0.010
NC: Wilmington	2				0.006	0.004	0.005
ND: Bismarck	4	0.6	0.1	0.3	0.034	0.015	0.024
NH: Concord	9	0.0	0.0	0.0	0.012	0.003	0.008
NM: Santa Fe	4	0.0	0.0	0.0	0.011	0.007	0.009
NV: Las Vegas	8	0.5	0.0	0.2	0.035	0.005	0.015
NY: Albany	4	0.0	0.0	0.0	0.014	0.009	0.011
NY: New York City	7	0.1	0.0	0.0	0.017	0.003	0.010
NY: Yaphank	8	0.3	0.0	0.1	0.012	0.002	0.007
OH: Columbus	3				0.021	0.008	0.016
OH: Painesville	8	0.1	0.0	0.1	0.022	0.003	0.013
OH: Ross	9				0.024	0.003	0.017
PA: Harrisburg	9	0.5	0.1	0.1	0.016	0.008	0.011
SC: Barnwell	2	0.1	0.0	0.0	0.007	0.007	0.007
SC: Columbia	8	0.2	0.0	0.1	0.010	0.004	0.008
SD: Pierre	5	0.4	0.1	0.2	0.039	0.014	0.026
TN: Knoxville	7	0.6	0.1	0.3	0.020	0.012	0.018

Table 2 (continued)
Gross Beta in Airborne Particulates
January 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
TN: Nashville	8	0.2	0.0	0.1	0.025	0.003	0.016
TN: Oak Ridge/Bethel	9	0.4	0.1	0.3	0.016	0.008	0.013
TN: Oak Ridge/K25	7	0.4	0.1	0.3	0.016	0.010	0.012
TN: Oak Ridge/Melton	8	0.7	0.1	0.3	0.016	0.007	0.012
TN: Oak Ridge/Y12 E	8	0.7	0.0	0.3	0.016	0.008	0.012
TN: Oak Ridge/Y12 W	7	0.2	0.0	0.1	0.016	0.008	0.013
TX: Austin	8	0.3	0.1	0.1	0.018	0.005	0.012
TX: El Paso	8	1.1	0.2	0.8	0.030	0.012	0.018
UT: Salt Lake City	6	0.2	0.0	0.1	0.019	0.004	0.010
VA: Lynchburg	8	0.3	0.0	0.2	0.013	0.005	0.009
WA: Spokane	8	0.1	0.0	0.1	0.017	0.002	0.007
WI: Madison	8	0.2	0.0	0.1	0.029	0.007	0.018

Table 3
Gross Beta in Airborne Particulates
February 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
AK: Fairbanks	2	0.0	0.0	0.0	0.020	0.013	0.016
AL: Montgomery	6	0.0	0.0	0.0	0.019	0.008	0.013
AR: Little Rock	7	0.2	0.0	0.1	0.022	0.014	0.018
AZ: Phoenix	4	1.3	0.1	0.5	0.029	0.005	0.013
CA: Berkeley	8	0.0	0.0	0.0	0.004	0.001	0.003
CA: Los Angeles	7	0.1	0.0	0.1	0.006	0.003	0.004
CO: Denver	8	0.5	0.2	0.4	0.031	0.006	0.015
CT: Hartford	8	0.1	0.0	0.1	0.013	0.002	0.008
DE: Wilmington	8	0.9	0.0	0.2	0.013	0.003	0.009
FL: Jacksonville	3	0.1	0.0	0.0	0.016	0.009	0.012
FL: Miami	4	0.5	0.0	0.2	0.010	0.004	0.007
HI: Honolulu	7	0.3	0.1	0.1	0.008	0.003	0.005
IA: Iowa City	8	0.3	0.1	0.2	0.031	0.007	0.017
ID: Boise	8	0.2	0.1	0.1	0.008	0.003	0.005
ID: Idaho Falls	7				0.014	0.005	0.009
IN: Indianapolis	8	0.5	0.1	0.3	0.025	0.005	0.016
KS: Topeka	8	0.8	0.3	0.5	0.023	0.010	0.017
ME: Augusta	8	0.1	0.0	0.0	0.019	0.004	0.011
MI: Lansing	8	0.1	0.0	0.1	0.023	0.004	0.014
MN: Welch	14	0.2	0.0	0.1	0.026	0.009	0.016
MS: Jackson	8	0.1	0.0	0.1	0.016	0.009	0.013
NC: Charlotte	6	0.1	0.0	0.0	0.012	0.008	0.009
NC: Wilmington	4				0.007	0.006	0.006
ND: Bismarck	4	0.5	0.2	0.3	0.026	0.013	0.022
NH: Concord	8	0.0	0.0	0.0	0.013	0.003	0.008
NM: Santa Fe	4	0.1	0.0	0.0	0.011	0.005	0.008
NV: Las Vegas	5	0.2	0.0	0.1	0.012	0.004	0.007
NY: Albany	4	0.0	0.0	0.0	0.020	0.006	0.014
NY: New York City	6	0.1	0.0	0.0	0.015	0.003	0.010
NY: Yaphank	7	0.1	0.0	0.0	0.012	0.003	0.008
OH: Columbus	4				0.016	0.012	0.013
OH: Painesville	8	0.2	0.0	0.1	0.015	0.003	0.011
OH: Ross	8	0.0	0.0	0.0	0.019	0.003	0.013
PA: Harrisburg	8	0.2	0.1	0.1	0.014	0.003	0.009
SC: Barnwell	2	0.0	0.0	0.0	0.008	0.008	0.008
SC: Columbia	8	0.2	0.0	0.1	0.013	0.004	0.009
SD: Pierre	6	0.3	0.1	0.2	0.023	0.010	0.016
TN: Knoxville	8	0.7	0.1	0.3	0.019	0.007	0.012

