

ENVIRONMENTAL

RADIATION

DATA

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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). Data from similar networks operated by contributing States, Canada, Mexico, and the Pan American Health Organization are reported in the ERD when available. 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 levels, 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 its indebtedness to 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 those 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 composite of the March, April, and May precipitation samples is analyzed for plutonium-238, combined plutonium-239 and 240, and uranium-234, 235, and 238.

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
July 1996

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	4	0.0	0.0	0.0	0.005	0.002	0.004
AL: Montgomery	9	0.2	0.0	0.0	0.018	0.008	0.011
AR: Little Rock	7	0.3	0.1	0.2	0.020	0.006	0.012
AZ: Phoenix	4	0.5	0.2	0.3	0.014	0.009	0.011
CA: Berkeley	9	0.5	0.0	0.1	0.007	0.002	0.003
CA: Los Angeles	9	0.2	0.0	0.1	0.010	0.007	0.009
CO: Denver	9	0.7	0.4	0.5	0.015	0.008	0.010
CT: Hartford	9	0.1	0.0	0.1	0.010	0.004	0.007
DE: Wilmington	7	0.2	0.0	0.1	0.017	0.007	0.010
FL: Jacksonville	9	0.1	0.0	0.0	0.018	0.007	0.010
FL: Miami	9	0.1	0.0	0.0	0.022	0.005	0.011
HI: Honolulu	6	0.2	0.1	0.1	0.004	0.002	0.003
IA: Iowa City	9	0.8	0.3	0.5	0.018	0.006	0.010
ID: Boise	9	0.8	0.3	0.5	0.013	0.007	0.010
ID: Idaho Falls	8				0.016	0.006	0.009
IN: Indianapolis	9	0.7	0.2	0.4	0.017	0.008	0.012
KS: Topeka	7	3.1	0.3	1.1	0.013	0.007	0.010
ME: Augusta	9	0.2	0.0	0.1	0.010	0.003	0.006
MI: Lansing	9	0.4	0.1	0.2	0.014	0.006	0.009
MN: Welch	9	0.7	0.1	0.3	0.012	0.006	0.009
MS: Jackson	7	0.3	0.0	0.1	0.017	0.005	0.011
NC: Charlotte	7	0.2	0.0	0.1	0.024	0.010	0.014
NC: Wilmington	4				0.011	0.008	0.010
ND: Bismarck	4	0.4	0.0	0.2	0.009	0.006	0.007
NH: Concord	9	0.2	0.1	0.1	0.009	0.004	0.007
NJ: Trenton	8	0.7	0.1	0.3	0.013	0.006	0.008
NM: Santa Fe	4	0.1	0.0	0.1	0.008	0.005	0.007
NV: Las Vegas	8	0.2	0.1	0.1	0.020	0.010	0.013
NY: Albany	4	0.1	0.0	0.1	0.010	0.006	0.008
NY: New York City	4	0.1	0.1	0.1	0.011	0.006	0.007
NY: Yaphank	9	0.2	0.0	0.1	0.015	0.006	0.008
OH: Painesville	5	0.2	0.1	0.1	0.016	0.008	0.011
OH: Ross	9				0.015	0.008	0.012
PA: Harrisburg	9	0.5	0.1	0.2	0.014	0.007	0.010
PA: Pittsburgh	9	0.1	0.1	0.1	0.019	0.008	0.013
SC: Barnwell	2	0.0	0.0	0.0	0.009	0.007	0.008
SC: Columbia	8	0.4	0.0	0.1	0.026	0.007	0.014
TN: Knoxville	9	0.9	0.0	0.3	0.025	0.013	0.016

Table 2 (continued)
Gross Beta in Airborne Particulates
July 1996

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	0.4	0.1	0.2	0.023	0.008	0.014
TN: Oak Ridge/Bethel	9	0.8	0.0	0.3	0.016	0.009	0.012
TN: Oak Ridge/K25	9	1.0	0.0	0.4	0.015	0.008	0.012
TN: Oak Ridge/Melton	9	1.3	0.0	0.4	0.017	0.008	0.012
TX: Austin	9	0.3	0.1	0.2	0.015	0.004	0.009
TX: El Paso	9	0.7	0.1	0.4	0.013	0.007	0.010
UT: Salt Lake City	7	0.4	0.1	0.2	0.012	0.010	0.011
VA: Lynchburg	8	1.2	0.4	0.7	0.012	0.008	0.011
VA: Virginia Beach	1	0.0	0.0	0.0	0.007	0.007	0.007
WA: Olympia	8	0.2	0.0	0.1	0.005	0.001	0.003
WA: Spokane	9	0.3	0.1	0.2	0.013	0.004	0.008
WI: Madison	9	0.7	0.1	0.3	0.011	0.006	0.009

