

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](http://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 <sup>3</sup>	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 <sup>3</sup>	0.75
	Water	pCi/L	0.1
† Uranium-234,235,238	Air	aCi/m <sup>3</sup>	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 m<sup>3</sup>. Measurement by alpha spectrometry includes combined activities of <sup>239</sup>Pu and <sup>240</sup>Pu, 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 m<sup>3</sup>.

‡ 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/m<sup>3</sup>. 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 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
AK: Fairbanks	2	0.0	0.0	0.0	0.026	0.018	0.022
AL: Montgomery	8	0.1	0.0	0.0	0.023	0.011	0.018
AR: Little Rock	7	0.1	0.0	0.0	0.025	0.013	0.019
AZ: Phoenix	4	0.5	0.2	0.4	0.027	0.013	0.021
CA: Los Angeles	8	0.3	0.0	0.2	0.025	0.005	0.015
CO: Denver	6	1.1	0.2	0.5	0.012	0.006	0.009
CT: Hartford	8	0.1	0.0	0.1	0.014	0.005	0.009
DE: Wilmington	8	0.1	0.0	0.1	0.016	0.008	0.011
FL: Jacksonville	5	0.2	0.0	0.1	0.016	0.008	0.012
HI: Honolulu	8	0.1	0.1	0.1	0.009	0.002	0.005
IA: Iowa City	8	0.2	0.0	0.1	0.026	0.010	0.018
ID: Boise	8	0.4	0.1	0.2	0.025	0.002	0.009
ID: Idaho Falls	8				0.046	0.003	0.014
IN: Indianapolis	8	0.2	0.0	0.1	0.017	0.009	0.013
KS: Topeka	8	1.2	0.1	0.5	0.032	0.009	0.020
ME: Augusta	7	0.1	0.0	0.0	0.021	0.008	0.012
MI: Lansing	8	0.1	0.0	0.0	0.021	0.008	0.013
MN: Welch	14	0.5	0.0	0.1	0.028	0.012	0.018
MS: Jackson	8	0.2	0.0	0.1	0.021	0.012	0.015
NC: Wilmington	3				0.016	0.011	0.013
ND: Bismarck	1	0.0	0.0	0.0	0.020	0.020	0.020
NH: Concord	2	0.0	0.0	0.0	0.010	0.009	0.009
NJ: Trenton	2				0.011	0.011	0.011
NV: Las Vegas	8	0.3	0.1	0.2	0.020	0.007	0.014
NY: Albany	3	0.1	0.0	0.0	0.029	0.011	0.019
NY: New York City	8	0.0	0.0	0.0	0.017	0.008	0.012
NY: Yaphank	7	0.1	0.0	0.0	0.013	0.007	0.010
OH: Painesville	8	0.4	0.0	0.1	0.019	0.007	0.013
OH: Ross	6				0.019	0.011	0.015
OR: Portland	6	0.1	0.0	0.1	0.018	0.002	0.007
PA: Harrisburg	8	0.2	0.0	0.1	0.017	0.006	0.012
PA: Pittsburgh	8				0.016	0.008	0.012
SC: Barnwell	1	0.0	0.0	0.0	0.013	0.013	0.013
SC: Columbia	8	0.4	0.1	0.2	0.017	0.007	0.012
SD: Pierre	5	0.3	0.1	0.1	0.028	0.009	0.023
TN: Knoxville	8	1.1	0.2	0.5	0.022	0.011	0.018
TN: Nashville	8	0.1	0.0	0.1	0.019	0.011	0.015
TN: Oak Ridge/Bethel	8	0.4	0.0	0.3	0.020	0.009	0.014

**Table 2 (continued)**  
**Gross Beta in Airborne Particulates**  
**January 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
TN: Oak Ridge/K25	8	0.4	0.1	0.2	0.019	0.009	0.013
TN: Oak Ridge/Melton	8	0.4	0.1	0.2	0.018	0.009	0.013
TN: Oak Ridge/Y12 E	8	0.4	0.1	0.2	0.016	0.009	0.013
TN: Oak Ridge/Y12 W	7	0.2	0.0	0.1	0.015	0.009	0.013
TX: Austin	7	0.2	0.1	0.2	0.023	0.008	0.016
TX: El Paso	5	1.9	0.3	1.0	0.026	0.009	0.016
UT: Salt Lake City	5	0.1	0.0	0.0	0.016	0.006	0.011
VA: Lynchburg	8	0.5	0.0	0.2	0.013	0.007	0.010
WA: Olympia	1	0.0	0.0	0.0	0.005	0.005	0.005
WA: Spokane	8	0.1	0.0	0.1	0.024	0.002	0.011
WI: Madison	4	0.1	0.0	0.1	0.021	0.008	0.013