Table 3 (continued)
Gross Beta in Airborne Particulates
February 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
TN: Nashville	8	0.2	0.1	0.1	0.021	0.009	0.015
TN: Oak Ridge/Bethel	8	0.3	0.1	0.2	0.014	0.006	0.010
TN: Oak Ridge/K25	8	0.3	0.1	0.2	0.013	0.005	0.009
TN: Oak Ridge/Melton	8	0.3	0.1	0.2	0.014	0.006	0.010
TN: Oak Ridge/Y12 E	8	0.4	0.1	0.2	0.013	0.005	0.010
TN: Oak Ridge/Y12 W	8	0.2	0.1	0.1	0.014	0.005	0.010
TX: Austin	7	0.2	0.0	0.1	0.018	0.004	0.012
TX: El Paso	8	1.3	0.2	0.7	0.023	0.007	0.011
UT: Salt Lake City	8	0.3	0.0	0.1	0.009	0.004	0.007
VA: Lynchburg	8	0.3	0.1	0.2	0.012	0.004	0.008
WA: Spokane	8	0.2	0.0	0.1	0.014	0.003	0.007
WI: Madison	8	0.2	0.0	0.1	0.024	0.011	0.017

Table 4
Gross Beta in Airborne Particulates
March 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
AL: Montgomery	5	0.0	0.0	0.0	0.028	0.010	0.017
AR: Little Rock	9	0.2	0.0	0.1	0.021	0.008	0.013
AZ: Phoenix	5	0.8	0.2	0.6	0.018	0.008	0.013
CA: Berkeley	9	0.1	0.0	0.0	0.012	0.003	0.005
CA: Los Angeles	9	0.3	0.0	0.1	0.012	0.003	0.008
CO: Denver	7	1.3	0.2	0.6	0.023	0.006	0.012
CT: Hartford	9	0.1	0.0	0.1	0.011	0.003	0.007
DE: Wilmington	9	0.2	0.0	0.1	0.015	0.005	0.009
FL: Jacksonville	1	0.0	0.0	0.0	0.012	0.012	0.012
FL: Miami	5	0.0	0.0	0.0	0.013	0.007	0.008
HI: Honolulu	8	0.2	0.1	0.1	0.005	0.001	0.003
IA: Iowa City	9	0.3	0.0	0.2	0.020	0.005	0.013
ID: Boise	8	0.5	0.1	0.2	0.012	0.003	0.007
ID: Idaho Falls	9				0.016	0.004	0.010
IN: Indianapolis	9	0.3	0.1	0.2	0.022	0.006	0.014
KS: Topeka	4	0.4	0.0	0.2	0.024	0.009	0.016
ME: Augusta	8	0.1	0.0	0.0	0.015	0.004	0.010
MI: Lansing	9	0.1	0.0	0.1	0.019	0.003	0.010
MN: Welch	18	0.2	0.0	0.1	0.016	0.003	0.009
MS: Jackson	9	0.1	0.0	0.1	0.020	0.004	0.011
NC: Charlotte	6	0.1	0.0	0.0	0.017	0.011	0.012
NC: Wilmington	4				0.011	0.008	0.010
ND: Bismarck	5	0.3	0.0	0.2	0.028	0.005	0.018
NH: Concord	9	0.1	0.0	0.0	0.015	0.003	0.009
NM: Santa Fe	3	0.1	0.0	0.1	0.010	0.007	0.008
NV: Las Vegas	9	0.2	0.0	0.2	0.015	0.003	0.010
NY: Albany	4	0.1	0.0	0.0	0.015	0.007	0.010
NY: New York City	10	0.1	0.0	0.0	0.016	0.005	0.009
NY: Yaphank	7	0.1	0.0	0.0	0.015	0.005	0.009
OH: Columbus	3				0.012	0.010	0.011
OH: Painesville	9	0.1	0.0	0.1	0.017	0.003	0.010
OH: Ross	8				0.021	0.007	0.012
PA: Harrisburg	9	0.3	0.1	0.1	0.015	0.004	0.010
SC: Barnwell	2	0.0	0.0	0.0	0.014	0.009	0.012
SC: Columbia	9	0.2	0.0	0.1	0.017	0.005	0.011
SD: Pierre	6	0.3	0.0	0.1	0.024	0.008	0.018
TN: Knoxville	9	0.7	0.1	0.4	0.021	0.008	0.015
TN: Nashville	9	0.2	0.1	0.1	0.027	0.008	0.015