Table 3
Gross Beta in Airborne Particulates
August 1996

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	3	0.0	0.0	0.0	0.004	0.002	0.003
AL: Montgomery	8	0.1	0.0	0.0	0.018	0.009	0.014
AR: Little Rock	8	0.4	0.1	0.3	0.025	0.013	0.018
AZ: Phoenix	4	0.5	0.2	0.4	0.016	0.009	0.014
CA: Berkeley	8	0.2	0.0	0.1	0.005	0.003	0.004
CA: Los Angeles	9	0.3	0.0	0.1	0.014	0.009	0.011
CO: Denver	9	0.7	0.4	0.5	0.016	0.009	0.011
CT: Hartford	9	0.1	0.0	0.1	0.018	0.005	0.010
DE: Wilmington	9	0.3	0.0	0.1	0.018	0.007	0.013
FL: Jacksonville	7	0.1	0.0	0.0	0.012	0.003	0.007
FL: Miami	8	0.1	0.0	0.0	0.018	0.003	0.009
HI: Honolulu	8	0.2	0.1	0.1	0.004	0.002	0.003
IA: Iowa City	9	1.0	0.3	0.6	0.014	0.008	0.012
ID: Boise	9	1.1	0.2	0.6	0.027	0.006	0.015
ID: Idaho Falls	9				0.021	0.008	0.013
IN: Indianapolis	9	0.7	0.2	0.4	0.033	0.008	0.020
KS: Topeka	7	5.8	0.2	1.9	0.021	0.011	0.015
ME: Augusta	9	0.3	0.0	0.2	0.016	0.003	0.009
MI: Lansing	9	0.4	0.2	0.2	0.020	0.004	0.011
MN: Welch	9	1.2	0.1	0.5	0.017	0.009	0.013
MS: Jackson	9	0.5	0.1	0.2	0.022	0.006	0.013
NC: Charlotte	8	0.4	0.0	0.1	0.028	0.011	0.018
NC: Wilmington	4				0.013	0.008	0.010
ND: Bismarck	5	0.6	0.0	0.4	0.011	0.008	0.009
NH: Concord	9	0.3	0.1	0.2	0.018	0.005	0.010
NJ: Trenton	9	1.2	0.1	0.6	0.018	0.007	0.012
NM: Santa Fe	3	0.1	0.0	0.1	0.009	0.008	0.008
NV: Las Vegas	9	0.3	0.1	0.2	0.023	0.010	0.016
NY: Albany	4	0.2	0.1	0.1	0.014	0.010	0.012
NY: Yaphank	9	0.0	0.0	0.0	0.020	0.004	0.011
OH: Columbus	4	0.3	0.2	0.2	0.018	0.015	0.016
OH: Painesville	6	0.5	0.1	0.2	0.020	0.009	0.014
OH: Ross	9				0.046	0.009	0.024
PA: Harrisburg	9	0.5	0.0	0.3	0.020	0.008	0.014
PA: Pittsburgh	9	0.6	0.2	0.4	0.021	0.009	0.015
SC: Barnwell	2	0.0	0.0	0.0	0.011	0.010	0.010
SC: Columbia	8	0.4	0.1	0.2	0.027	0.011	0.017
TN: Knoxville	7	1.2	0.0	0.3	0.036	0.014	0.024

Table 3 (continued)
Gross Beta in Airborne Particulates
August 1996

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	0.5	0.2	0.3	0.026	0.012	0.021
TN: Oak Ridge/Bethel	9	0.5	0.0	0.2	0.021	0.006	0.014
TN: Oak Ridge/K25	9	0.6	0.0	0.2	0.025	0.007	0.016
TN: Oak Ridge/Melton	9	0.6	0.0	0.3	0.021	0.007	0.015
TN: Oak Ridge/Y12 E	4	0.4	0.0	0.2	0.028	0.018	0.022
TN: Oak Ridge/Y12 W	3	0.2	0.0	0.1	0.027	0.016	0.020
TX: Austin	9	0.3	0.1	0.2	0.014	0.004	0.008
TX: El Paso	9	0.9	0.0	0.5	0.020	0.004	0.010
UT: Salt Lake City	7	0.3	0.1	0.2	0.022	0.011	0.018
VA: Lynchburg	9	1.2	0.6	0.9	0.017	0.007	0.013
VA: Virginia Beach	1	0.0	0.0	0.0	0.007	0.007	0.007
WA: Olympia	7	0.2	0.0	0.1	0.008	0.002	0.005
WA: Spokane	9	0.4	0.1	0.3	0.018	0.003	0.010
WI: Madison	9	0.8	0.1	0.4	0.017	0.004	0.010

Table 4
Gross Beta in Airborne Particulates
September 1996

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	7	0.1	0.0	0.0	0.022	0.009	0.015
AR: Little Rock	8	0.5	0.0	0.2	0.027	0.011	0.018
AZ: Phoenix	4	0.5	0.2	0.3	0.011	0.006	0.009
CA: Berkeley	8	0.1	0.0	0.1	0.014	0.004	0.006
CA: Los Angeles	8	0.4	0.0	0.2	0.015	0.006	0.011
CO: Denver	8	0.5	0.1	0.3	0.018	0.007	0.011
CT: Hartford	9	0.2	0.0	0.1	0.018	0.003	0.009
DE: Wilmington	9	0.3	0.0	0.1	0.023	0.001	0.011
FL: Jacksonville	8	0.1	0.0	0.0	0.017	0.003	0.010
FL: Miami	3	0.0	0.0	0.0	0.017	0.005	0.010
HI: Honolulu	8	0.2	0.1	0.1	0.003	0.002	0.003
IA: Iowa City	8	0.7	0.2	0.5	0.037	0.008	0.018
ID: Boise	7	0.8	0.2	0.6	0.015	0.008	0.011
ID: Idaho Falls	9				0.016	0.005	0.010
IN: Indianapolis	8	0.7	0.1	0.3	0.031	0.010	0.019
KS: Topeka	9	2.9	0.3	0.8	0.030	0.008	0.017
ME: Augusta	8	0.6	0.0	0.2	0.013	0.002	0.007
MI: Lansing	9	1.7	0.1	0.4	0.029	0.004	0.014
MN: Welch	8	1.1	0.1	0.4	0.039	0.005	0.016
MS: Jackson	8	0.6	0.1	0.3	0.024	0.013	0.017
NC: Charlotte	7	0.2	0.1	0.1	0.022	0.011	0.016
NC: Wilmington	2				0.013	0.011	0.012
ND: Bismarck	5	0.4	0.1	0.3	0.019	0.007	0.010
NH: Concord	8	0.6	0.1	0.2	0.018	0.003	0.010
NJ: Trenton	9	2.1	0.2	0.6	0.017	0.006	0.011
NM: Santa Fe	3	0.3	0.2	0.3	0.009	0.006	0.008
NV: Las Vegas	9	0.3	0.1	0.2	0.021	0.009	0.015
NY: Albany	3	0.1	0.0	0.0	0.014	0.013	0.013
NY: Yaphank	9				0.019	0.005	0.011
OH: Columbus	5	0.2	0.0	0.1	0.028	0.012	0.018
OH: Painesville	7	0.2	0.1	0.1	0.020	0.009	0.013
OH: Ross	9				0.056	0.009	0.021
PA: Harrisburg	9	0.6	0.1	0.3	0.018	0.008	0.012
PA: Pittsburgh	9	0.2	0.1	0.1	0.022	0.008	0.014
SC: Barnwell	2	0.0	0.0	0.0	0.012	0.007	0.009
SC: Columbia	7	0.4	0.1	0.3	0.021	0.007	0.015
TN: Knoxville	4	0.2	0.0	0.1	0.028	0.014	0.021
TN: Nashville	8	0.3	0.1	0.2	0.025	0.008	0.017