**Table 3**  
**Gross Beta in Airborne Particulates**  
**February 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
AK: Fairbanks	1	0.0	0.0	0.0	0.017	0.017	0.017
AL: Montgomery	8	0.3	0.0	0.1	0.038	0.010	0.018
AR: Little Rock	8	0.1	0.0	0.0	0.018	0.008	0.013
AZ: Phoenix	4	0.6	0.4	0.5	0.028	0.012	0.019
CA: Los Angeles	8	0.8	0.1	0.2	0.011	0.005	0.008
CO: Denver	8	1.0	0.2	0.4	0.019	0.005	0.009
CT: Hartford	8	0.1	0.0	0.1	0.012	0.006	0.010
DE: Wilmington	7	0.2	0.0	0.1	0.015	0.008	0.012
FL: Jacksonville	7	0.2	0.0	0.1	0.012	0.008	0.010
HI: Honolulu	8	0.1	0.1	0.1	0.007	0.002	0.004
IA: Iowa City	8	0.4	0.1	0.2	0.019	0.009	0.013
ID: Boise	8	0.2	0.1	0.1	0.013	0.003	0.006
ID: Idaho Falls	8				0.018	0.004	0.008
IN: Indianapolis	8	0.3	0.0	0.1	0.013	0.007	0.010
KS: Topeka	8	0.7	0.2	0.4	0.018	0.008	0.012
ME: Augusta	8	0.1	0.0	0.1	0.018	0.009	0.013
MI: Lansing	8	0.2	0.1	0.1	0.016	0.006	0.011
MN: Welch	10	0.1	0.0	0.0	0.022	0.008	0.014
MS: Jackson	8	0.3	0.1	0.1	0.016	0.006	0.011
NC: Wilmington	4				0.013	0.009	0.011
ND: Bismarck	3	0.0	0.0	0.0	0.020	0.012	0.016
NV: Las Vegas	8	0.4	0.1	0.2	0.016	0.006	0.013
NY: Albany	3	0.1	0.0	0.0	0.018	0.016	0.017
NY: New York City	8	0.1	0.0	0.0	0.016	0.007	0.012
NY: Yaphank	8	0.1	0.0	0.1	0.014	0.008	0.011
OH: Painesville	8	0.2	0.0	0.1	0.014	0.006	0.011
OH: Ross	8				0.016	0.008	0.013
OR: Portland	7	0.1	0.0	0.0	0.005	0.002	0.003
PA: Harrisburg	8	0.3	0.1	0.2	0.016	0.007	0.013
PA: Pittsburgh	8	0.1	0.1	0.1	0.014	0.009	0.012
SC: Barnwell	1	0.0	0.0	0.0	0.009	0.009	0.009
SC: Columbia	6	0.9	0.0	0.2	0.014	0.008	0.011
SD: Pierre	7	0.3	0.0	0.1	0.023	0.005	0.014
TN: Knoxville	8	0.8	0.2	0.4	0.023	0.012	0.017
TN: Nashville	8	0.2	0.1	0.1	0.016	0.008	0.012
TN: Oak Ridge/Bethel	8	0.5	0.0	0.2	0.021	0.006	0.012
TN: Oak Ridge/K25	3	0.6	0.2	0.4	0.015	0.007	0.010
TN: Oak Ridge/Melton	8	0.5	0.0	0.2	0.018	0.007	0.011

**Table 3 (continued)**  
**Gross Beta in Airborne Particulates**  
**February 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
TN: Oak Ridge/Y12 E	8	0.4	0.0	0.2	0.019	0.007	0.012
TN: Oak Ridge/Y12 W	8	0.2	0.0	0.1	0.017	0.007	0.012
TX: Austin	7	0.3	0.1	0.2	0.012	0.006	0.009
TX: El Paso	8	2.1	0.6	1.2	0.020	0.013	0.017
UT: Salt Lake City	5	0.1	0.0	0.0	0.015	0.006	0.009
VA: Lynchburg	8	0.7	0.1	0.4	0.014	0.005	0.009
WA: Olympia	4	0.1	0.1	0.1	0.004	0.002	0.002
WA: Spokane	8	0.1	0.0	0.1	0.012	0.002	0.005
WI: Madison	8	0.3	0.1	0.2	0.017	0.009	0.013