Table 4 (continued)
Gross Beta in Airborne Particulates
March 1998

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m ³)	Avg	Max	Min (pCi/m ³)	Avg
TN: Oak Ridge/Bethel	9	0.4	0.1	0.2	0.017	0.007	0.012
TN: Oak Ridge/K25	9	0.3	0.1	0.2	0.015	0.006	0.011
TN: Oak Ridge/Melton	9	0.3	0.1	0.2	0.014	0.007	0.011
TN: Oak Ridge/Y12 E	9	0.6	0.0	0.2	0.016	0.006	0.011
TN: Oak Ridge/Y12 W	9	0.2	0.1	0.1	0.019	0.007	0.012
TX: Austin	9	0.2	0.1	0.1	0.013	0.004	0.010
TX: El Paso	8	1.0	0.4	0.6	0.030	0.006	0.016
UT: Salt Lake City	8	0.3	0.0	0.1	0.018	0.004	0.010
VA: Lynchburg	9	0.4	0.1	0.2	0.014	0.005	0.009
WA: Spokane	9	0.2	0.1	0.1	0.014	0.004	0.008
WI: Madison	9	0.5	0.1	0.2	0.021	0.004	0.012

Table 5
Gross Beta and Specific Gamma in Precipitation
January 1998

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AL: Montgomery	0.84	0.26	Be7	52 48
AR: Little Rock	1.58	0.31	Be7	55 35
AZ: Phoenix	0.91	0.29		ND
CT: Hartford	2.35	0.37	Be7	41 24
DE: Wilmington	1.30	0.30	Be7	52 24
FL: Jacksonville	0.38	0.22		ND
FL: Miami	0.71	0.26		ND
HI: Honolulu	1.57	0.33		ND
IA: Iowa City	1.00	0.28		ND
ID: Boise	0.52	0.24		ND
ID: Idaho Falls	2.14	0.34		ND
MN: Minneapolis	2.90	0.41		ND
MN: Welch	0.24	0.22		ND
NC: Charlotte	1.64	0.31	Be7	34 23
			K40	36 11
NC: Wilmington	0.72	0.26	Be7	21 21
NY: Albany	0.99	0.28	Be7	38 25
NY: Yaphank	1.41	0.31	Be7	88 36
OH: Painesville	6.48	0.55	Be7	77 34
OR: Portland	1.33	0.30		ND
PA: Harrisburg	1.39	0.31		ND
SC: Barnwell	1.27	0.30		ND
SC: Columbia	2.31	0.37	Pb212	4.8 3.0
TN: Knoxville	0.49	0.23	Be7	26 23
TN: Nashville	1.46	0.32	Be7	64 28
TX: Austin	0.57	0.23		ND
TX: El Paso	3.70	0.59	Tl208	5.9 8.9
UT: Salt Lake City	1.24	0.30		ND
VA: Lynchburg	0.97	0.27		ND
WI: Madison	1.55	0.31		ND

Note: ND = Not Detected

Table 6
Gross Beta and Specific Gamma in Precipitation
February 1998

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AL: Montgomery	0.73	0.26	Be7	40 40
AR: Little Rock	2.37	0.38	Be7	27 28
			Pb212	6.1 8.2
AZ: Phoenix	0.52	0.24		ND
CT: Hartford	1.14	0.28		ND
DE: Wilmington	1.14	0.29	Be7	67 26
FL: Jacksonville	0.65	0.25		ND
FL: Miami	0.91	0.29		ND
IA: Iowa City	0.74	0.27		ND
ID: Boise	0.94	0.28		ND
ID: Idaho Falls	7.11	0.61		ND
MN: Minneapolis	3.84	0.49	Be7	94 30
MN: Welch	5.18	0.52		ND
MS: Jackson	0.62	0.25		ND
NC: Charlotte	0.83	0.27	Be7	32 25
NC: Wilmington	0.73	0.26		ND
ND: Bismarck	1.27	0.30		ND
NM: Santa Fe	1.47	0.33	Be7	32 25
NV: Las Vegas	0.48	0.23	Pb212	4.8 5.3
NY: Albany	1.07	0.30		ND
NY: Yaphank	1.41	0.30	Be7	39 27
OH: Painesville	3.07	0.41	Be7	45 24
OR: Portland	1.26	0.30	Be7	41 26
			Pb212	4.6 5.5
PA: Harrisburg	1.21	0.30	Be7	58 34
SC: Barnwell	0.93	0.28	Be7	30 17
SC: Columbia	3.79	0.44		ND
TN: Knoxville	0.73	0.25	Be7	23 18
TN: Nashville	1.13	0.30	Be7	59 19
			K40	12 15
TX: Austin	0.86	0.27	Be7	32 20
TX: El Paso	0.70	0.36	Pb212	5.9 4.5
UT: Salt Lake City	0.73	0.26		ND
VA: Lynchburg	1.21	0.30		ND
WI: Madison	1.35	0.30	Be7	28 17

Note: ND = Not Detected

Table 7
Gross Beta and Specific Gamma in Precipitation
March 1998

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AR: Little Rock	0.81	0.26		ND
AZ: Phoenix	0.98	0.28		ND
CO: Denver	6.17	0.56		ND
CT: Hartford	1.59	0.32	Be7	62 45
DE: Wilmington	1.58	0.36	Be7	96 50
FL: Jacksonville	1.33	0.30		ND
FL: Miami	0.63	0.25		ND
HI: Honolulu	1.15	0.31		ND
IA: Iowa City	0.53	0.23		ND
ID: Idaho Falls	1.45	0.32		ND
MN: Minneapolis	1.07	0.29		ND
MN: Welch	0.06	0.21	Pb212	3.7 6.4
NC: Charlotte	0.84	0.32	Be7	48 42
NC: Wilmington	0.90	0.32		ND
ND: Bismarck	0.52	0.24		ND
NM: Santa Fe	2.93	0.40		ND
NV: Las Vegas	1.55	0.32		ND
NY: Albany	0.64	0.31		ND
NY: Yaphank	1.30	0.36	Be7	56 49
			K40	35 58
OH: Painesville	3.14	0.41		ND
OR: Portland	1.64	0.32		ND
PA: Harrisburg	1.20	0.30		ND
SC: Barnwell	0.66	0.25	Tl208	3.1 4.5
SC: Columbia	1.41	0.30	K40	33 42
TN: Knoxville	1.08	0.28	Tl208	2.6 4.2
TN: Nashville	2.03	0.36	Be7	84 62
TX: Austin	2.39	0.37		ND
TX: El Paso	5.75	0.58		ND
UT: Salt Lake City	0.68	0.26	Pb212	5.6 7.1
			Ra224	40 45
VA: Lynchburg	1.01	0.34		ND
WI: Madison	0.90	0.26		ND