Table 4 (continued)
Gross Beta in Airborne Particulates
September 1996

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	0.3	0.0	0.1	0.024	0.008	0.013
TN: Oak Ridge/K25	9	0.3	0.0	0.1	0.026	0.008	0.014
TN: Oak Ridge/Melton	9	0.5	0.0	0.2	0.026	0.007	0.014
TN: Oak Ridge/Y12 E	9	0.3	0.0	0.1	0.026	0.008	0.013
TN: Oak Ridge/Y12 W	9	0.2	0.0	0.1	0.024	0.009	0.014
TX: Austin	9	0.4	0.0	0.1	0.022	0.006	0.010
TX: El Paso	9	0.7	0.4	0.6	0.014	0.006	0.010
UT: Salt Lake City	10	0.8	0.1	0.3	0.021	0.006	0.013
VA: Lynchburg	9	0.7	0.2	0.5	0.017	0.008	0.012
WA: Olympia	8	0.2	0.0	0.1	0.006	0.003	0.005
WA: Spokane	8	0.4	0.1	0.2	0.014	0.004	0.008
WI: Madison	9	1.0	0.2	0.4	0.033	0.006	0.016

Table 5
Gross Beta and Specific Gamma in Precipitation
July 1996

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$	
AK: Fairbanks	0.47	0.23		ND	
AL: Montgomery	1.12	0.29		ND	
AR: Little Rock	2.50	0.39		ND	
AZ: Phoenix	2.03	0.36	Be7	98	37
CO: Denver	2.98	0.41	Be7	103	46
CT: Hartford	2.84	0.40	Be7	52	29
DE: Wilmington	2.76	0.40	Be7	84	38
FL: Jacksonville	1.63	0.34		ND	
FL: Miami	0.57	0.24		ND	
HI: Honolulu	6.88	0.59		ND	
IA: Iowa City	0.85	0.27	Tl208	2.8	3.7
ID: Idaho Falls	4.23	0.49		ND	
ME: Augusta	2.64	0.37	Be7	69	24
MI: Lansing	1.31	0.31		ND	
MN: Minneapolis	1.50	0.32	Be7	50	33
			Bi214	6.2	6.9
MN: Welch	1.82	0.34	Be7	60	35
MS: Jackson	0.89	0.27		ND	
NC: Charlotte	2.86	0.38	Be7	65	29
NC: Wilmington	2.57	0.38	Am241	6.2	7.1
			Be7	43	42
ND: Bismarck	1.32	0.30		ND	
NE: Lincoln	5.78	0.55	K40	28	33
NH: Concord	2.92	0.40	Be7	54	41
			Pb212	6.1	6.6
NJ: Trenton	1.81	0.35	Tl208	3.1	3.5
NV: Las Vegas	8.27	0.64	Tl208	2.1	3.7
NY: Albany	2.47	0.36	Be7	51	26
			K40	38	46
NY: Yaphank	9.87	0.68		ND	
OH: Painesville	1.44	0.32	Be7	52	29
OR: Portland	0.95	0.28		ND	
PA: Harrisburg	2.20	0.36	Be7	43	21
			Pb212	5.7	4.5
			Ra224	37	23
			Tl208	1.8	2.7
SC: Barnwell	0.95	0.27	Tl208	2.1	3.6

Note: ND = Not detected.

Table 5 (continued)
Gross Beta and Specific Gamma in Precipitation
July 1996

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$	
SC: Columbia	1.89	0.34	Be7	50	31
			Tl208	2.4	3.3
TN: Knoxville	1.97	0.34	Be7	53	28
TN: Nashville	1.54	0.32		ND	
TX: El Paso	1.54	0.34		ND	
UT: Salt Lake City	1.92	0.36		ND	
VA: Lynchburg	2.92	0.41		ND	
WA: Olympia	0.75	0.27	Be7	35	29
			Pb212	3.8	4.7
WI: Madison	1.54	0.35	Bi212	40	35
			Pb212	12.1	4.9
			Tl208	3.8	2.8

Note: ND = Not detected.

Table 6
Gross Beta and Specific Gamma in Precipitation
August 1996

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$	
AK: Fairbanks	0.37	0.22		ND	
AL: Montgomery	1.54	0.33		ND	
AR: Little Rock	0.45	0.25	Ra224	29	36
AZ: Phoenix	0.72	0.26		ND	
CT: Hartford	1.12	0.30	Be7	28	25
			Pb212	3.3	5.1
DE: Wilmington	1.88	0.33	Be7	32	28
			K40	25	28
FL: Jacksonville	0.28	0.24	Tl208	2.2	3.8
FL: Miami	0.85	0.27		ND	
HI: Honolulu	1.65	0.33	Tl208	2.0	3.0
IA: Iowa City	1.10	0.29		ND	
ME: Augusta	0.94	0.28		ND	
MI: Lansing	0.55	0.26		ND	
MN: Minneapolis	1.05	0.29		ND	
MN: Welch	1.49	0.34		ND	
MS: Jackson	1.05	0.28		ND	
NC: Charlotte	4.43	0.46	Be7	84	36
			Pb212	3.6	6.3
NC: Wilmington	3.80	0.44	Be7	92	42
ND: Bismarck	1.43	0.32	Pb212	4.0	6.5
			Ra224	38	39
NE: Lincoln	0.95	0.28		ND	
NY: Albany	3.25	0.41	Be7	35	31
			K40	19	36
			Tl208	2.9	3.7
NY: Yaphank	1.84	0.35		ND	
OH: Painesville	1.59	0.33	K40	37	48
OR: Portland	0.96	0.29	K40	20	33
			Pb212	3.2	4.8
PA: Harrisburg	4.11	0.46	Be7	61	50
			K40	35	61
SC: Barnwell	1.96	0.34		ND	
SC: Columbia	2.75	0.39	Be7	58	38
TN: Knoxville	1.52	0.32		ND	
TN: Nashville	1.20	0.30	Be7	53	34
			Tl208	2.6	3.2

Note: ND = Not detected.

