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ENVIRONMENTAL RADIATION DATA

REPORT 90

April - June 1997

United States Environmental Protection Agency

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/m³	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/m³	0.75
	Water	pCi/L	0.1
† Uranium-234,235,238	Air	aCi/m³	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 ^{239}Pu and ^{240}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 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/m^3. 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 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
April 1997

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
		(pCi/m³)			(pCi/m³)		
AK: Fairbanks	2	0.0	0.0	0.0	0.019	0.012	0.015
AL: Montgomery	1	0.0	0.0	0.0	0.015	0.015	0.015
AR: Little Rock	7	0.2	0.0	0.1	0.020	0.009	0.014
AZ: Phoenix	2	0.4	0.3	0.4	0.018	0.007	0.013
CA: Berkeley	9	0.1	0.0	0.1	0.006	0.003	0.005
CA: Los Angeles	9	0.2	0.0	0.1	0.015	0.006	0.009
CO: Denver	8	0.8	0.2	0.4	0.017	0.007	0.011
CT: Hartford	8	0.1	0.0	0.0	0.011	0.004	0.008
DE: Wilmington	7	0.2	0.1	0.1	0.019	0.008	0.012
FL: Jacksonville	6	0.1	0.0	0.0	0.014	0.006	0.010
FL: Miami	7	0.1	0.0	0.0	0.015	0.005	0.010
HI: Honolulu	8	0.2	0.1	0.1	0.008	0.003	0.005
IA: Iowa City	6	0.9	0.1	0.4	0.017	0.009	0.012
ID: Boise	9	0.6	0.1	0.3	0.018	0.003	0.008
ID: Idaho Falls	8				0.019	0.005	0.009
IN: Indianapolis	9	0.8	0.2	0.3	0.020	0.011	0.015
KS: Topeka	8	1.5	0.2	0.8	0.017	0.009	0.013
ME: Augusta	9	0.1	0.0	0.0	0.015	0.005	0.009
MI: Lansing	8	0.2	0.1	0.1	0.017	0.009	0.012
MN: Minneapolis	3	0.1	0.0	0.1	0.012	0.006	0.009
MN: Welch	9	0.5	0.1	0.3	0.020	0.007	0.015
MS: Jackson	9	0.3	0.1	0.2	0.028	0.009	0.014
NC: Charlotte	6	0.1	0.0	0.0	0.015	0.009	0.012
NC: Wilmington	2				0.015	0.012	0.013
ND: Bismarck	4	0.2	0.0	0.1	0.015	0.007	0.012
NH: Concord	9	0.2	0.0	0.1	0.015	0.004	0.008
NM: Santa Fe	2	0.2	0.0	0.1	0.015	0.008	0.011
NV: Las Vegas	8	0.2	0.1	0.1	0.021	0.007	0.013
NY: Albany	5	0.1	0.0	0.1	0.014	0.007	0.010
NY: New York City	9	0.1	0.0	0.0	0.015	0.007	0.010
NY: Syracuse	2	0.0	0.0	0.0	0.011	0.007	0.009
NY: Yaphank	8	0.4	0.2	0.3	0.012	0.006	0.009
OH: Columbus	3	0.2	0.1	0.2	0.016	0.009	0.013
OH: Painesville	7	0.1	0.0	0.1	0.013	0.008	0.010
OH: Ross	5				0.018	0.010	0.014
PA: Harrisburg	8	0.5	0.1	0.3	0.019	0.007	0.012
SC: Barnwell	2	0.0	0.0	0.0	0.013	0.008	0.010
SC: Columbia	8	0.3	0.0	0.1	0.025	0.009	0.014

Table 2 (continued)

Gross Beta in Airborne Particulates
April 1997

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
		(pCi/m³)			(pCi/m³)		
SD: Pierre	5	0.3	0.0	0.2	0.014	0.008	0.011
TN: Knoxville	5	1.2	0.0	0.3	0.018	0.013	0.016
TN: Nashville	9	0.3	0.1	0.2	0.023	0.010	0.015
TN: Oak Ridge/Bethel	8	0.3	0.1	0.2	0.014	0.007	0.010
TN: Oak Ridge/K25	8	0.3	0.1	0.2	0.015	0.008	0.011
TN: Oak Ridge/Melton	8	0.3	0.0	0.2	0.013	0.007	0.011
TN: Oak Ridge/Y12 E	8	0.4	0.1	0.2	0.015	0.007	0.011
TN: Oak Ridge/Y12 W	8	0.2	0.0	0.1	0.017	0.008	0.012
TX: Austin	7	0.3	0.1	0.1	0.019	0.007	0.012
TX: El Paso	8	0.9	0.0	0.4	0.026	0.011	0.017
UT: Salt Lake City	5	0.1	0.0	0.0	0.022	0.006	0.012
VA: Lynchburg	8	0.4	0.1	0.3	0.014	0.006	0.010
WA: Olympia	7	0.1	0.0	0.1	0.011	0.003	0.005
WA: Spokane	8	0.3	0.1	0.2	0.018	0.004	0.008
WI: Madison	8	0.5	0.1	0.3	0.019	0.007	0.013