**Table 4**  
**Gross Beta in Airborne Particulates**  
**March 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
AK: Fairbanks	1	0.0	0.0	0.0	0.019	0.019	0.019
AL: Montgomery	9	0.2	0.0	0.1	0.026	0.010	0.017
AR: Little Rock	9	0.2	0.0	0.1	0.017	0.009	0.012
AZ: Phoenix	5	0.6	0.4	0.5	0.019	0.014	0.017
CA: Berkeley	2	0.1	0.0	0.0	0.006	0.004	0.005
CA: Los Angeles	9	0.2	0.1	0.1	0.012	0.004	0.008
CO: Denver	9	1.3	0.3	0.8	0.014	0.007	0.011
CT: Hartford	9	1.0	0.0	0.1	0.013	0.005	0.008
DE: Wilmington	4	0.1	0.0	0.0	0.013	0.007	0.011
FL: Jacksonville	9	0.1	0.0	0.1	0.014	0.006	0.011
HI: Honolulu	8	0.1	0.1	0.1	0.007	0.001	0.004
IA: Iowa City	9	0.6	0.0	0.3	0.021	0.011	0.014
ID: Boise	9	0.6	0.1	0.3	0.014	0.004	0.008
ID: Idaho Falls	9				0.012	0.006	0.008
IN: Indianapolis	9	0.3	0.0	0.1	0.011	0.008	0.009
KS: Topeka	9	3.2	0.2	0.8	0.015	0.008	0.012
ME: Augusta	9	0.1	0.0	0.0	0.012	0.004	0.008
MI: Lansing	9	0.3	0.0	0.1	0.013	0.007	0.011
MN: Welch	8	0.3	0.0	0.1	0.018	0.007	0.011
MS: Jackson	9	0.1	0.1	0.1	0.019	0.008	0.013
NC: Charlotte	8	0.1	0.0	0.1	0.017	0.008	0.012
NC: Wilmington	2				0.011	0.009	0.010
ND: Bismarck	7	0.4	0.1	0.2	0.018	0.010	0.013
NH: Concord	2	0.1	0.0	0.1	0.010	0.010	0.010
NV: Las Vegas	9	0.2	0.1	0.2	0.014	0.009	0.012
NY: Albany	5	0.1	0.0	0.0	0.013	0.007	0.011
NY: New York City	9	0.1	0.0	0.0	0.015	0.005	0.010
NY: Yaphank	8	0.0	0.0	0.0	0.012	0.007	0.009
OH: Painesville	7	0.2	0.0	0.1	0.011	0.009	0.010
OH: Ross	8				0.013	0.009	0.011
OR: Portland	9	0.1	0.0	0.0	0.007	0.002	0.005
PA: Harrisburg	9	0.3	0.0	0.1	0.014	0.006	0.011
PA: Pittsburgh	9				0.015	0.008	0.011
SC: Barnwell	1	0.0	0.0	0.0	0.011	0.011	0.011
SC: Columbia	9	0.2	0.1	0.1	0.017	0.007	0.013
SD: Pierre	7	0.2	0.1	0.1	0.015	0.008	0.011
TN: Knoxville	9	0.7	0.1	0.3	0.025	0.011	0.017
TN: Nashville	8	0.2	0.0	0.1	0.016	0.007	0.012



**Table 4 (continued)**  
**Gross Beta in Airborne Particulates**  
**March 1999**

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min (pCi/m <sup>3</sup> )	Avg	Max	Min (pCi/m <sup>3</sup> )	Avg
TN: Oak Ridge/Bethel	9	0.3	0.1	0.2	0.014	0.008	0.010
TN: Oak Ridge/K25	9	0.5	0.1	0.2	0.013	0.007	0.010
TN: Oak Ridge/Melton	9	0.3	0.0	0.1	0.012	0.008	0.009
TN: Oak Ridge/Y12 E	9	0.4	0.0	0.2	0.014	0.007	0.010
TN: Oak Ridge/Y12 W	9	0.3	0.0	0.1	0.015	0.007	0.011
TX: Austin	9	0.2	0.1	0.1	0.016	0.007	0.011
TX: El Paso	9	1.0	0.3	0.7	0.019	0.012	0.015
UT: Salt Lake City	5	0.4	0.0	0.2	0.021	0.011	0.014
VA: Lynchburg	9	0.6	0.1	0.2	0.011	0.004	0.008
WA: Olympia	7	0.0	0.0	0.0	0.005	0.002	0.003
WA: Spokane	9	0.3	0.1	0.1	0.012	0.003	0.006
WI: Madison	8	0.3	0.0	0.1	0.015	0.010	0.012

**Table 5**  
**Gross Beta and Specific Gamma in Precipitation**  
**January 1999**

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AL: Montgomery	2.69	0.39	Be7	61 38
AR: Little Rock	0.91	0.27		ND
CT: Hartford	3.48	0.47	Be7	40 29
FL: Jacksonville	0.77	0.26		ND
FL: Miami	0.84	0.27		ND
HI: Honolulu	1.36	0.31		ND
IA: Iowa City	2.09	0.36		ND
ID: Boise	0.39	0.24		ND
ID: Idaho Falls	5.97	0.53		ND
MN: Minneapolis	4.41	0.49	Be7	50 40
MN: Welch	5.23	0.51		ND
NC: Wilmington	0.92	0.31		ND
ND: Bismarck	1.56	0.33	K40	25 38
NY: Albany	2.39	0.40	Be7	68 33
NY: Yaphank	3.19	0.42		ND
OH: Painesville	6.85	0.56	Be7	95 27
OR: Portland	0.67	0.25	Be7	44 29
PA: Harrisburg	2.24	0.41	Be7	32 27
SC: Barnwell	1.40	0.30		ND
SC: Columbia	1.46	0.32	Tl208	3.0 2.4
TN: Knoxville	1.29	0.30		ND
TN: Nashville	3.70	0.44	Be7	63 29
UT: Salt Lake City	3.04	0.43		ND
VA: Lynchburg	3.15	0.44		ND
WA: Olympia	0.47	0.23		ND
WI: Madison	1.77	0.33		ND