Table 6 (continued)
Gross Beta and Specific Gamma in Precipitation
August 1996

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$	
TX: Austin	2.34	0.38		ND	
TX: El Paso	1.15	0.30		ND	
VA: Lynchburg	8.15	0.63	Tl208	1.5	2.9
WI: Madison	1.02	0.29	Pb212	6.7	6.1

Note: ND = Not detected.

Table 7
Gross Beta and Specific Gamma in Precipitation
September 1996

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$	
AL: Montgomery	7.87	0.63		ND	
AR: Little Rock	2.57	0.38		ND	
AZ: Phoenix	4.27	0.51		ND	
CO: Denver	1.46	0.31		ND	
CT: Hartford	2.07	0.35	Be7	82	45
DE: Wilmington	1.81	0.39		ND	
FL: Jacksonville	0.80	0.26		ND	
FL: Miami	0.92	0.28	K40	24	29
HI: Honolulu	0.95	0.29		ND	
IA: Iowa City	0.42	0.24	K40	33	38
ID: Boise	5.61	0.55		ND	
ID: Idaho Falls	2.97	0.43	Pb212	4.3	6.1
ME: Augusta	0.48	0.24		ND	
MI: Lansing	1.23	0.31		ND	
MN: Minneapolis	0.98	0.30		ND	
MN: Welch	1.25	0.31		ND	
NC: Charlotte	0.60	0.29		ND	
NC: Wilmington	0.96	0.36		ND	
ND: Bismarck	1.50	0.32		ND	
NE: Lincoln	0.60	0.25		ND	
NH: Concord	2.57	0.36	Be7	44	32
			Pb212	2.1	4.4
NY: Albany	1.98	0.36		ND	
NY: Syracuse	0.42	0.29		ND	
NY: Yaphank	4.08	0.48		ND	
OH: Painesville	1.32	0.31		ND	
OR: Portland	1.50	0.31		ND	
PA: Harrisburg	1.81	0.34	Be7	30	34
			Tl208	1.8	2.9
SC: Barnwell	3.76	0.43	Be7	55	58
SC: Columbia	2.13	0.35		ND	
TN: Knoxville	2.90	0.40	Pb212	3.3	5.2
TN: Nashville	1.33	0.29		ND	
TX: Austin	0.67	0.25		ND	
TX: El Paso	0.72	0.26		ND	
UT: Salt Lake City	2.19	0.36		ND	
VA: Lynchburg	5.12	0.52		ND	

Note: ND = Not detected.

Table 7 (continued)
Gross Beta and Specific Gamma in Precipitation
September 1996

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
WA: Olympia	0.56	0.26		ND
WI: Madison	0.92	0.29		ND

Note: ND = Not detected.

Table 8
Tritium in Precipitation
July - September 1996

Location	July 1996		August 1996		September 1996	
	pCi/L $\pm 2u$		pCi/L $\pm 2u$		pCi/L $\pm 2u$	
AK: Fairbanks	15	79	69	70	NS	
AL: Montgomery	40	79	20	73	-42	74
AR: Little Rock	26	79	20	69	-66	73
AZ: Phoenix	24	79	1	68	-51	72
CO: Denver	77	81	NS		48	82
CT: Hartford	27	74	60	80	6	72
DE: Wilmington	-3	73	16	73	29	73
FL: Jacksonville	52	79	35	73	-19	74
FL: Miami	15	78	-48	70	-32	72
HI: Honolulu	0	78	-13	67	-29	73
IA: Iowa City	39	79	3	73	-51	73
ID: Boise	NS		NS		-12	73
ID: Idaho Falls	11	78	NS		-55	72
ME: Augusta	-25	72	13	73	17	73
MI: Lansing	95	81	42	70	53	77
MN: Minneapolis	94	81	-9	68	-6	75
MN: Welch	123	82	-13	72	-48	74
MS: Jackson	6	77	29	73	NS	
NC: Charlotte	18	78	29	73	16	76
NC: Wilmington	3	78	-14	72	0	72
ND: Bismarck	99	81	51	70	9	76
NE: Lincoln	57	79	92	72	-3	75
NH: Concord	13	74	NS		-3	72
NJ: Trenton	13	74	NS		NS	
NV: Las Vegas	64	81	NS		NS	
NY: Albany	-10	72	46	74	10	73
NY: Syracuse	NS		NS		33	74
NY: Yaphank	39	79	0	72	27	73
OH: Painesville	39	79	17	73	-36	73
OR: Portland	51	80	61	70	-41	72
PA: Harrisburg	26	74	42	74	41	74
SC: Barnwell	105	81	23	73	193	82
SC: Columbia	48	79	101	76	23	76
TN: Knoxville	11	78	9	73	-47	73
TN: Nashville	66	80	22	73	25	76
TX: Austin	NS		36	70	-82	72
TX: El Paso	52	80	-4	68	-65	73
UT: Salt Lake City	55	80	NS		-15	73

Note: NS = No sample.