Note: ND = Not Detected

Table 8
Tritium in Precipitation
January - March 1998

Location	January 1998		February 1998		March 1998	
	pCi/L $\pm 2u$		pCi/L $\pm 2u$		pCi/L $\pm 2u$	
AL: Montgomery	21	84	43	81	NS	
AR: Little Rock	-3	80	-91	82	37	85
AZ: Phoenix	28	81	-51	85	-22	82
CO: Denver	NS		NS		34	85
CT: Hartford	36	85	-22	77	-4	81
DE: Wilmington	36	85	37	80	-50	79
FL: Jacksonville	34	82	-37	79	45	82
FL: Miami	-5	83	2	78	-2	81
HI: Honolulu	-44	78	NS		9	84
IA: Iowa City	12	81	-23	84	-22	80
ID: Boise	-33	79	-81	82	NS	
ID: Idaho Falls	46	82	-68	83	-15	82
MN: Minneapolis	43	82	-25	84	7	81
MN: Welch	23	81	41	87	37	83
MS: Jackson	NS		37	80	NS	
NC: Charlotte	-38	82	-41	77	13	82
NC: Wilmington	-5	83	4	78	-16	80
ND: Bismarck	NS		-66	83	-20	80
NM: Santa Fe	NS		41	87	15	81
NV: Las Vegas	NS		23	80	-19	82
NY: Albany	-84	80	45	81	37	83
NY: Yaphank	21	84	99	83	13	83
OH: Painesville	23	81	18	86	66	84
OR: Portland	25	81	-15	84	13	83
PA: Harrisburg	-36	82	68	82	-43	81
SC: Barnwell	335	95	284	91	26	83
SC: Columbia	-20	83	2	79	-58	78
TN: Knoxville	-7	83	21	80	39	83
TN: Nashville	-18	83	52	81	-45	79
TX: Austin	3	80	-56	83	-38	79
TX: El Paso	56	83	-38	84	-15	82
UT: Salt Lake City	35	82	-94	81	-36	82
VA: Lynchburg	-15	83	11	79	4	81
WI: Madison	61	83	-18	85	29	83

Note: NS = No Sample

Plutonium and Uranium in Airborne Particulates and Precipitation

Environmental radiation levels of plutonium and uranium are determined by the analysis of annually composited samples (air filters) collected from the continuously operating airborne particulate samplers.

Concentrations of plutonium-238, combined plutonium-239 and 240, and uranium-234, 235, and 238 are determined by alpha spectrometry following chemical separation. The volume of air represented by the annual composite ranges from 120,000 to 500,000 cubic meters.

Plutonium and uranium results are published when they become available.

2. Water Program

The ERAMS water program provides data on radionuclide concentrations in the nation's rivers, streams, and drinking water supplies.

Surface Water

Quarterly grab samples are taken downstream from nuclear facilities in as many as 58 stations. Surface water samples are analyzed for tritium quarterly and gamma-emitting radionuclides annually. Tritium is a primary potential radioactive pollutant from nuclear power plants and weapons production activities.

Table 9
Tritium in Surface Water
January - March 1998

Location	Source	Date Collected	³ H pCi/L ± 2σ	
AL: Decatur	Tennessee River	01/14/98	12	85
AL: Gordon	Chattahoochee River	01/06/98	-16	79
AL: Scottsboro	Tennessee River	01/13/98	-30	82
AR: Little Rock	Arkansas River	01/08/98	25	82
CA: Clay Station	Folsom S. Canal	02/24/98	-35	82
CA: Eureka	Humboldt Bay	01/09/98	-76	81
CA: San Onofre	Pacific Ocean	03/30/98	-45	82
CO: Platteville	South Platte River	01/07/98	24	85
CT: E. Haddam	Connecticut River	03/31/98	27	84
CT: Waterford	Long Island Sound	03/31/98	13	84
FL: Crystal River	Gulf Of Mexico	03/16/98	-44	83
FL: Ft. Pierce	Atlantic Ocean	01/09/98	-31	84
FL: Homestead	Biscayne Bay	01/23/98	171	88
GA: Baxley	Altamaha River	01/07/98	57	87
IA: Cedar Rapids	Cedar River	01/06/98	8	84
ID: Buhl	Snake River	01/08/98	56	84
IL: E. Moline	Mississippi River	01/08/98	44	84
IL: Morris	Illinois River	01/20/98	104	85
IL: Zion	Lake Michigan	03/31/98	67	87
KS: Le Roy	Neosho River	01/07/98	-11	84
KS: Le Roy	Neosho River	03/24/98	30	86
LA: New Orleans	Mississippi River	01/26/98	68	83
MA: Plymouth	Cape Cod Bay	03/02/98	56	81
MD: Conowingo	Susquehanna River	01/13/98	35	82
MD: Lusby	Chesapeake Bay	01/13/98	-12	80
ME: Wiscasset	Montseway Bay	01/06/98	-48	83
MI: Bridgman	Lake Michigan	01/12/98	129	89
MI: Charlevoix	Lake Michigan	01/07/98	81	84
MI: Monroe	Lake Erie	01/12/98	29	86
MI: S. Haven	Lake Michigan	01/15/98	40	82
MN: Monticello	Mississippi River	01/20/98	37	82
MN: Red Wing	Mississippi River	01/28/98	33	81
MS: Port Gibson	Mississippi River	01/06/98	32	83
NC: Charlotte	Catawba River	01/07/98	246	89
NC: Southport	Atlantic Ocean	01/12/98	-3	85
NV: Boulder City	Colorado River	03/31/98	5	84
NY: Chelsea	Hudson River	01/12/98	110	85
NY: Croton-On-Hudson	Hudson River	03/31/98	27	85
NY: Oswego	Lake Ontario	03/18/98	190	92
OR: Bradwood	Columbia River	01/22/98	19	81