Note: ND = Not Detected

**Table 6**  
**Gross Beta and Specific Gamma in Precipitation**  
**February 1999**

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AL: Montgomery	2.90	0.40	Be7	62 38
AR: Little Rock	1.37	0.31	Be7	72 31
AZ: Phoenix	1.98	0.35		ND
CT: Hartford	2.40	0.38	Be7	32 32
			Pb212	6.6 6.7
			Tl208	3.1 3.6
FL: Jacksonville	1.17	0.28		ND
FL: Miami	1.60	0.40	Pb212	4.8 6.8
			Tl208	3.3 3.6
HI: Honolulu	1.43	0.32		ND
	0.67	0.26		ND
IA: Iowa City	0.49	0.29		ND
ID: Boise	0.56	0.23		ND
ID: Idaho Falls	0.67	0.25		ND
MN: Minneapolis	3.70	0.50	Be7	86 31
MN: Welch	4.79	0.54		ND
NC: Wilmington	1.27	0.30	Be7	38 30
ND: Bismarck	1.46	0.54		ND
NY: Albany	1.66	0.33	Be7	68 32
			Bi212	30 43
			Pb212	5.4 6.8
NY: Yaphank	1.72	0.32		ND
OH: Painesville	3.24	0.46	Be7	60 36
OR: Portland	0.51	0.23	Tl208	2.0 3.6
PA: Harrisburg	2.70	0.39	Be7	50 33
SC: Barnwell	0.66	0.32		ND
SC: Columbia	0.96	0.25		ND
TN: Knoxville	0.87	0.32		ND
TN: Nashville	1.58	0.31	Be7	31 34
UT: Salt Lake City	1.03	0.29		ND
VA: Lynchburg	1.37	0.30		ND
WA: Olympia	0.40	0.23	Be7	30 31
WI: Madison	1.01	0.32		ND

Note: ND = Not Detected

**Table 7**  
**Gross Beta and Specific Gamma in Precipitation**  
**March 1999**

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L $\pm 2\sigma$		Nuclide	pCi/L $\pm 2\sigma$
AL: Montgomery	0.263	0.039	Be7	49 37
			Pb212	16.1 5.7
AR: Little Rock	2.00	0.37	Be7	52 32
CT: Hartford	2.24	0.37	Be7	48 35
			Tl208	2.5 4.2
FL: Jacksonville	0.82	0.27	Pb212	16.4 6.0
FL: Miami	4.7	1.3		ND
HI: Honolulu	2.04	0.38	K40	27 22
IA: Iowa City	1.13	0.31	Pb212	4.6 6.5
ID: Boise	1.48	0.33		ND
ID: Idaho Falls	5.51	0.54		ND
MN: Minneapolis	2.13	0.38		ND
NC: Charlotte	4.16	0.44	Be7	127 37
			K40	67 27
NC: Wilmington	1.11	0.29	Be7	43 27
			Pb212	9.3 4.6
			Tl208	3.7 2.7
NY: Albany	0.90	0.27		ND
NY: Yaphank	3.01	0.40	Be7	67 31
OH: Painesville	5.36	0.53	Be7	63 33
OR: Portland	0.76	0.28	Be7	35 27
PA: Harrisburg	0.60	0.25	Be7	34 30
SC: Columbia	1.75	0.35	Be7	36 41
			K40	56 61
TN: Knoxville	0.98	0.28		ND
TN: Nashville	1.12	0.30	Be7	84 36
TX: Austin	1.88	0.35	K40	35 58
UT: Salt Lake City	5.52	0.56		ND
VA: Lynchburg	1.84	0.34		ND
WA: Olympia	0.73	0.27		ND
WI: Madison	0.91	0.30	Pb212	20.9 5.6
			Tl208	2.7 4.3

Note: ND = Not Detected

**Table 8**  
**Tritium in Precipitation**  
**January - March 1999**

Location	January 1999		February 1999		March 1999	
	pCi/L $\pm 2u$		pCi/L $\pm 2u$		pCi/L $\pm 2u$	
AL: Montgomery	3	74	38	71	19	76
AR: Little Rock	-19	78	-47	80	40	77
AZ: Phoenix	NS		-71	78	NS	
CT: Hartford	38	76	19	70	25	80
FL: Jacksonville	3	74	78	73	-21	75
FL: Miami	0	74	103	74	0	76
HI: Honolulu	-6	78	10	81	11	76
IA: Iowa City	3	73	0	81	46	78
ID: Boise	-53	77	-6	81	71	78
ID: Idaho Falls	6	79	-22	80	5	76
MN: Minneapolis	119	79	31	82	56	78
MN: Welch	21	75	-26	80	NS	
NC: Charlotte	NS		NS		94	80
NC: Wilmington	47	76	66	73	-19	80
ND: Bismarck	0	73	18	82	NS	
NY: Albany	36	75	78	73	-3	80
NY: Yaphank	12	75	41	71	-17	79
OH: Painesville	84	77	-8	81	22	77
OR: Portland	46	80	-40	80	16	76
PA: Harrisburg	66	76	31	71	-24	80
SC: Barnwell	175	81	307	83	NS	
SC: Columbia	10	74	90	74	265	86
TN: Knoxville	9	73	5	70	-33	74
TN: Nashville	48	76	98	74	27	77
TX: Austin	NS		NS		91	79
UT: Salt Lake City	21	79	14	81	61	78
VA: Lynchburg	28	75	45	71	40	78
WA: Olympia	51	73	-16	80	2	75
WI: Madison	5	74	-24	80	73	78