Table 8 (continued)
Tritium in Precipitation
July - September 1996

Location	July 1996		August 1996		September 1996	
	pCi/L $\pm 2u$		pCi/L $\pm 2u$		pCi/L $\pm 2u$	
VA: Lynchburg	23	78	55	75	18	76
WA: Olympia	41	80	NS		-19	73
WI: Madison	55	79	-14	71	0	75

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 operating or future nuclear facilities at 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
July - September 1996

Location	Source	Date Collected	³ H pCi/L ± 2u	
AL: Decatur	Tennessee River	07/24/96	76	75
AL: Gordon	Chattahoochee River	07/08/96	2390	150
AL: Scottsboro	Tennessee River	07/23/96	113	77
AR: Little Rock	Arkansas River	07/11/96	139	86
CA: Clay Station	Folsom S. Canal	07/02/96	0	80
CA: Diablo Canyon	Pacific Ocean	07/02/96	0	80
CA: Eureka	Humboldt Bay	07/16/96	-36	71
CO: Platteville	South Platte River	07/10/96	26	82
CT: E. Haddam	Connecticut River	08/07/96	175	79
CT: Waterford	Long Island Sound	08/07/96	92	76
FL: Crystal River	Gulf Of Mexico	07/15/96	0	81
FL: Ft. Pierce	Atlantic Ocean	07/22/96	-36	71
FL: Homestead	Biscayne Bay	07/16/96	240	81
IA: Cedar Rapids	Cedar River	07/10/96	73	72
ID: Buhl	Snake River	07/08/96	29	81
IL: Morris	Illinois River	07/03/96	0	80
KS: Le Roy	Neosho River	09/24/96	10	67
LA: New Orleans	Mississippi River	07/29/96	69	75
MA: Plymouth	Cape Cod Bay	07/03/96	0	80
MD: Conowingo	Susquehanna River	07/16/96	30	74
MD: Lusby	Chesapeake Bay	07/08/96	29	82
ME: Wiscasset	Montseway Bay	07/10/96	63	72
MI: Bridgman	Lake Michigan	07/22/96	152	78
MI: Monroe	Lake Erie	07/15/96	155	87
MI: S. Haven	Lake Michigan	07/23/96	85	76
MN: Monticello	Mississippi River	07/08/96	0	80
MN: Red Wing	Mississippi River	07/15/96	0	81
MS: Port Gibson	Mississippi River	07/02/96	-50	73
NC: Charlotte	Catawba River	08/07/96	220	81
NC: Southport	Atlantic Ocean	07/03/96	853	99
NE: Rulo	Missouri River	07/18/96	80	75
NV: Boulder City	Colorado River	09/25/96	28	74
NY: Chelsea	Hudson River	07/15/96	45	74
NY: Croton-On-Hudson	Hudson River	07/11/96	79	84
NY: Oswego	Lake Ontario	09/26/96	227	76
OH: Toledo	Lake Erie	07/02/96	-13	74
OR: Bradwood	Columbia River	07/30/96	48	75
PA: Danville	Susquehanna River	07/17/96	17	73
PA: Philadelphia	Delaware River - Baxter	07/11/96	55	72
PA: Philadelphia	Schuylkill River - Belmont	07/11/96	128	75

Table 9 (continued)
Tritium in Surface Water
July - September 1996

Location	Source	Date Collected	³ H pCi/L ± 2 <i>u</i>	
PA: Philadelphia	Schuylkill River - Queen Lane	07/11/96	281	80
SC: Allendale	Savannah River	07/01/96	910	110
SC: Allendale	Savannah River	09/27/96	1510	120
SC: Broad River	Broad River	07/12/96	145	75
SC: Hartsville	Lake Robinson	07/03/96	604	91
TN: Daisy	Tennessee River	07/05/96	110	84
TN: Kingston	Clinch River	07/09/96	142	75
TN: Oak Ridge	Clinch River	08/15/96	170	74
TX: El Paso	Rio Grande	08/22/96	31	79
TX: Matagorda	Colorado River	07/08/96	10	73
VA: Doswell	North Anna River	07/03/96	2810	150
VA: Newport News	James River	07/12/96	45	75
VT: Vernon	Connecticut River	07/11/96	0	81
WA: Northport	Columbia River	07/23/96	-22	72
WA: Richland	Columbia River	07/17/96	-1	73
WI: Two Creeks	Lake Michigan	07/09/96	92	73
WI: Victory	Mississippi River	07/08/96	940	100
WV: Wheeling	Ohio River	07/01/96	-11	74

Drinking Water

This program monitors ambient radiation levels in drinking water at 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) specific 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
July - September 1996

Location	Date Collected	³ H pCi/L ± 2 <i>u</i>	
AK: Fairbanks	08/15/96	39	80
AL: Dothan	07/08/96	0	80
AL: Muscle Shoals	07/25/96	122	77
AL: Scottsboro	07/23/96	93	76
AR: Little Rock	07/07/96	6	80
CA: Berkeley	07/03/96	-59	72
CA: Los Angeles	07/08/96	2	80
CO: Denver	07/15/96	0	81
CO: Platteville	07/10/96	47	83
CT: Hartford	07/01/96	86	78
CT: Hartford	09/30/96	-40	71
DE: Dover	07/15/96	0	81
FL: Miami	07/05/96	26	82
FL: Tampa	07/02/96	-75	72
FL: Tampa	09/30/96	-41	74
GA: Savannah	07/03/96	-60	72
HI: Honolulu	07/01/96	-96	71
IA: Cedar Rapids	07/10/96	32	71
ID: Boise	07/03/96	22	81
ID: Idaho Falls	07/23/96	9	73
IL: Morris	07/05/96	0	80
IL: W. Chicago	07/02/96	-50	73
KS: Topeka	07/01/96	10	75
LA: New Orleans	07/03/96	0	80
MA: Lawrence	07/10/96	21	82
MD: Baltimore	07/05/96	890	110
MD: Conowingo	07/15/96	6	81
ME: Augusta	07/08/96	0	80
MI: Detroit	07/08/96	220	130
MI: Grand Rapids	07/24/96	93	76
MN: Minneapolis	07/22/96	4	73
MN: Red Wing	07/15/96	0	81
MO: Jefferson City	07/01/96	30	76
MS: Jackson	07/02/96	191	82
MS: Port Gibson	07/02/96	-26	73
MT: Helena	07/12/96	83	73
NC: Charlotte	08/07/96	395	87
NC: Wilmington	07/02/96	-70	130
ND: Bismarck	07/01/96	0	75
NE: Lincoln	07/19/96	-9	73