Table 3

Gross Beta in Airborne Particulates
May 1997

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
		(pCi/m³)			(pCi/m³)		
AK: Fairbanks	3	0.0	0.0	0.0	0.011	0.006	0.009
AL: Montgomery	6	0.0	0.0	0.0	0.020	0.009	0.016
AR: Little Rock	9	0.2	0.0	0.1	0.013	0.003	0.008
AZ: Phoenix	4	0.7	0.4	0.5	0.022	0.010	0.015
CA: Berkeley	9	0.1	0.0	0.0	0.007	0.003	0.005
CA: Los Angeles	9	0.1	0.0	0.1	0.015	0.007	0.011
CO: Denver	9	1.7	0.1	0.6	0.014	0.008	0.010
CT: Hartford	9	0.1	0.0	0.0	0.009	0.003	0.006
DE: Wilmington	8	0.2	0.0	0.1	0.016	0.005	0.010
FL: Jacksonville	6	0.1	0.0	0.1	0.013	0.005	0.009
FL: Miami	5	0.0	0.0	0.0	0.009	0.007	0.008
HI: Honolulu	8	0.2	0.1	0.1	0.007	0.003	0.005
IA: Iowa City	8	0.7	0.1	0.3	0.012	0.005	0.009
ID: Boise	9	0.6	0.1	0.4	0.014	0.005	0.010
ID: Idaho Falls	9				0.016	0.006	0.010
IN: Indianapolis	8	0.5	0.0	0.3	0.015	0.007	0.011
KS: Topeka	9	1.8	0.3	0.8	0.011	0.004	0.008
ME: Augusta	9	0.1	0.0	0.1	0.011	0.002	0.007
MI: Lansing	9	0.2	0.1	0.1	0.013	0.004	0.008
MN: Welch	11	0.4	0.1	0.2	0.014	0.005	0.009
MS: Jackson	9	0.3	0.0	0.1	0.030	0.005	0.013
NC: Charlotte	7	0.4	0.0	0.1	0.014	0.008	0.010
NC: Wilmington	3				0.012	0.011	0.012
ND: Bismarck	6	1.5	0.1	0.6	0.012	0.006	0.009
NH: Concord	9	0.1	0.0	0.1	0.009	0.001	0.006
NV: Las Vegas	9	0.2	0.1	0.1	0.018	0.009	0.014
NY: Albany	4	0.1	0.0	0.1	0.012	0.005	0.009
NY: New York City	8	0.1	0.0	0.1	0.014	0.003	0.008
NY: Syracuse	4	0.0	0.0	0.0	0.010	0.004	0.008
NY: Yaphank	8	0.7	0.0	0.2	0.010	0.005	0.008
OH: Columbus	3	0.1	0.1	0.1	0.008	0.006	0.007
OH: Painesville	8	0.1	0.0	0.1	0.010	0.004	0.008
OH: Ross	9				0.013	0.005	0.010
PA: Harrisburg	9	0.5	0.1	0.2	0.015	0.006	0.009
SC: Barnwell	2	0.0	0.0	0.0	0.014	0.010	0.012
SC: Columbia	9	0.4	0.1	0.2	0.018	0.005	0.012
SD: Pierre	6	0.4	0.0	0.1	0.010	0.005	0.008
TN: Knoxville	6	0.4	0.0	0.1	0.018	0.009	0.014

Table 3 (continued)

Gross Beta in Airborne Particulates
May 1997

Location	Number of Samples	5-hour Field Estimate (pCi/m³)			NAREL Lab Measurement (pCi/m³)		
		Max	Min	Avg	Max	Min	Avg
TN: Nashville	9	0.2	0.1	0.1	0.015	0.008	0.010
TN: Oak Ridge/Bethel	9	0.5	0.1	0.2	0.013	0.008	0.010
TN: Oak Ridge/K25	9	0.5	0.1	0.3	0.012	0.007	0.009
TN: Oak Ridge/Melton	9	0.5	0.0	0.2	0.012	0.007	0.009
TN: Oak Ridge/Y12 E	9	0.6	0.0	0.2	0.011	0.007	0.009
TN: Oak Ridge/Y12 W	9	0.2	0.0	0.1	0.012	0.008	0.009
TX: Austin	9	0.1	0.1	0.1	0.011	0.007	0.010
TX: El Paso	8	1.2	0.0	0.4	0.017	0.008	0.013
UT: Salt Lake City	7	0.2	0.0	0.1	0.027	0.005	0.013
VA: Lynchburg	9	0.4	0.2	0.3	0.016	0.006	0.010
WA: Olympia	7	1.0	0.0	0.2	0.007	0.002	0.004
WA: Spokane	8	0.3	0.1	0.2	0.015	0.004	0.009
WI: Madison	9	0.9	0.1	0.3	0.011	0.004	0.008

Table 4

Gross Beta in Airborne Particulates
June 1997

Location	Number of Samples	5-hour Field Estimate (pCi/m³)			NAREL Lab Measurement (pCi/m³)		
		Max	Min	Avg	Max	Min	Avg
AK: Fairbanks	3	0.0	0.0	0.0	0.009	0.005	0.006
AL: Montgomery	5	0.0	0.0	0.0	0.018	0.012	0.014
AR: Little Rock	8	0.4	0.1	0.2	0.020	0.008	0.012
AZ: Phoenix	4	0.6	0.1	0.3	0.020	0.008	0.013
CA: Berkeley	8	0.1	0.0	0.0	0.004	0.002	0.003
CA: Los Angeles	9	0.1	0.0	0.1	0.012	0.004	0.008
CO: Denver	9	0.9	0.2	0.4	0.012	0.007	0.010
CT: Hartford	9	0.1	0.0	0.1	0.010	0.004	0.007
DE: Wilmington	9	0.6	0.1	0.2	0.014	0.003	0.009
FL: Jacksonville	8	0.1	0.0	0.0	0.011	0.004	0.007
FL: Miami	7	0.0	0.0	0.0	0.011	0.004	0.008
HI: Honolulu	5	0.2	0.1	0.1	0.005	0.002	0.003
IA: Iowa City	8	1.2	0.2	0.5	0.013	0.007	0.010
ID: Boise	8	0.5	0.2	0.3	0.010	0.005	0.007
ID: Idaho Falls	8				0.008	0.005	0.007
IN: Indianapolis	8	0.3	0.1	0.2	0.015	0.006	0.011
KS: Topeka	9	1.3	0.2	0.6	0.014	0.008	0.011
ME: Augusta	7	0.1	0.0	0.1	0.009	0.003	0.007
MI: Lansing	9	0.4	0.1	0.2	0.012	0.005	0.009
MN: Welch	10	1.1	0.1	0.4	0.012	0.006	0.010
MS: Jackson	8	0.3	0.1	0.2	0.033	0.008	0.015
NC: Charlotte	8	0.2	0.1	0.1	0.014	0.006	0.009
NC: Wilmington	4	0.0	0.0	0.0	0.012	0.006	0.009
ND: Bismarck	5	0.9	0.2	0.5	0.010	0.006	0.008
NH: Concord	8	0.2	0.1	0.1	0.014	0.005	0.009
NV: Las Vegas	9	0.1	0.1	0.1	0.012	0.007	0.010
NY: Albany	4	0.6	0.0	0.2	0.015	0.004	0.011
NY: New York City	7	0.1	0.0	0.1	0.014	0.006	0.010
NY: Syracuse	4	0.1	0.0	0.0	0.012	0.009	0.011
NY: Yaphank	8	0.2	0.0	0.1	0.013	0.005	0.008
OH: Columbus	4	0.2	0.1	0.1	0.012	0.006	0.010
OH: Painesville	7	0.2	0.1	0.1	0.012	0.005	0.010
OH: Ross	8	0.0	0.0	0.0	0.017	0.006	0.011
PA: Harrisburg	9	0.7	0.1	0.3	0.015	0.005	0.009
SC: Barnwell	2	0.0	0.0	0.0	0.007	0.007	0.007
SC: Columbia	8	0.6	0.1	0.2	0.016	0.006	0.010
SD: Pierre	6	0.2	0.1	0.1	0.011	0.007	0.009
TN: Knoxville	4	0.4	0.0	0.2	0.028	0.010	0.017