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 1999**

Location	Source	Date Collected	<sup>3</sup> H pCi/L ± 2σ	
AL: Decatur	Tennessee River	01/20/99	93	83
AL: Gordon	Chattahoochee River	01/11/99	64	80
AL: Scottsboro	Tennessee River	01/19/99	47	81
AR: Little Rock	Arkansas River	01/11/99	51	79
CA: Clay Station	Folsom S. Canal	01/26/99	15	77
CA: Eureka	Humboldt Bay	01/13/99	-14	79
CO: Platteville	South Platte River	01/12/99	5	79
CT: E. Haddam	Connecticut River	02/02/99	0	77
CT: Waterford	Long Island Sound	02/02/99	-50	74
FL: Crystal River	Gulf Of Mexico	01/19/99	16	80
FL: Ft. Pierce	Atlantic Ocean	01/20/99	157	81
FL: Homestead	Biscayne Bay	01/20/99	103	83
GA: Baxley	Altamaha River	01/19/99	47	77
IA: Cedar Rapids	Cedar River	01/12/99	-26	79
ID: Buhl	Snake River	01/20/99	27	80
IL: Moline	Mississippi River	02/23/99	10	77
IL: Morris	Illinois River	01/06/99	249	87
IL: Zion	Lake Michigan	02/01/99	43	83
KS: Le Roy	Neosho River	03/25/99	136	80
LA: New Orleans	Mississippi River	02/01/99	23	78
MA: Plymouth	Cape Cod Bay	03/12/99	49	76
MD: Conowingo	Susquehanna River	01/19/99	-13	83
MD: Lusby	Chesapeake Bay	01/12/99	-11	79
ME: Wiscasset	Montseway Bay	01/11/99	-16	79
MI: Bridgman	Lake Michigan	01/19/99	640	100
MI: Charlevoix	Lake Michigan	01/09/99	94	80
MI: Monroe	Lake Erie	01/29/99	75	77
MI: S. Haven	Lake Michigan	01/19/99	74	82
MN: Monticello	Mississippi River	01/19/99	16	80
MN: Red Wing	Mississippi River	01/25/99	35	77
MS: Port Gibson	Mississippi River	01/05/99	97	81
NC: Charlotte	Catawba River	01/20/99	426	92
NC: Southport	Atlantic Ocean	01/12/99	-44	78
NV: Boulder City	Colorado River	02/23/99	34	78
NY: Chelsea	Hudson River	01/07/99	3	79
NY: Croton-On-Hudson	Hudson River	02/19/99	46	79
NY: Oswego	Lake Ontario	03/25/99	221	83
OR: Bradwood	Columbia River	01/07/99	29	79
PA: Danville	Susquehanna River	01/20/99	92	78
PA: Philadelphia	Delaware River - Baxter	01/28/99	85	78



**Table 9 (continued)**  
**Tritium in Surface Water**  
**January - March 1999**

Location	Source	Date Collected	<sup>3</sup> H pCi/L ± 2 <i>u</i>	
PA: Philadelphia	Schuylkill River - Queen	01/28/99	86	78
SC: Allendale	Savannah River	01/05/99	1000	110
SC: Broad River	Broad River	01/06/99	304	89
SC: Hartsville	Lake Robinson	01/29/99	3020	160
TN: Daisy	Tennessee River	01/13/99	63	82
TN: Kingston	Clinch River	01/29/99	128	83
TN: Oak Ridge	Clinch River	02/23/99	527	95
TX: Matagorda	Colorado River	01/12/99	5	80
VA: Doswell	North Anna River	01/05/99	2960	160
VA: Newport News	James River	01/20/99	5	77
VT: Vernon	Connecticut River	02/24/99	40	76
WA: Northport	Columbia River	01/05/99	11	77
WA: Richland	Columbia River	01/25/99	99	82
WI: Two Creeks	Lake Michigan	01/19/99	21	78
WI: Victory	Mississippi River	01/11/99	42	81
WV: Wheeling	Ohio River	01/04/99	42	79

