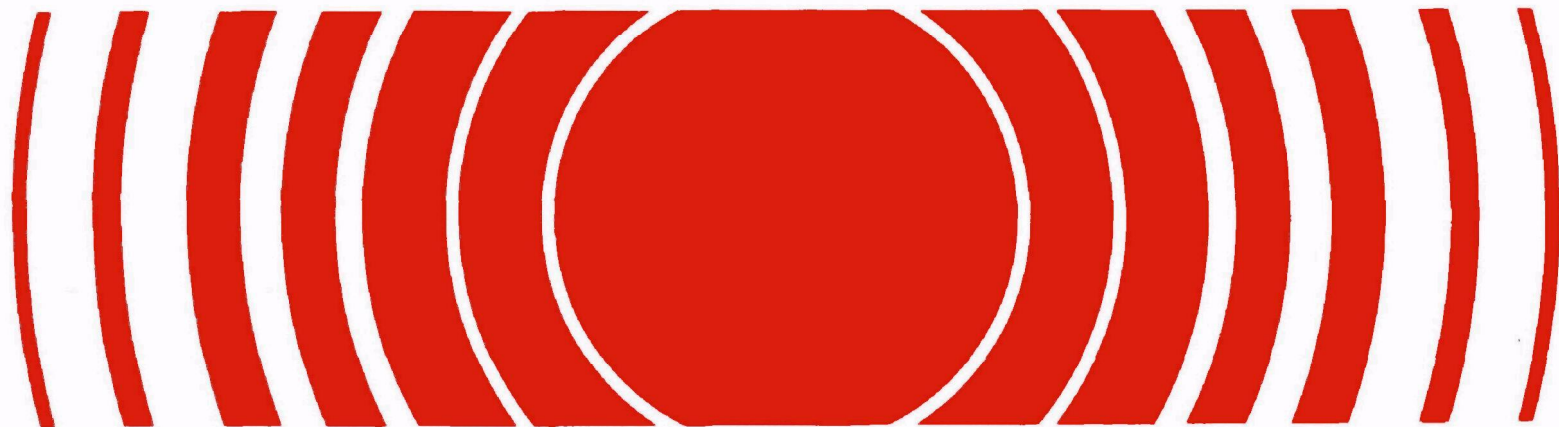




Office of Radiation and Indoor Air

Environmental Radiation Data Report 81

January - March 1995



ENVIRONMENTAL

RADIATION

DATA

REPORT 81

January–March 1995

United States Environmental Protection Agency

Office of Radiation and Indoor Air

Preface

Environmental Radiation Data (ERD) is compiled and distributed 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.

ERAMS was established in 1973 by the United States Environmental Protection Agency. It is comprised of a nationwide network of sampling stations that provide air, surface and drinking water, and milk samples from which environmental radiation levels are derived. The major emphasis for ERAMS is upon identifying trends in the accumulation of long-lived radionuclides in the environment.

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 for fission products, and 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).

Contents

	<i>Page</i>
Data Reporting Rationale	ix
ERAMS Data	1
1. Air Program	1
• Airborne Particulates and Precipitation	1
• Plutonium and Uranium in Airborne Particulates and Precipitation	14
2. Water Program	15
• Surface Water	15
• Drinking Water	18
3. Milk Program	21
• Pasteurized Milk	21

Tables

<i>Table</i>		<i>Page</i>
1	ERAMS Reporting Increments and Minimum Detectable Concentrations for Radionuclide Analyses	xi
2	Gross Beta in Airborne Particulates: January 1995	2
3	Gross Beta in Airborne Particulates: February 1995	4
4	Gross Beta in Airborne Particulates: March 1995	6
5	Gross Beta and Specific Gamma in Precipitation: January 1995	8
6	Gross Beta and Specific Gamma in Precipitation: February 1995	9
7	Gross Beta and Specific Gamma in Precipitation: March 1995	10
8	Tritium in Precipitation: January–March 1995	12
9	Tritium in Surface Water: January–March 1995	16
10	Tritium in Drinking Water: January–March 1995	19
11	Radionuclides in Pasteurized Milk: January 1995	22
12	Radionuclides in Pasteurized Milk: February 1995	24
13	Radionuclides in Pasteurized Milk: March 1995	26