Table 4 (continued)

Gross Beta in Airborne Particulates
June 1997

Location	Number of Samples	5-hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
		(pCi/m³)			(pCi/m³)		
TN: Nashville	9	0.2	0.1	0.1	0.013	0.008	0.010
TN: Oak Ridge/Bethel	9	0.5	0.1	0.2	0.012	0.006	0.008
TN: Oak Ridge/K25	9	0.5	0.1	0.3	0.011	0.006	0.008
TN: Oak Ridge/Melton	9	0.6	0.1	0.3	0.011	0.006	0.008
TN: Oak Ridge/Y12 E	9	0.3	0.1	0.2	0.013	0.007	0.009
TN: Oak Ridge/Y12 W	9	0.3	0.0	0.2	0.012	0.006	0.009
TX: Austin	9	0.3	0.0	0.1	0.016	0.008	0.011
TX: El Paso	9	0.9	0.1	0.5	0.015	0.007	0.011
UT: Salt Lake City	8	0.2	0.0	0.1	0.016	0.007	0.011
VA: Lynchburg	8	0.8	0.2	0.4	0.013	0.004	0.008
WA: Olympia	7	0.1	0.0	0.0	0.004	0.001	0.003
WA: Spokane	9	0.1	0.1	0.1	0.011	0.003	0.006
WI: Madison	9	0.7	0.1	0.4	0.012	0.008	0.010

Table 5

Gross Beta and Specific Gamma in Precipitation
April 1997

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L	± 2*u*	Nuclide	pCi/L	± 2*u*
AL: Montgomery	1.60	0.31	K40	15	14
AR: Little Rock	1.04	0.29	Pb212	5.3	8.1
			Ra224	56	52
			Tl208	2.7	6.2
AZ: Phoenix	1.71	0.34		ND	
CO: Denver	1.10	0.29		ND	
DE: Wilmington	0.84	0.27		ND	
FL: Jacksonville	0.69	0.27		ND	
FL: Miami	0.35	0.22	Tl208	1.9	1.7
HI: Honolulu	0.56	0.25		ND	
IA: Iowa City	0.60	0.24	Pb212	3.7	7.5
ID: Boise	0.69	0.24		ND	
ID: Idaho Falls	4.05	0.48	Be7	81	50
			Pb212	4.7	7.5
MI: Lansing	0.65	0.26		ND	
MN: Minneapolis	2.54	0.37		ND	
MS: Jackson	0.60	0.24		ND	
NC: Charlotte	0.92	0.27	Be7	61	55
			Bi214	14	10
			Pb212	3.3	9.0
NC: Wilmington	0.93	0.28		ND	
ND: Bismarck	2.27	0.37	Pb212	8.0	8.5
			Tl208	4.3	5.4
NE: Lincoln	1.62	0.32		ND	
NH: Concord	1.57	0.32	Be7	70	59
			Pb212	4.1	7.7
NY: Albany	0.31	0.25		ND	
NY: Yaphank	0.91	0.27	Pb212	4.4	7.5
OH: Painesville	4.26	0.46	Be7	119	40
			Bi214	7.4	3.3
			K40	12	14
			Pb214	8.8	3.2
OR: Portland	0.73	0.27		ND	
PA: Harrisburg	1.94	0.36	Be7	62	52
			Tl208	2.4	5.3
SC: Barnwell	2.79	0.39	Pb212	3.8	3.5
SC: Columbia	2.84	0.39	Pb212	4.5	3.4

Note: ND = Not Detected

Table 5 (continued)

Gross Beta and Specific Gamma in Precipitation
April 1997

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L	± 2*u*	Nuclide	pCi/L	± 2*u*
TN: Knoxville	1.53	0.31		ND	
TN: Nashville	1.87	0.35	Be7	48	35
TX: Austin	0.94	0.27		ND	
UT: Salt Lake City	2.55	0.39		ND	
VA: Lynchburg	5.86	0.53		ND	
WA: Olympia	0.77	0.26	Pb214	3.9	4.0
WI: Madison	0.48	0.23	Tl208	3.5	3.0