## **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 1999**

Location	Date Collected	<sup>3</sup> H pCi/L ± 2 <i>u</i>	
AK: Fairbanks	02/22/99	10	79
AL: Dothan	01/11/99	19	80
AL: Montgomery	01/05/99	-36	77
AL: Muscle Shoals	01/20/99	125	81
AL: Scottsboro	01/19/99	60	81
AR: Little Rock	01/06/99	-54	77
CA: Berkeley	01/26/99	29	77
CA: Los Angeles	01/11/99	-13	78
CO: Denver	01/12/99	53	81
CO: Platteville	01/12/99	63	81
CT: Hartford	01/04/99	-19	78
DC: Washington	01/05/99	-28	78
DE: Dover	01/26/99	64	78
FL: Miami	01/14/99	-5	78
FL: Tampa	02/25/99	17	79
GA: Baxley	01/19/99	43	77
GA: Savannah	02/25/99	-5	78
HI: Honolulu	01/15/99	-3	79
IA: Cedar Rapids	01/12/99	-3	79
ID: Boise	01/04/99	18	80
ID: Idaho Falls	02/11/99	59	81
IL: Morris	01/11/99	-43	77
IL: W. Chicago	01/05/99	-14	78
KS: Topeka	01/05/99	42	81
MA: Lawrence	01/04/99	-35	77
MA: Lawrence	03/10/99	-25	77
MD: Baltimore	01/05/99	44	81
MD: Conowingo	01/19/99	43	77
ME: Augusta	01/12/99	-13	78
MI: Detroit	01/07/99	171	86
MI: Grand Rapids	02/17/99	54	81
MN: Minneapolis	02/01/99	43	81
MN: Red Wing	01/25/99	14	76
MO: Jefferson City	01/05/99	17	80
MS: Jackson	01/05/99	-16	78
MS: Port Gibson	01/05/99	-45	77
MT: Helena	02/19/99	-13	78
NC: Charlotte	01/20/99	304	88
NC: Wilmington	01/13/99	3	79
ND: Bismarck	01/11/99	89	82

**Table 10 (continued)**  
**Tritium in Drinking Water**  
**January - March 1999**

Location	Date Collected	<sup>3</sup> H pCi/L ± 2 <i>u</i>	
NE: Lincoln	01/06/99	-19	78
NH: Concord	02/17/99	49	80
NM: Santa Fe	01/12/99	12	76
NV: Las Vegas	01/08/99	39	81
NY: Albany	01/04/99	23	80
NY: Niagara Falls	02/03/99	62	81
NY: Syracuse	02/09/99	82	81
OH: Cincinnati	01/28/99	-29	78
OH: Columbus	02/09/99	10	79
OH: E. Liverpool	03/12/99	10	79
OH: Painesville	01/04/99	83	82
OH: Toledo	03/24/99	120	84
OR: Portland	01/05/99	2	79
PA: Columbia	01/21/99	35	77
PA: Harrisburg	01/21/99	19	76
PA: Philadelphia - Baxter	01/28/99	55	78
PA: Philadelphia - Queen	01/28/99	38	77
PA: Pittsburgh	03/12/99	10	80
PC: Corozal	01/12/99	8	79
RI: Providence	01/04/99	-7	79
SC: Barnwell	01/11/99	31	81
SC: Columbia	01/06/99	207	88
SC: Jenkinsville	01/07/99	31	80
SC: Seneca	01/20/99	94	79
TN: Chattanooga	01/08/99	-24	78
TN: Knoxville	01/05/99	-5	79
TN: Oak Ridge - Anderson Co #772	03/26/99	-11	79
TN: Oak Ridge - Knox Co #371	03/26/99	46	81
TN: Oak Ridge - Roane Co #4442	03/26/99	250	88
TN: Oak Ridge - Anderson Co #768	03/26/99	-16	77
TN: Oak Ridge - Roane Co #360	03/26/99	87	82
TX: Austin	01/08/99	-35	77
VA: Lynchburg	03/02/99	30	79
WA: Richland	01/25/99	73	79
WA: Seattle	01/04/99	-68	76
WI: Genoa	01/11/99	31	80
WI: Madison	01/15/99	38	77

### **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 1999**

Location	Date Collected	K g/L $\pm 2u$		<sup>137</sup> Cs pCi/L $\pm 2u$	<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
AL: Montgomery	01/13/99	1.51	0.10	ND	ND	ND
AR: Little Rock	01/27/99	1.537	0.078	ND	ND	ND
AZ: Phoenix	01/20/99	1.55	0.10	ND	ND	ND
CA: Los Angeles	01/05/99	1.632	0.049	ND	ND	ND
CA: Sacramento	01/19/99	1.61	0.12	ND	ND	ND
CA: San Francisco	01/06/99	1.61	0.12	ND	ND	ND
CT: Hartford	01/04/99	1.48	0.14	ND	ND	ND
DE: Wilmington	01/11/99	1.489	0.080	ND	ND	ND
FL: Tampa	01/12/99	1.61	0.11	ND	ND	ND
GA: Atlanta	01/25/99	1.53	0.14	ND	ND	ND
HI: Honolulu	01/08/99	1.49	0.12	ND	ND	ND
IA: Des Moines	01/11/99	1.54	0.14	ND	ND	ND
IN: Indianapolis	01/20/99	1.609	0.081	ND	ND	ND
KS: Wichita	01/12/99	1.66	0.11	ND	ND	ND
KY: Louisville	01/07/99	1.54	0.12	ND	ND	ND
MA: Boston	01/04/99	1.525	0.081	ND	ND	ND
MD: Baltimore	01/08/99	1.573	0.090	ND	ND	ND
ME: Portland	01/06/99	1.585	0.090	ND	ND	ND
MI: Detroit	01/12/99	1.501	0.086	ND	ND	ND
MI: Grand Rapids	01/07/99	1.680	0.068	ND	ND	ND
MO: Jefferson City	01/06/99	1.680	0.081	ND	ND	ND
MS: Jackson	01/05/99	1.513	0.081	ND	ND	ND
NC: Charlotte	01/22/99	1.525	0.080	ND	ND	ND
NM: Albuquerque	01/06/99	1.64	0.11	ND	ND	ND
NY: Buffalo	01/08/99	1.56	0.12	ND	ND	ND
NY: Syracuse	01/06/99	1.621	0.049	ND	ND	ND
OH: Cincinnati	01/25/99	1.44	0.14	ND	ND	ND
OH: Cleveland	01/19/99	1.621	0.090	ND	ND	ND
OR: Portland	01/05/99	1.668	0.050	ND	ND	ND
PA: Pittsburgh	01/06/99	1.644	0.049	ND	ND	ND
PC: Cristobal	01/07/99	1.49	0.14	ND	ND	ND
PR: San Juan	01/27/99	1.489	0.078	ND	ND	ND
SD: Rapid City	01/12/99	1.57	0.12	ND	ND	ND
TN: Knoxville	01/04/99	1.45	0.14	ND	ND	ND
TN: Memphis	01/05/99	1.644	0.048	ND	ND	ND
TX: Austin	01/20/99	1.478	0.076	ND	ND	ND
TX: Ft. Worth	01/12/99	1.525	0.089	ND	ND	ND
VA: Norfolk	01/05/99	1.621	0.049	ND	ND	ND
VT: Burlington	01/12/99	1.54	0.12	ND	ND	ND