Data Reporting Rationale

Frequently, there is little or no radioactivity in environmental media. Thus, the results of laboratory analyses should show a distribution of negative and positive numbers about zero. A negative value occurs when a previously determined background value is subtracted from a sample value that is less than that of the background. From July 1975 to March 1991, ERAMS data were reported as calculated, whether the results were negative, zero, or positive. Since April 1991, negative results have been denoted as “not detectable,” or “ND.” For gamma analyses only, results less than the 2σ counting error are also denoted as “not detectable.”

All data are stored in the NAREL sample database as generated, and these values are available for statistical evaluation. However, caution should be exercised in the use of the data in this report for statistical analysis, since the removal of negative numbers produces a positive bias in the distribution of results.

Reported Error Terms

Each reported value for specific analyses will be accompanied by a counting error term at the 2σ (95%) confidence level. Error terms are therefore reported as counting errors. At the very low levels characteristic of most ERAMS measurements, counting error is the greatest contributor to overall error.

Significant Figures

No more than three significant figures will be reported. A datum that contains more than three figures will be rounded off to three figures.

Reporting Levels

The reporting units, smallest increments for reporting, and routine minimum detectable concentrations (MDCs) for each isotope 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. Reporting increments are sometimes considerably smaller than MDCs to avoid truncation errors in averaging.

Averages

Averages will be calculated along with appropriate error terms in an annual summary and analysis of ERAMS data. In calculating these averages, all values of individual data, including negative numbers, will be utilized. Averages will not be included in ERD quarterly reports.

Table 1
ERAMS Reporting Increments and Minimum Detectable Concentrations for Radionuclide Analyses

Radionuclide	Media	Reporting Units	Reporting Increments	Minimum Detectable Concentrations
Gross Alpha	Water	pCi/L	1 pCi/L	2 pCi/L
† Gross Beta	Air	pCi/m ³	0.01 pCi/m ³	0.0015 pCi/m ³
	Water	pCi/L	1 pCi/L	2 pCi/L
	Precipitation	nCi/m ²	0.01 nCi/m ²	0.005 nCi/m ²
	(specific radiochemical analyses)			
Tritium	Water	nCi/L	0.1 nCi/L	0.15 nCi/L
	Milk	nCi/L	0.1 nCi/L	0.15 nCi/L
†† Plutonium-238,239/240	Air	aCi/m ³	0.1 aCi/m ³	1.5 aCi/m ³
	Water	pCi/L	0.001 pCi/L	0.1 pCi/L
‡ Uranium-234,235,238	Air	aCi/m ³	0.1 aCi/m ³	1.5 aCi/m ³
	Water	pCi/L	0.001 pCi/L	0.1 pCi/L
Radium-226	Water	pCi/L	0.1 pCi/L	0.02 pCi/L
Strontium-90	Milk	pCi/L	0.1 pCi/L	2 pCi/L
	Water	pCi/L	0.1 pCi/L	1 pCi/L
‡‡ Iodine-131	Milk (gamma)	pCi/L	1 pCi/L	4 pCi/L
	Water (gamma)	pCi/L	1 pCi/L	4 pCi/L
	Water	pCi/L	0.1 pCi/L	0.3 pCi/L
Cesium-137	Milk	pCi/L	1 pCi/L	5 pCi/L
	Water	pCi/L	1 pCi/L	5 pCi/L
‡‡ Barium-140	Milk	pCi/L	1 pCi/L	15 pCi/L
	Water	pCi/L	1 pCi/L	15 pCi/L
Potassium	Milk	g/L	0.1 g/L	0.06 g/L
	Water	g/L	0.1 g/L	0.06 g/L
Potassium-40	Water	pCi/L	1 pCi/L	50 pCi/L

† The MDC for precipitation is based on the assumption of 1 cm of precipitation.

†† The MDC for air is based on an assumed total sample volume of 60,000 m³. Measurement by alpha spectroscopy includes contributions of plutonium-239 and plutonium-240.