Table 9 (continued)
Tritium in Surface Water
January - March 1998

Location	Source	Date Collected	³ H pCi/L ± 2 <i>u</i>	
PA: Danville	Susquehanna River	01/14/98	124	86
PA: Philadelphia	Delaware River - Baxter	01/06/98	12	82
PA: Philadelphia	Schuylkill River - Belmont	01/06/98	272	93
PA: Philadelphia	Schuylkill River - Queen	01/06/98	123	91
SC: Allendale	Savannah River	01/05/98	1130	120
SC: Broad River	Broad River	01/14/98	133	86
SC: Columbia	Broad River	01/06/98	5800	210
TN: Daisy	Tennessee River	01/29/98	78	83
TN: Oak Ridge	Clinch River	01/21/98	415	98
TX: Matagorda	Colorado River	01/08/98	4	85
VA: Doswell	North Anna River	01/07/98	2640	160
VA: Newport News	James River	01/19/98	-25	85
VT: Vernon	Connecticut River	02/02/98	49	82
WA: Northport	Columbia River	01/21/98	175	88
WA: Richland	Columbia River	01/06/98	13	85
WI: Two Creeks	Lake Michigan	01/12/98	79	84
WI: Victory	Mississippi River	01/12/98	-3	84
WV: Wheeling	Ohio River	01/06/98	40	81

Drinking Water

This program monitors ambient radiation levels in drinking water in as many as 78 sites. These data serve to assess trends and anomalies in concentrations, and to compare with standards set forth in the EPA "National Interim Primary Drinking Water Regulations." These regulations provide for approval of supplies when the combined radium-226 and radium-228 levels do not exceed 5 pCi/L, when the gross alpha (excluding radon and uranium) levels do not exceed 15 pCi/L, when tritium levels do not exceed 20,000 pCi/L, when the strontium-90 levels do not exceed 8 pCi/L, and when the gross beta levels do not exceed 50 pCi/L.

Grab samples are taken at the 78 sites which are either major population centers or selected nuclear facility environs.

The analyses include (a) tritium on a quarterly basis; (b) gross alpha, gross beta, strontium-90, and gamma on annual composites; (c) radium-226 if the gross alpha exceeds 2 pCi/L and radium-228 if the radium-226 falls between 3 and 5 pCi/L; (d) iodine-131 on one quarterly sample per year for each station; and (e) an annual composite for plutonium-238, combined plutonium-239 and 240, and uranium-234, 235, and 238 for stations that demonstrate gross alpha levels greater than 2 pCi/L.

Table 10
Tritium in Drinking Water
January - March 1998

Location	Date Collected	³ H pCi/L ± 2 <i>u</i>	
AK: Fairbanks	03/03/98	51	81
AL: Dothan	01/06/98	41	82
AL: Montgomery	01/08/98	5	80
AL: Muscle Shoals	01/14/98	-13	84
AL: Scottsboro	01/13/98	23	86
AR: Little Rock	01/02/98	-99	81
CA: Berkeley	02/26/98	-14	78
CA: Los Angeles	01/05/98	3	80
CO: Denver	01/07/98	-7	84
CO: Platteville	01/07/98	2	85
CT: Hartford	01/05/98	3	79
DC: Washington	01/22/98	56	83
DE: Dover	01/14/98	-72	82
FL: Miami	01/02/98	-51	78
FL: Tampa	03/09/98	-81	82
GA: Atlanta	01/06/98	-57	83
GA: Savannah	02/12/98	-3	80
HI: Honolulu	01/05/98	-31	78
IA: Cedar Rapids	01/06/98	-21	84
ID: Boise	01/05/98	32	86
ID: Idaho Falls	01/26/98	43	82
IL: Morris	01/06/98	-42	83
IL: W. Chicago	01/26/98	67	83
KS: Topeka	01/02/98	-21	79
LA: New Orleans	01/05/98	3	80
MA: Lawrence	03/23/98	-40	82
MD: Baltimore	01/05/98	-17	84
MD: Conowingo	01/13/98	0	85
ME: Augusta	01/27/98	-2	80
MI: Detroit	01/06/98	137	90
MI: Grand Rapids	01/22/98	27	82
MN: Minneapolis	01/28/98	46	82
MN: Red Wing	01/28/98	-5	80
MO: Jefferson City	01/05/98	35	81
MS: Jackson	01/07/98	-59	82
MS: Port Gibson	01/06/98	-99	81
MT: Helena	02/09/98	58	82
NC: Charlotte	01/07/98	352	97
NC: Raleigh	01/15/98	48	83
ND: Bismarck	01/02/98	36	81