Note: ND = Not Detected

Table 6

Gross Beta and Specific Gamma in Precipitation
May 1997

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L	± 2*u*	Nuclide	pCi/L	± 2*u*
AL: Montgomery	0.49	0.24	Tl208	3.8	4.0
AR: Little Rock	0.87	0.25		ND	
CO: Denver	1.14	0.28	Bi214	17.6	6.8
			Pb212	4.6	9.3
			Pb214	12.0	5.6
			Tl208	2.7	6.1
CT: Hartford	3.43	0.42	Be7	152	37
DE: Wilmington	2.10	0.34	Be7	88	42
			K40	25	59
			Pb212	2.8	8.4
			Tl208	2.4	5.3
FL: Jacksonville	0.90	0.29	Pb212	11.5	8.6
			Tl208	4.7	5.3
FL: Miami	0.38	0.24	Bi214	7	12
			Tl208	2.1	6.0
HI: Honolulu	0.87	0.27		ND	
IA: Iowa City	2.14	0.36		ND	
ID: Idaho Falls	2.44	0.38	Pb212	3.5	7.9
ME: Augusta	0.85	0.27	Be7	56	58
MI: Lansing	1.53	0.33	Be7	47	43
			Bi214	8.3	9.8
			Pb212	9.0	8.1
			Pb214	5.8	9.0
MN: Minneapolis	1.68	0.34		ND	
MN: Welch	5.04	0.55	Be7	63	39
			Bi212	28	26
MS: Jackson	0.70	0.27		ND	
NC: Charlotte	2.71	0.40	Be7	86	50
NC: Wilmington	0.72	0.26	Bi212	46	31
			Pb212	9.2	9.1
			Tl208	2.8	6.1
ND: Bismarck	6.16	0.60	Pb212	5.8	8.5
NE: Lincoln	1.63	0.33	Pb212	4.5	7.5
NH: Concord	2.42	0.37	Be7	98	37
			K40	27	58
NY: Albany	1.23	0.30	Be7	51	54
NY: Syracuse	1.02	0.29	Be7	44	31

Note: ND = Not Detected

Table 6 (continued)

Gross Beta and Specific Gamma in Precipitation
May 1997

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L	± 2*u*	Nuclide	pCi/L	± 2*u*
NY: Syracuse	1.02	0.29	Pb212	4.3	7.8
NY: Yaphank	3.23	0.42	Be7	105	34
OH: Painesville	1.86	0.34	Be7	47	35
			Pb212	4.9	7.6
OR: Portland	0.89	0.28	Tl208	2.8	2.8
PA: Harrisburg	2.69	0.38	Be7	50	40
SC: Barnwell	1.12	0.30	Pb214	5.6	6.4
SC: Columbia	1.36	0.31		ND	
TN: Knoxville	0.64	0.26	Bi214	8.7	8.1
			K40	19	57
TN: Nashville	0.92	0.27	Be7	55	28
			K40	23	42
			Tl208	2.6	4.2
TX: Austin	0.55	0.23		ND	
UT: Salt Lake City	0.44	0.24	K40	53	67
VA: Lynchburg	9.66	0.67	Pb212	8.6	8.3
			Ra224	43	38
WA: Olympia	0.67	0.24		ND	
WI: Madison	1.05	0.28		ND	

Note: ND = Not Detected

Table 7

Gross Beta and Specific Gamma in Precipitation
June 1997

Location	Gross Beta Activity		Specific Gamma Activity		
	pCi/L	± 2*u*	Nuclide	pCi/L	± 2*u*
AK: Fairbanks	2.10	0.36	Be7	90	34
AL: Montgomery	0.51	0.24	Be7	36	18
AR: Little Rock	2.09	0.35	Be7	38	40
CO: Denver	1.18	0.30	Be7	54	34
			K40	34	40
			Pb212	3.2	5.1
CT: Hartford	1.58	0.32	Be7	45	40
			Pb212	5.1	6.6
DE: Wilmington	1.63	0.33		ND	
FL: Jacksonville	1.54	0.32	Be7	50	20
			K40	11	13
			Pb212	3.8	3.3
			Tl208	1.6	1.5
FL: Miami	0.51	0.25		ND	
IA: Iowa City	1.04	0.30		ND	
ID: Idaho Falls	3.26	0.45		ND	
ME: Augusta	0.93	0.28	Be7	65	33
MI: Lansing	0.62	0.26		ND	
MN: Minneapolis	1.09	0.29	Be7	38	32
			K40	21	40
MS: Jackson	0.11	0.21	Bi214	4.8	2.8
NC: Charlotte	1.22	0.29	Be7	54	19
			Bi214	8.7	2.7
			Tl208	2.2	1.5
NC: Wilmington	1.28	0.31	Be7	38	19
			Bi214	15.2	2.9
ND: Bismarck	3.25	0.44	K40	23	35
NE: Lincoln	3.22	0.44		ND	
NH: Concord	3.53	0.43	Be7	97	41
			Pb212	3.4	7.8
			Tl208	3.3	2.5
NY: Albany	2.17	0.37	Be7	141	37
			K40	50	27
NY: Syracuse	0.61	0.26	Be7	35	37
			Pb212	9.7	8.7
			Tl208	3.9	5.4
NY: Yaphank	14.60	0.83	Be7	34	26

Note: ND = Not Detected

Table 7 (continued)

Gross Beta and Specific Gamma in Precipitation
June 1997

Location	Gross Beta Activity		Specific Gamma Activity	
	pCi/L	± 2*u*	Nuclide	pCi/L ± 2*u*
NY: Yaphank	14.60	0.83	K40	31 53
			Pb212	5.2 7.5
OH: Painesville	0.86	0.28	Be7	66 21
			Pb212	2.7 3.2
OR: Portland	0.86	0.27		ND
PA: Harrisburg	2.51	0.37	Be7	63 30
			K40	27 62
SC: Barnwell	0.68	0.26	K40	11 14
			Pb212	3.1 3.3
SC: Columbia	1.20	0.30	Be7	44 18
TN: Knoxville	0.68	0.26	Be7	101 31
TN: Nashville	0.86	0.28	Be7	55 21
TX: Austin	0.64	0.25		ND
UT: Salt Lake City	1.59	0.32	K40	53 54
VA: Lynchburg	9.07	0.65	K40	11 14
			Pb212	4.2 3.3
WA: Olympia	0.69	0.26	Pb212	3.0 5.2
WI: Madison	0.74	0.28	K40	33 54