‡ The MDC for air is based on an assumed total sample volume of 60,000 m³

‡‡ Activity as of the day of counting.

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 radon and thoron daughter product decay. 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 many 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, -239, -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.

Tables 2-4 contain the data from airborne particulate samples for January-March 1995. Tables 5-7 contain the data from precipitation samples for January-March 1995. Table 8 contains the data from tritium in precipitation samples for January-March 1995 at the selected sites.

† The counts at five hours for the Montgomery, Alabama, station are performed on a low background beta counter.

Table 2
Gross Beta in Airborne Particulates
January 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
AK:Fairbanks	9	0.0	0.0	0.0	0.04	0.01	0.02
AK:Juneau	9	0.0	0.0	0.0	0.01	0.00	0.01
AL:Montgomery	8	0.3	0.0	0.2	0.02	0.01	0.01
AR:Little Rock	9	0.2	0.1	0.2	0.03	0.01	0.02
AZ:Phoenix	5	0.8	0.2	0.4	0.01	0.01	0.01
CA:Berkeley	9	0.2	0.0	0.0	0.02	0.00	0.00
CA:Los Angeles	9	0.3	0.0	0.1	0.02	0.00	0.01
CO:Denver	9	1.8	0.2	0.9	0.02	0.01	0.01
CT:Hartford	9	0.1	0.0	0.0	0.01	0.00	0.01
DE:Wilmington	9	0.1	0.0	0.1	0.02	0.00	0.01
FL:Jacksonville	7	0.3	0.0	0.1	0.02	0.01	0.01
FL:Miami	9	0.1	0.0	0.0	0.02	0.00	0.01
HI:Honolulu	7	0.2	0.1	0.1	0.01	0.00	0.00
IA:Iowa City	8	0.3	0.0	0.1	0.02	0.02	0.02
ID:Boise	9	0.4	0.0	0.2	0.04	0.00	0.01
ID:Idaho Falls	9	0.0	0.0	0.0	0.02	0.00	0.01
IL:Chicago	9	0.2	0.0	0.1	0.03	0.01	0.02
IN:Indianapolis	6	0.2	0.1	0.2	0.02	0.01	0.02
KS:Topeka	8	0.9	0.2	0.5	0.03	0.01	0.02
KY:Frankfort	1	0.0	0.0	0.0	0.03	0.03	0.03
ME:Augusta	9	0.1	0.0	0.0	0.01	0.00	0.01
MI:Lansing	9	0.2	0.0	0.1	0.02	0.00	0.01
MN:Minneapolis	4	0.1	0.0	0.0	0.03	0.01	0.02
MN:Welch	2	0.1	0.0	0.1	0.04	0.02	0.03
MO:Jefferson City	8	0.3	0.1	0.2	0.04	0.01	0.02
MS:Jackson	9	0.1	0.0	0.1	0.02	0.01	0.01
NC:Charlotte	9	0.2	0.0	0.1	0.03	0.01	0.02
NC:Wilmington	3	0.0	0.0	0.0	0.01	0.01	0.01
ND:Bismarck	8	0.3	0.0	0.1	0.04	0.02	0.03
NH:Concord	9	0.1	0.0	0.0	0.01	0.00	0.01
NJ:Trenton	9	0.2	0.1	0.1	0.02	0.00	0.01
NM:Santa Fe	8	0.4	0.1	0.2	0.01	0.00	0.01
NV:Las Vegas	9	0.2	0.0	0.1	0.02	0.00	0.01
NY:Albany	5	0.1	0.0	0.0	0.01	0.00	0.01
NY:Niagara Falls	9	0.2	0.1	0.1	0.02	0.00	0.01
NY:Yaphank	9	0.1	0.0	0.0	0.01	0.00	0.01
OH:Columbus	4	0.1	0.0	0.1	0.02	0.01	0.01