Table 10 (continued)
Tritium in Drinking Water
January - March 1998

Location	Date Collected	³ H pCi/L ± 2 <i>u</i>	
NE: Lincoln	02/03/98	0	80
NH: Concord	01/05/98	-2	84
NM: Santa Fe	02/06/98	-13	79
NV: Las Vegas	01/05/98	-10	84
NY: Albany	01/05/98	-33	82
NY: Niagara Falls	01/14/98	12	85
NY: Syracuse	01/15/98	-19	84
OH: Cincinnati	03/02/98	-45	83
OH: Columbus	01/27/98	-52	79
OH: E. Liverpool	01/28/98	93	84
OH: Painesville	01/05/98	69	88
OH: Toledo	01/07/98	33	86
OK: Oklahoma	01/27/98	71	83
OR: Portland	01/05/98	-34	82
PA: Columbia	01/15/98	-14	84
PA: Harrisburg	01/15/98	-73	81
PA: Philadelphia - Baxter	01/06/98	-35	84
PA: Philadelphia - Belmont	01/06/98	183	91
PA: Philadelphia - Queen	01/06/98	-10	84
PA: Pittsburgh	01/28/98	36	82
PC: Corozal	01/06/98	-18	84
RI: Providence	01/08/98	27	86
SC: Barnwell	01/12/98	-41	83
SC: Columbia	01/07/98	62	87
SC: Columbia	01/21/98	21	81
SC: Jenkinsville	01/16/98	-50	83
TN: Chattanooga	01/07/98	84	88
TN: Knoxville	01/05/98	21	80
TN: Oak Ridge - Anderson Co #768	03/25/98	10	85
TN: Oak Ridge - Anderson Co #772	03/25/98	-17	84
TN: Oak Ridge - Knox Co #371	03/25/98	-12	85
TN: Oak Ridge - Roane Co #360	03/24/98	22	86
TN: Oak Ridge - Roane Co #4442	03/24/98	470	100
TX: Austin	02/12/98	0	80
VA: Lynchburg	01/05/98	35	86
WA: Richland	01/06/98	-2	84
WA: Seattle	01/06/98	-33	83
WI: Genoa	01/12/98	-58	82
WI: Madison	01/02/98	-41	78

3. Milk Program

Pasteurized Milk

Milk is a reliable indicator of the general population's intake of radionuclides since it is consumed fresh by a large segment of the population and can contain several of the biologically significant radionuclides that result from environmental releases from nuclear activities. A primary function of this program is to obtain reliable monitoring data relative to current radionuclide concentrations and determine any long-term trends.

Monthly samples are collected at approximately 55 sampling sites. The samples are composited, according to production, from the major milk suppliers representing more than 80 percent of the milk consumed in a given population center.

The samples are analyzed for gamma-emitting nuclides, including iodine-131, barium-140, cesium-137, and potassium-40. Total potassium concentrations in g/L are determined from potassium-40 activities assuming natural isotopic abundances. All samples collected in July are analyzed for strontium-90.

Iodine-131, barium-140, cesium-137, and potassium-40 are determined by gamma spectral analysis. Strontium-90 is determined by beta counting a total strontium precipitate that has been chemically separated by ion exchange.

Table 11
Radionuclides in Pasteurized Milk
January 1998

Location	Date Collected	K g/L $\pm 2u$		¹³⁷ Cs pCi/L $\pm 2u$		¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
AL: Montgomery	01/06/98	1.621	0.089	ND		ND	ND
AR: Little Rock	01/05/98	1.609	0.048	ND		ND	ND
CA: Los Angeles	01/13/98	1.621	0.090	ND		ND	ND
CA: Sacramento	01/12/98	1.513	0.089	ND		ND	ND
CA: San Francisco	01/08/98	1.680	0.092	ND		ND	ND
CT: Hartford	01/06/98	1.644	0.083	ND		ND	ND
DE: Wilmington	01/14/98	1.656	0.089	ND		ND	ND
FL: Tampa	01/05/98	1.704	0.070	4.7	1.9	ND	ND
GA: Atlanta	01/28/98	1.609	0.083	ND		ND	ND
HI: Honolulu	01/05/98	1.764	0.084	ND		ND	ND
IA: Des Moines	01/05/98	1.597	0.090	ND		ND	ND
IL: Chicago	01/08/98	1.621	0.049	ND		ND	ND
IN: Indianapolis	01/05/98	1.668	0.082	ND		ND	ND
KS: Wichita	01/13/98	1.752	0.093	ND		ND	ND
KY: Louisville	01/06/98	1.644	0.089	ND		ND	ND
MA: Boston	01/09/98	1.656	0.049	ND		ND	ND
MD: Baltimore	01/08/98	1.704	0.049	ND		ND	ND
ME: Portland	01/06/98	1.621	0.048	ND		ND	ND
MI: Detroit	01/06/98	1.61	0.15	ND		ND	ND
MI: Grand Rapids	01/12/98	1.680	0.081	ND		ND	ND
MN: St. Paul	01/05/98	1.704	0.050	ND		ND	ND
MO: Kansas City	01/14/98	1.537	0.081	ND		ND	ND
MS: Jackson	01/07/98	1.609	0.088	ND		ND	ND
ND: Minot	01/05/98	1.621	0.082	ND		ND	ND
NJ: Trenton	01/02/98	1.668	0.049	ND		ND	ND
NM: Albuquerque	01/26/98	1.54	0.12	ND		ND	ND
NV: Las Vegas	01/26/98	1.680	0.093	ND		ND	ND
NY: Buffalo	01/12/98	1.57	0.12	ND		ND	ND
NY: Syracuse	01/06/98	1.632	0.089	ND		ND	ND
OH: Cincinnati	01/13/98	1.692	0.069	ND		ND	ND
OH: Cleveland	01/05/98	1.740	0.070	ND		ND	ND
OR: Portland	01/05/98	1.644	0.048	ND		ND	ND
PA: Philadelphia	01/06/98	1.704	0.049	ND		ND	ND
PA: Pittsburgh	01/12/98	1.51	0.12	ND		ND	ND
PC: Cristobal	01/23/98	1.656	0.081	3.2	2.5	ND	ND
PR: San Juan	01/16/98	1.644	0.082	ND		ND	ND
SC: Charleston	01/08/98	1.609	0.049	ND		ND	ND
TX: Austin	01/02/98	1.54	0.15	ND		ND	ND
TX: Ft. Worth	01/06/98	1.644	0.068	ND		ND	ND