Note: ND = Not Detected

Table 8

Tritium in Precipitation
April - June 1997

Location	April 1997		May 1997		June 1997	
	pCi/L	± 2*u*	pCi/L	± 2*u*	pCi/L	± 2*u*
AK: Fairbanks	NS		NS		-21	83
AL: Montgomery	-20	90	-35	81	-2	86
AR: Little Rock	-35	87	-49	86	68	86
AZ: Phoenix	-61	87	NS		NS	
CO: Denver	52	90	-30	87	62	86
CT: Hartford	NS		24	85	15	87
DE: Wilmington	65	91	79	87	58	89
FL: Jacksonville	43	90	10	84	45	88
FL: Miami	-45	89	37	85	-15	85
HI: Honolulu	-63	86	-92	84	NS	
IA: Iowa City	-70	86	3	88	46	86
ID: Boise	247	97	NS		NS	
ID: Idaho Falls	59	87	-12	87	45	86
ME: Augusta	NS		90	88	0	86
MI: Lansing	-24	87	103	92	-10	86
MN: Minneapolis	21	89	54	90	69	86
MN: Welch	NS		-16	87	NS	
MS: Jackson	-39	87	6	84	-10	86
NC: Charlotte	-34	87	67	87	12	87
NC: Wilmington	-4	89	18	84	-33	85
ND: Bismarck	-49	87	16	89	67	87
NE: Lincoln	-10	88	9	88	41	85
NH: Concord	28	89	94	88	47	89
NY: Albany	10	88	30	85	-2	86
NY: Syracuse	NS		80	87	-8	86
NY: Yaphank	18	89	45	85	-16	85
OH: Painesville	-46	87	33	89	22	85
OR: Portland	-51	87	-42	86	32	85
PA: Harrisburg	-8	88	57	86	2	86
SC: Barnwell	12	89	148	94	93	90
SC: Columbia	55	91	53	86	82	90
TN: Knoxville	11	89	-14	83	45	88
TN: Nashville	-64	87	59	86	64	89
TX: Austin	-47	87	-35	86	7	84
UT: Salt Lake City	-17	88	-35	87	71	87
VA: Lynchburg	-67	85	51	86	19	87
WA: Olympia	34	85	-38	86	21	85
WI: Madison	-49	86	40	90	7	84

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 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
April - June 1997

Location	Source	Date Collected	^{3}H pCi/L	± 2*u*
AL: Decatur	Tennessee River	04/22/97	96	89
AL: Gordon	Chattahoochee River	04/09/97	4	86
AL: Scottsboro	Tennessee River	04/21/97	129	86
AR: Little Rock	Arkansas River	04/07/97	0	72
CA: Clay Station	Folsom S. Canal	04/22/97	5	84
CA: Diablo Canyon	Pacific Ocean	04/08/97	136	83
CA: Eureka	Humboldt Bay	04/17/97	-12	83
CA: San Onofre	Pacific Ocean	04/22/97	65	87
CO: Platteville	South Platte River	04/14/97	60	87
CT: E. Haddam	Connecticut River	04/17/97	2	85
CT: Waterford	Long Island Sound	04/17/97	-76	81
FL: Crystal River	Gulf Of Mexico	04/08/97	12	73
FL: Ft. Pierce	Atlantic Ocean	04/07/97	45	88
FL: Homestead	Biscayne Bay	04/10/97	-65	88
GA: Baxley	Altamaha River	04/22/97	76	88
IA: Cedar Rapids	Cedar River	04/15/97	64	83
ID: Buhl	Snake River	04/11/97	-5	90
IL: Moline	Mississippi River	06/20/97	-35	84
IL: Morris	Illinois River	04/07/97	108	96
IL: Zion	Lake Michigan	05/15/97	47	88
KS: Le Roy	Neosho River	06/24/97	16	83
LA: New Orleans	Mississippi River	04/28/97	26	90
MA: Plymouth	Cape Cod Bay	04/15/97	-11	85
MD: Conowingo	Susquehanna River	04/08/97	72	89
MD: Lusby	Chesapeake Bay	04/08/97	1	73
ME: Wiscasset	Montseway Bay	04/15/97	51	87
MI: Bridgman	Lake Michigan	04/13/97	73	88
MI: Charlevoix	Lake Michigan	04/09/97	-14	90
MI: Monroe	Lake Erie	04/07/97	28	92
MI: S. Haven	Lake Michigan	04/13/97	93	88
MN: Monticello	Mississippi River	04/14/97	-4	85
MN: Red Wing	Mississippi River	04/07/97	-60	89
MS: Port Gibson	Mississippi River	04/15/97	18	86
NC: Charlotte	Catawba River	04/16/97	183	92
NC: Southport	Atlantic Ocean	04/04/97	-107	87
NE: Rulo	Missouri River	04/23/97	4	83
NE: Rulo	Missouri River	04/29/97	48	90
NJ: Bayside	Delaware River	06/24/97	-19	85
NJ: Oyster Creek	Oyster Creek	06/23/97	41	87
NY: Chelsea	Hudson River	04/07/97	7	73

Table 9 (continued)

Tritium in Surface Water
April - June 1997

Location	Source	Date Collected	^{3}H pCi/L	± 2*u*
NY: Croton-On-Hudson	Hudson River	06/24/97	-35	84
NY: Oswego	Lake Ontario	06/18/97	110	90
OH: Toledo	Lake Erie	04/02/97	22	71
OR: Bradwood	Columbia River	04/09/97	-15	71
PA: Danville	Susquehanna River	04/09/97	-49	89
PA: Philadelphia	Schuylkill River - Belmont	04/11/97	-62	89
PA: Philadelphia	Schuylkill River - Queen Lane	04/11/97	16	86
PA: Philadelphia	Delaware River - Baxter	04/11/97	0	85
SC: Allendale	Savannah River	04/29/97	1100	120
SC: Broad River	Broad River	04/14/97	720	110
SC: Hartsville	Lake Robinson	04/08/97	640	110
TN: Kingston	Clinch River	04/07/97	278	83
TN: Oak Ridge	Clinch River	06/03/97	690	110
TX: Matagorda	Colorado River	04/03/97	13	73
VA: Doswell	North Anna River	05/14/97	2690	170
VA: Newport News	James River	04/03/97	1760	130
VT: Vernon	Connecticut River	04/09/97	-84	87
WA: Northport	Columbia River	04/08/97	-104	87
WA: Richland	Columbia River	04/14/97	7	91
WI: Two Creeks	Lake Michigan	04/15/97	88	89
WI: Victory	Mississippi River	04/07/97	-33	90
WV: Wheeling	Ohio River	04/03/97	81	73