Table 10 (continued)
Tritium in Drinking Water
July - September 1996

Location	Date Collected	³ H pCi/L ± 2 <i>u</i>	
NH: Concord	07/01/96	25	75
NM: Santa Fe	07/19/96	0	81
NV: Las Vegas	07/01/96	0	75
NY: Albany	07/01/96	-50	73
NY: Albany	09/30/96	22	72
NY: Niagara Falls	07/03/96	148	86
NY: Syracuse	07/30/96	123	83
OH: Cincinnati	09/06/96	24	79
OH: Columbus	08/20/96	-9	74
OH: E. Liverpool	08/29/96	0	78
OH: Painesville	08/13/96	112	82
OH: Toledo	07/02/96	99	79
OK: Oklahoma City	07/02/96	-42	73
OR: Portland	07/08/96	2	81
PA: Columbia	07/18/96	-13	72
PA: Harrisburg	07/18/96	16	73
PA: Philadelphia - Baxter Lab	07/11/96	106	74
PA: Philadelphia - Belmont	07/11/96	72	71
PA: Philadelphia - Queen Lane	07/11/96	97	73
PA: Pittsburgh	08/29/96	0	78
PC: Corozal	07/02/96	-33	73
RI: Providence	07/01/96	54	77
SC: Barnwell	07/10/96	-20	130
SC: Columbia	07/02/96	107	84
SC: Jenkinsville	07/05/96	40	81
SC: Seneca	07/30/96	23	74
TN: Chattanooga	07/08/96	93	85
TN: Knoxville	07/02/96	-3	74
TN: Oak Ridge - Anderson Co. #768	09/23/96	71	70
TN: Oak Ridge - Anderson Co. #772	09/23/96	38	69
TN: Oak Ridge - Knox Co. #371	09/23/96	0	67
TN: Oak Ridge - Roane Co. #360	09/23/96	20	68
TN: Oak Ridge - Roane Co. #4442	09/23/96	104	71
TX: Austin	07/12/96	36	71
VA: Doswell	09/30/96	-4	73
VA: Lynchburg	07/01/96	-68	72
VA: Lynchburg	09/30/96	49	69
WA: Richland	07/17/96	39	83
WA: Seattle	07/01/96	42	83
WA: Seattle	09/30/96	-27	72

Table 10 (continued)
Tritium in Drinking Water
July - September 1996

Location	Date Collected	³ H pCi/L ± 2 <i>u</i>	
WI: Genoa City	07/08/96	80	130
WI: Madison	07/03/96	10	75

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 with at least one located in each state, Puerto Rico, and the Panama Canal Zone. 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
July 1996

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	07/02/96	1.537	0.076	ND		ND	ND
AR: Little Rock	07/02/96	1.51	0.12	ND		ND	ND
CA: Los Angeles	07/05/96	1.67	0.11	ND		ND	ND
CA: Sacramento	07/08/96	1.692	0.080	ND		ND	ND
CA: San Francisco	07/05/96	1.632	0.067	ND		ND	ND
CO: Denver	07/15/96	1.680	0.081	ND		ND	ND
CT: Hartford	07/08/96	1.54	0.12	ND		ND	ND
DE: Wilmington	07/23/96	1.609	0.088	ND		ND	ND
FL: Tampa	07/10/96	1.60	0.14	3.9	3.8	ND	ND
HI: Honolulu	07/15/96	1.621	0.078	ND		ND	ND
IA: Des Moines	07/01/96	1.56	0.10	ND		ND	ND
IL: Chicago	07/11/96	1.525	0.076	ND		ND	ND
IN: Indianapolis	07/08/96	1.561	0.078	ND		ND	ND
KS: Wichita	07/17/96	1.609	0.080	ND		ND	ND
KY: Louisville	07/02/96	1.632	0.090	ND		ND	ND
MA: Boston	07/12/96	1.55	0.11	ND		ND	ND
MD: Baltimore	07/05/96	1.692	0.091	ND		ND	ND
ME: Portland	07/09/96	1.644	0.067	ND		ND	ND
MI: Grand Rapids	07/08/96	1.64	0.14	ND		ND	ND
MN: St. Paul	07/01/96	1.55	0.14	ND		ND	ND
MO: Kansas City	07/16/96	1.609	0.067	ND		ND	ND
MS: Jackson	07/01/96	1.632	0.088	ND		ND	ND
NC: Charlotte	07/09/96	1.632	0.079	ND		ND	ND
ND: Minot	07/02/96	1.62	0.14	ND		ND	ND
NJ: Trenton	07/02/96	1.67	0.12	ND		ND	ND
NM: Albuquerque	07/22/96	1.740	0.082	ND		ND	ND
NV: Las Vegas	07/08/96	1.573	0.079	ND		ND	ND
NY: Buffalo	07/03/96	1.64	0.11	ND		ND	ND
NY: Syracuse	07/08/96	1.55	0.11	ND		ND	ND
OH: Cincinnati	07/29/96	1.609	0.080	ND		ND	ND
OH: Cleveland	07/29/96	1.597	0.081	ND		ND	ND
OR: Portland	07/08/96	1.656	0.089	ND		ND	ND
PA: Philadelphia	07/08/96	1.66	0.14	ND		ND	ND
PA: Pittsburgh	07/08/96	1.573	0.067	ND		ND	ND
PC: Cristobal	07/25/96	1.668	0.077	4.5	2.4	ND	ND
PR: San Juan	07/12/96	1.621	0.092	ND		ND	ND
SC: Charleston	07/31/96	1.656	0.068	ND		ND	ND
TN: Chattanooga	07/08/96	1.680	0.092	ND		ND	ND
TN: Knoxville	07/02/96	1.632	0.080	ND		ND	ND