Note: ND = Not Detected

Table 11 (continued)
Radionuclides in Pasteurized Milk
January 1998

Location	Date Collected	K g/L $\pm 2u$	¹³⁷ Cs pCi/L $\pm 2u$	¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
VA: Norfolk	01/06/98	1.55 0.12	ND	ND	ND
VT: Burlington	01/15/98	1.656 0.083	ND	ND	ND
WA: Seattle	01/05/98	1.609 0.080	ND	ND	ND
WA: Spokane	01/05/98	1.621 0.049	ND	ND	ND
WV: Charleston	01/05/98	1.621 0.092	ND	ND	ND

Note: ND = Not Detected

Table 12
Radionuclides in Pasteurized Milk
February 1998

Location	Date Collected	K g/L $\pm 2u$		¹³⁷ Cs pCi/L $\pm 2u$		¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
AL: Montgomery	02/05/98	1.537	0.090	ND		ND	ND
AR: Little Rock	02/09/98	1.621	0.081	ND		ND	ND
AZ: Phoenix	02/25/98	1.585	0.092	ND		ND	ND
CA: Los Angeles	02/09/98	1.525	0.080	ND		ND	ND
CA: Sacramento	02/25/98	1.561	0.093	ND		ND	ND
CA: San Francisco	02/09/98	1.656	0.067	ND		ND	ND
CT: Hartford	02/09/98	1.585	0.086	ND		ND	ND
DE: Wilmington	02/09/98	1.668	0.083	ND		ND	ND
FL: Tampa	02/09/98	1.54	0.12	ND		ND	ND
GA: Atlanta	02/25/98	1.644	0.081	ND		ND	ND
HI: Honolulu	02/05/98	1.680	0.092	ND		ND	ND
IA: Des Moines	02/10/98	1.644	0.081	ND		ND	ND
IL: Chicago	02/05/98	1.621	0.082	ND		ND	ND
IN: Indianapolis	02/12/98	1.597	0.081	ND		ND	ND
KS: Wichita	02/10/98	1.53	0.15	ND		ND	ND
KY: Louisville	02/11/98	1.54	0.15	ND		ND	ND
MA: Boston	02/03/98	1.525	0.091	ND		ND	ND
MD: Baltimore	02/06/98	1.68	0.15	ND		ND	ND
MI: Detroit	02/03/98	1.680	0.083	ND		ND	ND
MI: Grand Rapids	02/04/98	1.644	0.049	ND		ND	ND
MN: St. Paul	02/11/98	1.632	0.082	ND		ND	ND
MO: Kansas City	02/24/98	1.668	0.083	ND		ND	ND
MS: Jackson	02/03/98	1.573	0.089	ND		ND	ND
NC: Charlotte	02/27/98	1.56	0.12	ND		ND	ND
ND: Minot	02/03/98	1.597	0.049	ND		ND	ND
NJ: Trenton	02/06/98	1.72	0.15	ND		ND	ND
NM: Albuquerque	02/27/98	1.573	0.093	ND		ND	ND
NV: Las Vegas	02/09/98	1.573	0.080	ND		ND	ND
NY: Buffalo	02/06/98	1.644	0.049	ND		ND	ND
NY: Syracuse	02/02/98	1.549	0.081	ND		ND	ND
OH: Cincinnati	02/11/98	1.549	0.091	ND		ND	ND
OH: Cleveland	02/26/98	1.585	0.080	ND		ND	ND
OR: Portland	02/03/98	1.45	0.14	ND		ND	ND
PA: Philadelphia	02/04/98	1.621	0.080	ND		ND	ND
PA: Pittsburgh	02/04/98	1.621	0.081	ND		ND	ND
PC: Cristobal	02/18/98	1.609	0.068	3.7	2.0	ND	ND
PR: San Juan	02/13/98	1.70	0.13	ND		ND	ND
SC: Charleston	02/05/98	1.668	0.089	ND		ND	ND
TN: Chattanooga	02/03/98	1.704	0.092	ND		ND	ND