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) 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
April - June 1997

Location	Date Collected	^{3}H pCi/L	± 2*u*
AK: Fairbanks	05/05/97	-59	85
AL: Dothan	04/09/97	-19	71
AL: Montgomery	06/23/97	-56	84
AL: Muscle Shoals	04/24/97	46	87
AL: Scottsboro	04/21/97	135	90
AR: Little Rock	04/07/97	14	85
CA: Berkeley	04/07/97	28	86
CA: Los Angeles	04/03/97	16	71
CO: Denver	04/18/97	70	88
CO: Platteville	04/14/97	14	86
CT: Hartford	04/02/97	18	71
DC: Washington	04/23/97	-27	86
DE: Dover	04/09/97	-51	85
FL: Miami	04/03/97	-19	70
GA: Baxley	04/22/97	-20	84
GA: Savannah	06/26/97	380	100
HI: Honolulu	04/02/97	9	71
IA: Cedar Rapids	04/07/97	-47	70
ID: Boise	04/07/97	-40	71
ID: Idaho Falls	04/10/97	-19	90
IL: Morris	04/02/97	12	86
KS: Topeka	04/02/97	67	73
LA: New Orleans	04/02/97	52	72
MA: Lawrence	04/25/97	24	85
MD: Baltimore	04/04/97	40	74
MD: Conowingo	04/08/97	67	75
ME: Augusta	04/10/97	8	88
MI: Detroit	04/04/97	182	77
MI: Grand Rapids	04/08/97	5	91
MN: Minneapolis	04/28/97	30	89
MN: Red Wing	04/21/97	-8	83
MO: Jefferson City	04/02/97	52	73
MS: Jackson	04/18/97	-26	84
MS: Port Gibson	04/15/97	-2	85
MT: Helena	06/04/97	-65	85
NC: Charlotte	04/16/97	177	93
NC: Wilmington	04/15/97	63	88
ND: Bismarck	04/16/97	48	87
NE: Lincoln	05/01/97	24	89
NH: Concord	04/09/97	-9	72

Table 10 (continued)

Tritium in Drinking Water
April - June 1997

Location	Date Collected	^{3}H pCi/L ± 2*u*	
NJ: Waretown	06/23/97	-33	84
NM: Santa Fe	04/09/97	-6	88
NV: Las Vegas	04/03/97	49	73
NY: Albany	04/03/97	-53	89
NY: Niagara Falls	04/02/97	143	92
NY: Syracuse	04/09/97	57	90
OH: Cincinnati	06/04/97	6	87
OH: Columbus	06/25/97	-35	83
OH: E. Liverpool	04/18/97	14	85
OH: Painesville	04/04/97	117	77
OH: Toledo	04/02/97	117	75
OK: Oklahoma City	05/14/97	-16	87
OR: Portland	04/02/97	-10	84
PA: Harrisburg	04/11/97	6	85
PA: Philadelphia - Belmont	04/11/97	-53	85
PA: Philadelphia - Baxter	04/11/97	0	84
PA: Pittsburgh	04/18/97	-11	85
PC: Corozal	04/08/97	-49	83
RI: Providence	04/07/97	9	73
SC: Barnwell	04/30/97	24	89
SC: Columbia	04/04/97	43	72
SC: Jenkinsville	04/24/97	85	88
SC: Seneca	04/07/97	-18	90
TN: Chattanooga	04/07/97	79	75
TN: Knoxville	04/07/97	54	75
TN: Oak Ridge - Anderson Co #768	06/18/97	-26	86
TN: Oak Ridge - Anderson Co #772	06/18/97	3	85
TN: Oak Ridge - Knox Co #371	06/18/97	26	87
TN: Oak Ridge - Roane Co #360	06/17/97	31	87
TN: Oak Ridge - Roane Co #4442	06/17/97	560	110
TX: Austin	04/04/97	15	71
VA: Doswell	04/03/97	49	72
WA: Richland	04/14/97	-4	91
WA: Seattle	04/07/97	-14	87
WI: Genoa City	04/07/97	-4	85
WI: Madison	04/09/97	30	89