Table 2 (continued)
Gross Beta in Airborne Particulates
January 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Painesville	9	0.1	0.0	0.1	0.02	0.00	0.01
OH:Ross	9	0.0	0.0	0.0	0.02	0.01	0.01
OH:Toledo	9	0.2	0.0	0.1	0.02	0.01	0.01
OR:Portland	9	0.0	0.0	0.0	0.04	0.00	0.01
PA:Harrisburg	9	0.2	0.0	0.1	0.02	0.00	0.01
PA:Pittsburgh	9	0.1	0.1	0.1	0.03	0.01	0.01
SC:Barnwell	2	0.0	0.0	0.0	0.01	0.01	0.01
SC:Columbia	8	0.3	0.1	0.2	0.02	0.00	0.01
SD:Pierre	9	0.3	0.1	0.2	0.05	0.01	0.03
TN:Knoxville	8	0.7	0.3	0.4	0.02	0.01	0.01
TN:Nashville	9	0.2	0.0	0.1	0.02	0.01	0.02
TX:Austin	9	0.1	0.0	0.1	0.02	0.00	0.01
TX:El Paso	9	1.4	0.4	0.7	0.02	0.01	0.01
UT:Salt Lake City	8	0.2	0.0	0.1	0.03	0.00	0.01
VA:Lynchburg	9	0.7	0.1	0.2	0.03	0.00	0.01
VA:Virginia Beach	2	0.0	0.0	0.0	0.01	0.00	0.00
WA:Olympia	8	0.2	0.0	0.1	0.03	0.00	0.01
WA:Spokane	8	0.2	0.0	0.1	0.04	0.00	0.02
WI:Madison	9	0.2	0.0	0.1	0.03	0.01	0.02

Minimum Detectable Concentration for field estimates – 0.1 pCi/m³.

Table 3
Gross Beta in Airborne Particulates
February 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
AK:Fairbanks	8	0.0	0.0	0.0	0.03	0.00	0.02
AK:Juneau	8	0.0	0.0	0.0	0.01	0.00	0.00
AL:Montgomery	7	0.2	0.1	0.1	0.02	0.01	0.01
AR:Little Rock	8	0.3	0.1	0.2	0.02	0.01	0.01
AZ:Phoenix	3	1.0	0.2	0.5	0.02	0.01	0.01
CA:Berkeley	8	0.1	0.0	0.1	0.03	0.01	0.01
CA:Los Angeles	8	0.3	0.0	0.2	0.03	0.00	0.01
CO:Denver	7	1.0	0.2	0.6	0.01	0.00	0.01
CT:Hartford	8	0.0	0.0	0.0	0.01	0.01	0.01
DE:Wilmington	8	0.1	0.0	0.0	0.02	0.01	0.01
FL:Jacksonville	8	0.1	0.0	0.0	0.01	0.01	0.01
FL:Miami	8	0.1	0.0	0.0	0.01	0.00	0.01
HI:Honolulu	8	0.2	0.1	0.2	0.00	0.00	0.00
IA:Iowa City	8	0.3	0.0	0.1	0.03	0.01	0.02
ID:Boise	8	0.8	0.1	0.4	0.02	0.00	0.01
ID:Idaho Falls	8	0.0	0.0	0.0	0.02	0.01	0.02
IL:Chicago	8	0.1	0.0	0.1	0.03	0.01	0.02
IN:Indianapolis	8	0.3	0.1	0.2	0.02	0.01	0.02
KS:Topeka	8	1.3	0.2	0.7	0.02	0.01	0.01
KY:Frankfort	2	0.0	0.0	0.0	0.02	0.01	0.01
ME:Augusta	7	0.0	0.0	0.0	0.02	0.01	0.01
MI:Lansing	8	0.1	0.0	0.0	0.02	0.01	0.01
MN:Minneapolis	4	0.1	0.0	0.1	0.03	0.02	0.02
MN:Welch	8	0.2	0.0	0.1	0.02	0.01	0.02
MO:Jefferson City	7	0.3	0.1	0.1	0.02	0.01	0.01
MS:Jackson	8	0.2	0.0	0.1	0.02	0.01	0.01
NC:Charlotte	7	0.1	0.0	0.1	0.02	0.01	0.01
NC:Wilmington	3	0.0	0.0	0.0	0.02	0.01	0.02
ND:Bismarck	7	0.6	0.0	0.1	0.03	0.00	0.01
NH:Concord	8	0.1	0.0	0.0	0.01	0.01	0.01
NJ:Trenton	8	0.2	0.0	0.1	0.01	0.01	0.01
NM:Santa Fe	7	0.3	0.1	0.2	0.01	0.00	0.01
NV:Las Vegas	8	0.3	0.0	0.2	0.02	0.01	0.01
NY:Albany	3	0.1	0.0	0.0	0.02	0.01	0.02
NY:Niagara Falls	8	0.1	0.0	0.1	0.02	0.01	0.01
NY:Yaphank	7	0.1	0.0	0.0	0.01	0.01	0.01
OH:Columbus	4	0.1	0.0	0.1	0.01	0.01	0.01