Note: ND = Not Detected

**Table 11 (continued)**  
**Radionuclides in Pasteurized Milk**  
**January 1999**

Location	Date Collected	K g/L $\pm 2u$	<sup>137</sup> Cs pCi/L $\pm 2u$	<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
WA: Seattle	01/06/99	1.632 0.049	ND	ND	ND
WA: Spokane	01/05/99	1.644 0.048	ND	ND	ND
WV: Charleston	01/04/99	1.585 0.081	ND	ND	ND

Note: ND = Not Detected

**Table 12**  
**Radionuclides in Pasteurized Milk**  
**February 1999**

Location	Date Collected	K g/L $\pm 2u$		<sup>137</sup> Cs pCi/L $\pm 2u$		<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
AL: Montgomery	02/03/99	1.632	0.067	ND		ND	ND
AR: Little Rock	02/25/99	1.489	0.088	ND		ND	ND
CA: Los Angeles	02/08/99	1.656	0.081	ND		ND	ND
CA: San Francisco	02/05/99	1.62	0.15	ND		ND	ND
CT: Hartford	02/04/99	1.704	0.050	ND		ND	ND
DE: Wilmington	02/08/99	1.58	0.14	ND		ND	ND
FL: Tampa	02/04/99	1.692	0.068	2.4	1.7	ND	ND
GA: Atlanta	02/22/99	1.561	0.097	ND		ND	ND
HI: Honolulu	02/09/99	1.573	0.089	ND		ND	ND
IA: Des Moines	02/01/99	1.585	0.080	ND		ND	ND
IL: Chicago	02/11/99	1.525	0.079	ND		ND	ND
IN: Indianapolis	02/09/99	1.644	0.081	ND		ND	ND
KS: Wichita	02/09/99	1.489	0.088	ND		ND	ND
KY: Louisville	02/03/99	1.632	0.049	ND		ND	ND
MA: Boston	02/08/99	1.632	0.081	ND		ND	ND
MD: Baltimore	02/04/99	1.56	0.14	ND		ND	ND
ME: Portland	02/02/99	1.680	0.067	ND		ND	ND
ME: Portland	02/08/99	1.597	0.088	ND		ND	ND
MI: Detroit	02/09/99	1.501	0.090	ND		ND	ND
MI: Grand Rapids	02/08/99	1.537	0.089	ND		ND	ND
MO: Jefferson City	02/03/99	1.704	0.049	ND		ND	ND
MS: Jackson	02/01/99	1.58	0.12	ND		ND	ND
NC: Charlotte	02/18/99	1.51	0.17	ND		ND	ND
NJ: Trenton	02/22/99	1.513	0.078	ND		ND	ND
NM: Albuquerque	02/15/99	1.549	0.087	ND		ND	ND
NV: Las Vegas	02/02/99	1.632	0.079	ND		ND	ND
NY: Buffalo	02/05/99	1.61	0.12	ND		ND	ND
NY: Syracuse	02/08/99	1.58	0.12	ND		ND	ND
OH: Cincinnati	02/09/99	1.66	0.11	ND		ND	ND
OH: Cleveland	02/22/99	1.53	0.17	ND		ND	ND
OR: Portland	02/02/99	1.549	0.080	ND		ND	ND
PA: Philadelphia	02/08/99	1.43	0.12	ND		ND	ND
PA: Pittsburgh	02/10/99	1.585	0.082	ND		ND	ND
PR: San Juan	02/04/99	1.668	0.049	ND		ND	ND
SD: Rapid City	02/05/99	1.573	0.089	ND		ND	ND
TN: Chattanooga	02/02/99	1.561	0.080	ND		ND	ND
TN: Knoxville	02/12/99	1.573	0.067	ND		ND	ND
TN: Memphis	02/05/99	1.64	0.11	ND		ND	ND
TX: Austin	02/16/99	1.49	0.14	ND		ND	ND