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
April 1997

Location	Date Collected	K g/L ± 2*u*		^{137}Cs pCi/L ± 2*u*		^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
AL: Montgomery	04/02/97	1.44	0.14	ND		ND	ND
AR: Little Rock	04/02/97	1.632	0.088	ND		ND	ND
AZ: Phoenix	04/30/97	1.597	0.095	ND		ND	ND
CA: Los Angeles	04/07/97	1.57	0.10	ND		ND	ND
CA: Sacramento	04/16/97	1.61	0.12	ND		ND	ND
CA: San Francisco	04/15/97	1.644	0.089	ND		ND	ND
CO: Denver	04/21/97	1.68	0.10	ND		ND	ND
CT: Hartford	04/08/97	1.61	0.15	ND		ND	ND
DE: Wilmington	04/08/97	1.621	0.058	ND		ND	ND
FL: Tampa	04/07/97	1.69	0.12	3.0	3.3	ND	ND
GA: Atlanta	04/22/97	1.58	0.14	ND		ND	ND
HI: Honolulu	04/24/97	1.716	0.098	ND		ND	ND
IA: Des Moines	04/07/97	1.632	0.068	ND		ND	ND
IL: Chicago	04/05/97	1.644	0.081	ND		ND	ND
IN: Indianapolis	04/07/97	1.561	0.080	ND		ND	ND
KS: Wichita	04/07/97	1.609	0.081	ND		ND	ND
KY: Louisville	04/09/97	1.609	0.058	ND		ND	ND
MA: Boston	04/11/97	1.656	0.068	ND		ND	ND
MD: Baltimore	04/04/97	1.668	0.068	ND		ND	ND
ME: Portland	04/11/97	1.668	0.082	3.1	2.3	ND	ND
MI: Detroit	04/01/97	1.72	0.13	ND		ND	ND
MI: Grand Rapids	04/09/97	1.609	0.059	ND		ND	ND
MN: St. Paul	04/02/97	1.585	0.082	ND		ND	ND
MO: Kansas City	04/28/97	1.430	0.094	ND		ND	ND
MS: Jackson	04/07/97	1.632	0.081	ND		ND	ND
NC: Charlotte	04/08/97	1.680	0.078	ND		ND	ND
ND: Minot	04/04/97	1.597	0.090	ND		ND	ND
NJ: Trenton	04/24/97	1.644	0.067	ND		ND	ND
NM: Albuquerque	04/22/97	1.609	0.087	ND		ND	ND
NV: Las Vegas	04/14/97	1.597	0.080	ND		ND	ND
NY: Buffalo	04/10/97	1.668	0.060	ND		ND	ND
NY: Syracuse	04/07/97	1.561	0.077	ND		ND	ND
OH: Cincinnati	04/15/97	1.63	0.14	ND		ND	ND
OH: Cleveland	04/02/97	1.692	0.068	ND		ND	ND
OR: Portland	04/07/97	1.704	0.096	ND		ND	ND
PA: Philadelphia	04/07/97	1.632	0.059	ND		ND	ND
PA: Pittsburgh	04/07/97	1.656	0.060	ND		ND	ND
PC: Cristobal	04/07/97	1.57	0.12	3.7	3.1	ND	ND
PR: San Juan	04/03/97	1.656	0.088	ND		ND	ND

Note: ND = Not Detected

Table 11 (continued)

Radionuclides in Pasteurized Milk
April 1997

Location	Date Collected	K g/L ± 2*u*	^{137}Cs pCi/L ± 2*u*	^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
PR: San Juan	04/10/97	1.632 0.083	ND	ND	ND
SC: Charleston	04/09/97	1.573 0.086	ND	ND	ND
SD: Rapid City	04/05/97	1.573 0.080	ND	ND	ND
TN: Chattanooga	04/03/97	1.609 0.089	ND	ND	ND
TN: Chattanooga	04/28/97	1.585 0.097	ND	ND	ND
TN: Knoxville	04/10/97	1.70 0.15	ND	ND	ND
TN: Knoxville	04/28/97	1.61 0.17	ND	ND	ND
TN: Memphis	04/29/97	1.48 0.17	ND	ND	ND
TX: Ft. Worth	04/07/97	1.585 0.077	ND	ND	ND
VA: Norfolk	04/04/97	1.478 0.074	ND	ND	ND
VT: Burlington	04/11/97	1.549 0.089	ND	ND	ND
WA: Seattle	04/09/97	1.609 0.059	ND	ND	ND
WA: Spokane	04/07/97	1.55 0.15	ND	ND	ND
WV: Charleston	04/07/97	1.632 0.078	ND	ND	ND

Note: ND = Not Detected

Table 12

Radionuclides in Pasteurized Milk
May 1997

Location	Date Collected	K g/L ± 2*u*	^{137}Cs pCi/L ± 2*u*	^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
AL: Montgomery	05/09/97	1.585 0.058	ND	ND	ND
AR: Little Rock	05/29/97	1.585 0.048	ND	ND	ND
CA: Los Angeles	05/13/97	1.656 0.088	ND	ND	ND
CA: Sacramento	05/06/97	1.58 0.10	ND	ND	ND
CA: San Francisco	05/14/97	1.728 0.069	ND	ND	ND
CO: Denver	05/15/97	1.609 0.049	ND	ND	ND
CT: Hartford	05/06/97	1.68 0.10	ND	ND	ND
DE: Wilmington	05/07/97	1.585 0.060	ND	ND	ND
FL: Tampa	05/05/97	1.597 0.074	2.3 1.7	ND	ND
GA: Atlanta	05/28/97	1.513 0.047	ND	ND	ND
HI: Honolulu	05/14/97	1.64 0.10	ND	ND	ND
IA: Des Moines	05/12/97	1.621 0.058	ND	ND	ND
IN: Indianapolis	05/05/97	1.609 0.049	ND	ND	ND
KY: Louisville	05/07/97	1.621 0.059	ND	ND	ND
MA: Boston	05/09/97	1.632 0.049	ND	ND	ND
MD: Baltimore	05/01/97	1.72 0.11	ND	ND	ND
ME: Portland	05/07/97	1.692 0.049	2.0 1.3	ND	ND
MI: Detroit	05/12/97	1.692 0.059	ND	ND	ND
MI: Grand Rapids	05/05/97	1.644 0.095	ND	ND	ND
MN: St. Paul	05/02/97	1.632 0.094	ND	ND	ND
MO: Kansas City	05/19/97	1.561 0.047	ND	ND	ND
MS: Jackson	05/06/97	1.57 0.17	ND	ND	ND
NC: Charlotte	05/06/97	1.585 0.059	ND	ND	ND
ND: Minot	05/09/97	1.561 0.058	ND	ND	ND
NJ: Trenton	05/12/97	1.585 0.048	ND	ND	ND
NM: Albuquerque	05/19/97	1.573 0.048	ND	ND	ND
NY: Buffalo	05/09/97	1.692 0.049	ND	ND	ND
NY: Syracuse	05/05/97	1.680 0.095	ND	ND	ND
OH: Cincinnati	05/12/97	1.644 0.060	ND	ND	ND
OH: Cleveland	05/13/97	1.704 0.049	ND	ND	ND
OR: Portland	05/05/97	1.716 0.076	ND	ND	ND
PA: Philadelphia	05/05/97	1.621 0.048	ND	ND	ND
PA: Pittsburgh	05/06/97	1.573 0.048	ND	ND	ND
PC: Cristobal	05/07/97	1.573 0.058	8.6 2.0	ND	ND
PR: San Juan	05/15/97	1.680 0.049	ND	ND	ND
SC: Charleston	05/07/97	1.513 0.058	ND	ND	ND
TN: Memphis	05/16/97	1.609 0.086	ND	ND	ND
TX: Austin	05/05/97	1.621 0.059	ND	ND	ND
TX: Ft. Worth	05/05/97	1.573 0.083	ND	ND	ND