Note: ND = Not detected

Table 11 (continued)
Radionuclides in Pasteurized Milk
July 1996

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: Memphis	07/16/96	1.644 0.082	ND	ND	ND
TX: Austin	07/23/96	1.66 0.14	ND	ND	ND
TX: Ft. Worth	07/09/96	1.632 0.081	ND	ND	ND
VA: Norfolk	07/01/96	1.66 0.14	ND	ND	ND
VA: Norfolk	07/31/96	1.609 0.089	ND	ND	ND
VT: Burlington	07/26/96	1.54 0.11	ND	ND	ND
WA: Seattle	07/09/96	1.680 0.092	ND	ND	ND
WA: Spokane	07/08/96	1.621 0.089	ND	ND	ND

Note: ND = Not detected

Table 12
Radionuclides in Pasteurized Milk
August 1996

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	08/06/96	1.585	0.086	ND		ND	ND
AR: Little Rock	08/05/96	1.61	0.15	ND		ND	ND
AZ: Phoenix	08/28/96	1.585	0.090	ND		ND	ND
CA: Los Angeles	08/06/96	1.53	0.14	ND		ND	ND
CA: Sacramento	08/13/96	1.668	0.090	ND		ND	ND
CA: San Francisco	08/07/96	1.656	0.090	ND		ND	ND
CO: Denver	08/10/96	1.644	0.068	ND		ND	ND
DE: Wilmington	08/07/96	1.621	0.081	ND		ND	ND
FL: Tampa	08/05/96	1.66	0.14	4.3	4.0	ND	ND
GA: Atlanta	08/13/96	1.632	0.080	ND		ND	ND
HI: Honolulu	08/22/96	1.764	0.093	ND		ND	ND
IA: Des Moines	08/05/96	1.656	0.069	ND		ND	ND
IL: Chicago	08/01/96	1.561	0.078	ND		ND	ND
IN: Indianapolis	08/06/96	1.597	0.077	ND		ND	ND
KS: Wichita	08/28/96	1.644	0.079	ND		ND	ND
KY: Louisville	08/05/96	1.72	0.10	ND		ND	ND
MA: Boston	08/08/96	1.561	0.087	ND		ND	ND
MD: Baltimore	08/01/96	1.692	0.078	ND		ND	ND
ME: Portland	08/06/96	1.525	0.075	ND		ND	ND
MI: Detroit	08/06/96	1.680	0.068	ND		ND	ND
MI: Grand Rapids	08/05/96	1.656	0.091	ND		ND	ND
MN: St. Paul	08/02/96	1.621	0.091	ND		ND	ND
MO: Kansas City	08/28/96	1.609	0.082	ND		ND	ND
MS: Jackson	08/05/96	1.573	0.092	ND		ND	ND
NC: Charlotte	08/07/96	1.621	0.081	ND		ND	ND
NM: Albuquerque	08/19/96	1.62	0.10	ND		ND	ND
NV: Las Vegas	08/20/96	1.597	0.090	ND		ND	ND
NY: Buffalo	08/09/96	1.680	0.069	ND		ND	ND
NY: Syracuse	08/06/96	1.609	0.091	ND		ND	ND
OH: Cincinnati	08/14/96	1.680	0.092	ND		ND	ND
OH: Cleveland	08/12/96	1.609	0.089	ND		ND	ND
OR: Portland	08/05/96	1.728	0.070	ND		ND	ND
PA: Philadelphia	08/05/96	1.632	0.078	ND		ND	ND
PA: Pittsburgh	08/06/96	1.609	0.067	ND		ND	ND
PC: Cristobal	08/15/96	1.466	0.074	10.0	2.5	ND	ND
PR: San Juan	08/09/96	1.60	0.12	ND		ND	ND
SC: Charleston	08/09/96	1.56	0.12	ND		ND	ND
SD: Rapid City	08/07/96	1.692	0.082	ND		ND	ND
TN: Chattanooga	08/05/96	1.632	0.081	ND		ND	ND

Note: ND = Not detected

Table 12 (continued)
Radionuclides in Pasteurized Milk
August 1996

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	08/12/96	1.51 0.10	ND	ND	ND
TN: Memphis	08/16/96	1.561 0.089	ND	ND	ND
TX: Austin	08/02/96	1.63 0.10	ND	ND	ND
TX: Ft. Worth	08/07/96	1.57 0.12	ND	ND	ND
VA: Norfolk	08/29/96	1.549 0.087	ND	ND	ND
VT: Burlington	08/26/96	1.61 0.10	ND	ND	ND
WA: Seattle	08/12/96	1.632 0.081	ND	ND	ND
WA: Spokane	08/12/96	1.70 0.15	ND	ND	ND
WV: Charleston	08/05/96	1.632 0.080	ND	ND	ND