Note: ND = Not Detected



**Table 12 (continued)**  
**Radionuclides in Pasteurized Milk**  
**February 1999**

Location	Date Collected	K g/L $\pm 2u$		<sup>137</sup> Cs pCi/L $\pm 2u$	<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
TX: Ft. Worth	02/08/99	1.597	0.067	ND	ND	ND
VA: Norfolk	02/01/99	1.609	0.080	ND	ND	ND
VT: Burlington	02/23/99	1.609	0.081	ND	ND	ND
WA: Seattle	02/02/99	1.621	0.088	ND	ND	ND
WA: Spokane	02/17/99	1.61	0.12	ND	ND	ND
WV: Charleston	02/02/99	1.513	0.088	ND	ND	ND

Note: ND = Not Detected

**Table 13**  
**Radionuclides in Pasteurized Milk**  
**March 1999**

Location	Date Collected	K g/L $\pm 2u$		<sup>137</sup> Cs pCi/L $\pm 2u$		<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
AL: Montgomery	03/03/99	1.57	0.10	ND		ND	ND
AZ: Phoenix	03/17/99	1.62	0.13	ND		ND	ND
CA: Los Angeles	03/11/99	1.58	0.13	ND		ND	ND
CA: Sacramento	03/08/99	1.54	0.12	ND		ND	ND
CA: Sacramento	03/08/99	1.67	0.13	ND		ND	ND
CA: San Francisco	03/04/99	1.69	0.10	ND		ND	ND
CT: Hartford	03/04/99	1.609	0.090	ND		ND	ND
DE: Wilmington	03/23/99	1.54	0.16	ND		ND	ND
FL: Tampa	03/09/99	1.64	0.13	3.2	3.1	ND	ND
GA: Atlanta	03/29/99	1.63	0.13	ND		ND	ND
HI: Honolulu	03/04/99	1.60	0.13	ND		ND	ND
IA: Des Moines	03/08/99	1.56	0.14	ND		ND	ND
IL: Chicago	03/18/99	1.54	0.13	ND		ND	ND
IN: Indianapolis	03/08/99	1.57	0.13	ND		ND	ND
KS: Wichita	03/16/99	1.63	0.12	ND		ND	ND
KY: Louisville	03/13/99	1.49	0.16	ND		ND	ND
MA: Boston	03/09/99	1.69	0.13	ND		ND	ND
MD: Baltimore	03/05/99	1.680	0.073	ND		ND	ND
ME: Portland	03/02/99	1.62	0.10	ND		ND	ND
MI: Detroit	03/09/99	1.58	0.12	ND		ND	ND
MI: Grand Rapids	03/05/99	1.656	0.069	ND		ND	ND
MO: Jefferson City	03/16/99	1.55	0.12	ND		ND	ND
MS: Jackson	03/03/99	1.585	0.091	ND		ND	ND
NC: Charlotte	03/18/99	1.68	0.13	ND		ND	ND
NJ: Trenton	03/26/99	1.48	0.14	ND		ND	ND
NV: Las Vegas	03/02/99	1.57	0.14	ND		ND	ND
NV: Las Vegas	03/26/99	1.56	0.12	ND		ND	ND
NY: Buffalo	03/08/99	1.644	0.081	ND		ND	ND
NY: Syracuse	03/08/99	1.58	0.12	ND		ND	ND
OH: Cincinnati	03/08/99	1.50	0.15	ND		ND	ND
OH: Cleveland	03/02/99	1.66	0.10	ND		ND	ND
OR: Portland	03/03/99	1.632	0.068	ND		ND	ND
PA: Philadelphia	03/08/99	1.56	0.17	ND		ND	ND
PA: Pittsburgh	03/08/99	1.67	0.13	ND		ND	ND
PC: Cristobal	03/02/99	1.716	0.092	4.7	2.9	ND	ND
PR: San Juan	03/17/99	1.48	0.12	ND		ND	ND
SD: Rapid City	03/18/99	1.53	0.12	ND		ND	ND
TN: Chattanooga	03/08/99	1.61	0.12	ND		ND	ND
TN: Knoxville	03/11/99	1.60	0.14	ND		ND	ND

Note: ND = Not Detected

**Table 13 (continued)**  
**Radionuclides in Pasteurized Milk**  
**March 1999**

Location	Date Collected	K g/L $\pm 2u$	<sup>137</sup> Cs pCi/L $\pm 2u$	<sup>140</sup> Ba pCi/L $\pm 2u$	<sup>131</sup> I pCi/L $\pm 2u$
TN: Memphis	03/12/99	1.53 0.15	ND	ND	ND
TX: Ft. Worth	03/17/99	1.62 0.12	ND	ND	ND
VA: Norfolk	03/04/99	1.573 0.081	ND	ND	ND
VT: Burlington	03/15/99	1.60 0.13	ND	ND	ND
WA: Seattle	03/03/99	1.64 0.12	ND	ND	ND
WA: Spokane	03/02/99	1.597 0.091	ND	ND	ND
WV: Charleston	03/05/99	1.561 0.079	ND	ND	ND

Note: ND = Not Detected

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## For More Information

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