Note: ND = Not Detected

Table 12 (continued)

Radionuclides in Pasteurized Milk
May 1997

Location	Date Collected	K g/L ± 2*u*	^{137}Cs pCi/L ± 2*u*	^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
VA: Norfolk	05/06/97	1.632 0.048	ND	ND	ND
VT: Burlington	05/29/97	1.609 0.048	ND	ND	ND
WA: Seattle	05/06/97	1.561 0.059	ND	ND	ND
WA: Spokane	05/19/97	1.621 0.048	ND	ND	ND
WV: Charleston	05/06/97	1.621 0.067	ND	ND	ND

Note: ND = Not Detected

Table 13

Radionuclides in Pasteurized Milk
June 1997

Location	Date Collected	K g/L ± 2*u*		^{137}Cs pCi/L ± 2*u*		^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
AL: Montgomery	06/17/97	1.53	0.17	ND		ND	ND
AR: Little Rock	06/23/97	1.57	0.10	ND		ND	ND
AZ: Phoenix	06/25/97	1.66	0.10	ND		ND	ND
CA: Los Angeles	06/04/97	1.668	0.049	ND		ND	ND
CA: Sacramento	06/09/97	1.668	0.049	ND		ND	ND
CA: San Francisco	06/06/97	1.597	0.087	ND		ND	ND
CO: Denver	06/13/97	1.61	0.13	ND		ND	ND
CT: Hartford	06/04/97	1.656	0.095	ND		ND	ND
DE: Wilmington	06/10/97	1.66	0.10	ND		ND	ND
FL: Tampa	06/04/97	1.632	0.049	3.1	1.3	ND	ND
GA: Atlanta	06/24/97	1.51	0.10	ND		ND	ND
HI: Honolulu	06/26/97	1.692	0.088	ND		ND	ND
IA: Des Moines	06/02/97	1.644	0.078	ND		ND	ND
IL: Chicago	06/05/97	1.597	0.048	ND		ND	ND
IN: Indianapolis	06/17/97	1.585	0.086	ND		ND	ND
KY: Louisville	06/03/97	1.656	0.049	ND		ND	ND
MA: Boston	06/04/97	1.63	0.10	ND		ND	ND
MD: Baltimore	06/05/97	1.740	0.050	ND		ND	ND
ME: Portland	06/11/97	1.764	0.095	ND		ND	ND
MI: Detroit	06/03/97	1.621	0.049	ND		ND	ND
MI: Grand Rapids	06/04/97	1.632	0.048	ND		ND	ND
MN: St. Paul	06/02/97	1.54	0.14	ND		ND	ND
MO: Kansas City	06/30/97	1.61	0.10	ND		ND	ND
MS: Jackson	06/02/97	1.621	0.092	ND		ND	ND
NC: Charlotte	06/03/97	1.621	0.048	ND		ND	ND
ND: Minot	06/03/97	1.61	0.10	ND		ND	ND
NJ: Trenton	06/04/97	1.632	0.048	ND		ND	ND
NM: Albuquerque	06/18/97	1.787	0.096	ND		ND	ND
NV: Las Vegas	06/23/97	1.668	0.068	ND		ND	ND
NY: Buffalo	06/06/97	1.680	0.049	ND		ND	ND
NY: Syracuse	06/05/97	1.632	0.049	ND		ND	ND
OH: Cincinnati	06/12/97	1.621	0.077	ND		ND	ND
OH: Cleveland	06/02/97	1.656	0.049	ND		ND	ND
OR: Portland	06/03/97	1.64	0.10	ND		ND	ND
PA: Philadelphia	06/04/97	1.656	0.086	ND		ND	ND
PA: Pittsburgh	06/04/97	1.585	0.048	ND		ND	ND
PC: Cristobal	06/06/97	1.632	0.048	6.3	1.4	ND	ND
PR: San Juan	06/06/97	1.668	0.049	ND		ND	ND
SC: Charleston	06/06/97	1.573	0.048	ND		ND	ND

Note: ND = Not Detected

Table 13 (continued)

Radionuclides in Pasteurized Milk
June 1997

Location	Date Collected	K g/L ± 2*u*		^{137}Cs pCi/L ± 2*u*	^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
SD: Rapid City	06/16/97	1.644	0.099	ND	ND	ND
TN: Chattanooga	06/30/97	1.609	0.081	ND	ND	ND
TN: Knoxville	06/03/97	1.680	0.095	ND	ND	ND
TN: Knoxville	06/30/97	1.561	0.087	ND	ND	ND
TN: Memphis	06/27/97	1.597	0.097	ND	ND	ND
TX: Ft. Worth	06/09/97	1.61	0.10	ND	ND	ND
VA: Norfolk	06/04/97	1.597	0.048	ND	ND	ND
VT: Burlington	06/27/97	1.70	0.17	ND	ND	ND
WA: Seattle	06/02/97	1.644	0.049	ND	ND	ND
WA: Spokane	06/05/97	1.668	0.049	ND	ND	ND
WV: Charleston	06/02/97	1.62	0.10	ND	ND	ND

Note: ND = Not Detected

For More Information

Environmental Radiation Data (ERD) is published quarterly by the U.S. Environmental Protection Agency's Office of Radiation and Indoor Air.

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