Table 3 (continued)
Gross Beta in Airborne Particulates
February 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Painesville	8	0.1	0.0	0.1	0.02	0.01	0.01
OH:Ross	8	0.0	0.0	0.0	0.02	0.01	0.01
OH:Toledo	8	0.2	0.0	0.1	0.02	0.01	0.02
OR:Portland	7	0.0	0.0	0.0	0.01	0.00	0.01
PA:Harrisburg	8	0.2	0.0	0.1	0.02	0.01	0.01
PA:Pittsburgh	8	0.0	0.0	0.0	0.02	0.01	0.01
SC:Barnwell	2	0.0	0.0	0.0	0.01	0.01	0.01
SC:Columbia	8	0.2	0.1	0.1	0.01	0.01	0.01
SD:Pierre	5	0.2	0.1	0.1	0.02	0.01	0.01
TN:Knoxville	6	0.4	0.0	0.2	0.02	0.01	0.01
TN:Nashville	8	0.1	0.1	0.1	0.02	0.01	0.02
TX:Austin	8	0.2	0.1	0.1	0.01	0.00	0.01
TX:El Paso	3	2.0	0.1	0.7	0.02	0.01	0.01
UT:Salt Lake City	8	0.2	0.1	0.1	0.02	0.01	0.01
VA:Lynchburg	8	0.4	0.0	0.2	0.01	0.01	0.01
VA:Virginia Beach	2	0.0	0.0	0.0	0.01	0.01	0.01
WA:Olympia	8	0.2	0.0	0.1	0.01	0.00	0.01
WA:Spokane	7	0.2	0.0	0.1	0.01	0.00	0.01
WI:Madison	8	0.1	0.0	0.1	0.02	0.01	0.02

Minimum Detectable Concentration for field estimates - 0.1 pCi/m³.