Note: ND = Not Detected

Table 12 (continued)
Radionuclides in Pasteurized Milk
February 1998

Location	Date Collected	K g/L $\pm 2u$	¹³⁷ Cs pCi/L $\pm 2u$	¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
TN: Knoxville	02/02/98	1.680 0.083	ND	ND	ND
TX: Austin	02/19/98	1.561 0.091	ND	ND	ND
TX: Ft. Worth	02/09/98	1.549 0.087	ND	ND	ND
TX: San Antonio	02/11/98	1.573 0.067	ND	ND	ND
VA: Norfolk	02/02/98	1.668 0.068	ND	ND	ND
VT: Burlington	02/20/98	1.63 0.12	ND	ND	ND
WA: Seattle	02/04/98	1.609 0.049	ND	ND	ND
WA: Spokane	02/04/98	1.644 0.092	ND	ND	ND
WV: Charleston	02/02/98	1.50 0.12	ND	ND	ND

Note: ND = Not Detected

Table 13
Radionuclides in Pasteurized Milk
March 1998

Location	Date Collected	K g/L $\pm 2u$		¹³⁷ Cs pCi/L $\pm 2u$		¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
AL: Montgomery	03/04/98	1.55	0.12	ND		ND	ND
AR: Little Rock	03/10/98	1.692	0.081	ND		ND	ND
AZ: Phoenix	03/17/98	1.668	0.083	ND		ND	ND
CA: Los Angeles	03/04/98	1.656	0.080	ND		ND	ND
CA: San Francisco	03/06/98	1.573	0.069	ND		ND	ND
CT: Hartford	03/03/98	1.692	0.081	ND		ND	ND
DE: Wilmington	03/10/98	1.585	0.081	ND		ND	ND
GA: Atlanta	03/30/98	1.585	0.079	ND		ND	ND
HI: Honolulu	03/05/98	1.716	0.069	ND		ND	ND
IA: Des Moines	03/02/98	1.56	0.12	ND		ND	ND
IL: Chicago	03/12/98	1.632	0.080	ND		ND	ND
IN: Indianapolis	03/09/98	1.609	0.079	ND		ND	ND
KS: Wichita	03/18/98	1.680	0.049	ND		ND	ND
KY: Louisville	03/02/98	1.668	0.088	ND		ND	ND
MA: Boston	03/06/98	1.704	0.093	ND		ND	ND
MD: Baltimore	03/06/98	1.621	0.081	ND		ND	ND
ME: Portland	03/02/98	1.63	0.15	ND		ND	ND
MI: Grand Rapids	03/04/98	1.704	0.069	ND		ND	ND
MN: St. Paul	03/02/98	1.621	0.079	ND		ND	ND
MO: Kansas City	03/12/98	1.585	0.049	ND		ND	ND
MS: Jackson	03/04/98	1.680	0.069	ND		ND	ND
NC: Charlotte	03/19/98	1.609	0.048	ND		ND	ND
NJ: Trenton	03/05/98	1.632	0.069	ND		ND	ND
NM: Albuquerque	03/25/98	1.585	0.080	ND		ND	ND
NV: Las Vegas	03/03/98	1.644	0.081	ND		ND	ND
NY: Buffalo	03/06/98	1.64	0.12	ND		ND	ND
NY: Syracuse	03/06/98	1.656	0.081	ND		ND	ND
OH: Cincinnati	03/19/98	1.53	0.29	ND		ND	ND
OH: Cleveland	03/16/98	1.728	0.069	ND		ND	ND
OR: Portland	03/02/98	1.45	0.14	ND		ND	ND
PA: Philadelphia	03/03/98	1.70	0.15	ND		ND	ND
PA: Pittsburgh	03/02/98	1.632	0.081	ND		ND	ND
PC: Cristobal	03/25/98	1.513	0.078	3.2	2.2	ND	ND
PR: San Juan	03/13/98	1.656	0.088	ND		ND	ND
SC: Charleston	03/05/98	1.597	0.080	ND		ND	ND
TN: Chattanooga	03/02/98	1.597	0.087	ND		ND	ND
TN: Knoxville	03/02/98	1.632	0.082	ND		ND	ND
TN: Memphis	03/26/98	1.466	0.090	ND		ND	ND
TX: Ft. Worth	03/30/98	1.74	0.15	ND		ND	ND

Note: ND = Not Detected

Table 13 (continued)
Radionuclides in Pasteurized Milk
March 1998

Location	Date Collected	K g/L $\pm 2u$	¹³⁷ Cs pCi/L $\pm 2u$	¹⁴⁰ Ba pCi/L $\pm 2u$	¹³¹ I pCi/L $\pm 2u$
TX: San Antonio	03/05/98	1.585 0.080	ND	ND	ND
VA: Norfolk	03/04/98	1.525 0.087	ND	ND	ND
VT: Burlington	03/09/98	1.632 0.091	ND	ND	ND
WA: Seattle	03/03/98	1.728 0.092	ND	ND	ND
WA: Spokane	03/04/98	1.63 0.15	ND	ND	ND
WV: Charleston	03/02/98	1.57 0.14	ND	ND	ND

Note: ND = Not Detected

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For More Information

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