Note: ND = Not detected

Table 13
Radionuclides in Pasteurized Milk
September 1996

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	09/06/96	1.573	0.067	ND		ND	ND
AR: Little Rock	09/09/96	1.537	0.088	ND		ND	ND
AZ: Phoenix	09/25/96	1.561	0.090	ND		ND	ND
CA: Los Angeles	09/10/96	1.775	0.082	ND		ND	ND
CA: Sacramento	09/17/96	1.597	0.080	ND		ND	ND
CA: San Francisco	09/05/96	1.740	0.093	ND		ND	ND
CO: Denver	09/19/96	1.57	0.10	ND		ND	ND
DE: Wilmington	09/19/96	1.70	0.10	ND		ND	ND
FL: Tampa	09/04/96	1.656	0.082	2.9	2.1	ND	ND
GA: Atlanta	09/03/96	1.644	0.091	ND		ND	ND
HI: Honolulu	09/06/96	1.68	0.10	ND		ND	ND
IA: Des Moines	09/09/96	1.621	0.091	ND		ND	ND
IL: Chicago	09/09/96	1.63	0.14	ND		ND	ND
IN: Indianapolis	09/10/96	1.680	0.068	ND		ND	ND
KS: Wichita	09/30/96	1.656	0.091	ND		ND	ND
KY: Louisville	09/04/96	1.716	0.068	ND		ND	ND
MA: Boston	09/06/96	1.585	0.088	ND		ND	ND
MD: Baltimore	09/06/96	1.561	0.075	ND		ND	ND
ME: Portland	09/16/96	1.51	0.10	ND		ND	ND
MI: Detroit	09/17/96	1.668	0.068	ND		ND	ND
MI: Grand Rapids	09/04/96	1.549	0.074	ND		ND	ND
MN: St. Paul	09/03/96	1.585	0.090	ND		ND	ND
MO: Kansas City	09/25/96	1.585	0.066	ND		ND	ND
MS: Jackson	09/04/96	1.61	0.10	ND		ND	ND
NC: Charlotte	09/03/96	1.668	0.092	ND		ND	ND
ND: Minot	09/04/96	1.704	0.091	ND		ND	ND
NJ: Trenton	09/05/96	1.87	0.11	ND		ND	ND
NM: Albuquerque	09/23/96	1.728	0.082	ND		ND	ND
NV: Las Vegas	09/16/96	1.537	0.075	ND		ND	ND
NY: Buffalo	09/06/96	1.716	0.080	ND		ND	ND
NY: Syracuse	09/10/96	1.561	0.087	ND		ND	ND
OH: Cincinnati	09/10/96	1.621	0.078	ND		ND	ND
OH: Cleveland	09/24/96	1.668	0.068	ND		ND	ND
OR: Portland	09/03/96	1.64	0.10	ND		ND	ND
PA: Philadelphia	09/05/96	1.644	0.068	ND		ND	ND
PA: Pittsburgh	09/03/96	1.632	0.090	ND		ND	ND
PC: Cristobal	09/12/96	1.525	0.087	5.0	2.7	ND	ND
PR: San Juan	09/13/96	1.45	0.14	ND		ND	ND
SC: Charleston	09/12/96	1.585	0.081	ND		ND	ND

Note: ND = Not detected

Table 13 (continued)
Radionuclides in Pasteurized Milk
September 1996

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: Chattanooga	09/04/96	1.656 0.068	ND	ND	ND
TN: Chattanooga	09/30/96	1.573 0.090	ND	ND	ND
TN: Knoxville	09/03/96	1.609 0.090	ND	ND	ND
TN: Memphis	09/23/96	1.549 0.087	ND	ND	ND
TX: Ft. Worth	09/10/96	1.64 0.10	ND	ND	ND
WA: Seattle	09/03/96	1.644 0.079	ND	ND	ND
WA: Spokane	09/16/96	1.644 0.082	ND	ND	ND

Note: ND = Not detected

Table 14
Strontium-90 in Pasteurized Milk
July 1996

Location	Date Collected	⁹⁰ Sr pCi/L ± 2 <i>u</i>	
AL: Montgomery	07/02/96	0.63	0.47
AR: Little Rock	07/02/96	1.74	0.57
CA: Los Angeles	07/05/96	0.06	0.46
CA: Sacramento	07/08/96	0.67	0.59
CA: San Francisco	07/05/96	0.23	0.40
CO: Denver	07/15/96	-0.7	1.3
CT: Hartford	07/08/96	0.75	0.72
DE: Wilmington	07/23/96	0.55	0.74
FL: Tampa	07/10/96	1.03	0.49
HI: Honolulu	07/15/96	0.71	0.48
IA: Des Moines	07/01/96	1.06	0.91
IL: Chicago	07/11/96	1.63	0.69
IN: Indianapolis	07/08/96	-0.01	0.61
KS: Wichita	07/17/96	0.41	0.63
KY: Louisville	07/02/96	1.63	0.57
MA: Boston	07/12/96	1.08	0.51
MD: Baltimore	07/05/96	1.26	0.54
ME: Portland	07/09/96	1.05	0.85
MN: St. Paul	07/01/96	1.54	0.88
MS: Jackson	07/01/96	0.99	0.50
NC: Charlotte	07/09/96	0.71	0.77
ND: Minot	07/02/96	2.00	0.58
NJ: Trenton	07/02/96	1.55	0.57
NM: Albuquerque	07/22/96	0.31	0.38
NV: Las Vegas	07/08/96	0.51	0.56
NY: Buffalo	07/03/96	1.12	0.52
NY: Syracuse	07/08/96	1.00	0.80
OH: Cincinnati	07/29/96	0.75	0.47
OH: Cleveland	07/29/96	1.18	0.62
PA: Philadelphia	07/08/96	1.56	0.53
PA: Pittsburgh	07/08/96	0.7	1.6
PC: Cristobal	07/25/96	0.65	0.48
PR: San Juan	07/12/96	0.36	0.40
SC: Charleston	07/31/96	1.02	0.52
TN: Chattanooga	07/08/96	1.11	0.54
TN: Knoxville	07/02/96	1.42	0.70
TN: Memphis	07/16/96	1.46	0.68
TX: Austin	07/23/96	0.24	0.56

Table 14 (continued)
Strontium-90 in Pasteurized Milk
July 1996

Location	Date Collected	⁹⁰ Sr pCi/L ± 2 <i>u</i>	
TX: Ft. Worth	07/09/96	0.76	0.46
VA: Norfolk	07/01/96	0.35	0.46
VA: Norfolk	07/31/96	0.77	0.44
VT: Burlington	07/26/96	2.08	0.62
WA: Seattle	07/09/96	1.14	0.49
WA: Spokane	07/08/96	1.07	0.50

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