Table 4
Gross Beta in Airborne Particulates
March 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
		(pCi/m ³)			(pCi/m ³)		
AK:Fairbanks	9	0.0	0.0	0.0	0.03	0.01	0.02
AK:Juneau	9	0.0	0.0	0.0	0.01	0.00	0.01
AL:Montgomery	9	0.3	0.0	0.1	0.03	0.01	0.01
AR:Little Rock	8	0.3	0.0	0.2	0.02	0.00	0.01
AZ:Phoenix	3	0.0	0.0	0.0	0.01	0.01	0.01
CA:Berkeley	9	0.2	0.0	0.1	0.02	0.00	0.01
CA:Los Angeles	9	0.3	0.0	0.1	0.02	0.00	0.01
CO:Denver	9	0.9	0.3	0.5	0.02	0.01	0.01
CT:Hartford	9	0.1	0.0	0.0	0.01	0.00	0.01
DE:Wilmington	8	0.1	0.0	0.1	0.02	0.01	0.01
FL:Jacksonville	5	0.0	0.0	0.0	0.01	0.01	0.01
FL:Miami	9	0.1	0.0	0.0	0.01	0.00	0.01
HI:Honolulu	8	0.2	0.1	0.2	0.01	0.00	0.00
IA:Iowa City	9	0.5	0.0	0.3	0.02	0.01	0.01
ID:Boise	9	0.6	0.1	0.3	0.02	0.00	0.01
ID:Idaho Falls	9	0.0	0.0	0.0	0.02	0.00	0.01
IL:Chicago	7	0.2	0.0	0.1	0.02	0.01	0.01
IN:Indianapolis	9	0.5	0.1	0.3	0.02	0.01	0.01
KS:Topeka	7	1.3	0.2	0.6	0.02	0.01	0.01
KY:Frankfort	2	0.0	0.0	0.0	0.02	0.01	0.01
ME:Augusta	8	0.0	0.0	0.0	0.01	0.01	0.01
MI:Lansing	9	0.2	0.0	0.1	0.02	0.01	0.01
MN:Minneapolis	5	0.1	0.0	0.1	0.02	0.01	0.01
MN:Welch	9	0.5	0.0	0.2	0.02	0.01	0.01
MO:Jefferson City	9	1.4	0.1	0.4	0.02	0.01	0.01
MS:Jackson	9	0.2	0.0	0.1	0.02	0.01	0.01
NC:Charlotte	9	0.2	0.0	0.1	0.02	0.01	0.01
NC:Wilmington	3	0.0	0.0	0.0	0.01	0.01	0.01
ND:Bismarck	6	0.4	0.1	0.2	0.02	0.01	0.01
NH:Concord	9	0.1	0.0	0.0	0.01	0.00	0.01
NJ:Trenton	9	0.4	0.1	0.2	0.02	0.01	0.01
NM:Santa Fe	9	0.5	0.1	0.3	0.01	0.00	0.01
NV:Las Vegas	9	0.2	0.0	0.1	0.01	0.00	0.01
NY:Albany	5	0.1	0.0	0.0	0.02	0.01	0.01
NY:Niagara Falls	9	0.5	0.0	0.1	0.02	0.01	0.01
NY:Yaphank	8	0.9	0.0	0.2	0.02	0.00	0.01
OH:Columbus	4	0.1	0.0	0.1	0.01	0.01	0.01

Table 4 (continued)
Gross Beta in Airborne Particulates
March 1995

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Painesville	9	0.1	0.0	0.1	0.02	0.01	0.01
OH:Ross	7	0.0	0.0	0.0	0.03	0.01	0.01
OH:Toledo	9	0.2	0.1	0.1	0.02	0.01	0.01
OR:Portland	9	0.0	0.0	0.0	0.02	0.00	0.01
PA:Harrisburg	9	0.6	0.0	0.2	0.02	0.01	0.01
PA:Pittsburgh	9	0.0	0.0	0.0	0.02	0.01	0.01
SC:Barnwell	2	0.0	0.0	0.0	0.01	0.01	0.01
SC:Columbia	9	0.2	0.0	0.1	0.02	0.01	0.02
SD:Pierre	9	0.4	0.0	0.2	0.02	0.01	0.01
TN:Knoxville	6	0.8	0.2	0.4	0.03	0.01	0.02
TN:Nashville	9	0.3	0.1	0.2	0.02	0.01	0.01
TX:Austin	9	0.2	0.0	0.1	0.02	0.01	0.01
TX:El Paso	9	0.7	0.0	0.4	0.02	0.01	0.01
UT:Salt Lake City	9	0.1	0.0	0.1	0.02	0.00	0.01
VA:Lynchburg	9	0.9	0.2	0.5	0.02	0.01	0.01
VA:Virginia Beach	2	0.0	0.0	0.0	0.01	0.01	0.01
WA:Olympia	8	0.1	0.0	0.0	0.01	0.00	0.00
WA:Spokane	9	0.3	0.1	0.1	0.01	0.00	0.01
WI:Madison	9	0.3	0.1	0.2	0.02	0.01	0.01

Minimum Detectable Concentration for field estimates – 0.1 pCi/m³.

Table 5
Gross Beta and Specific Gamma in Precipitation
January 1995

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m ²	±2σ	Activity pCi/L ±2σ
AL:Montgomery	107.0	0.41	0.05	ND
AR:Little Rock	85.0	0.08	0.03	ND
AZ:Phoenix	53.2	0.04	0.01	ND
CA:Berkeley	209.6	0.12	0.05	²¹⁴ Pb: 5.9±5.1
CT:Hartford	80.0	0.10	0.03	⁷ Be: 27.0±23.5
DE:Wilmington	91.0	0.28	0.04	⁷ Be: 35.0±24.7
FL:Jacksonville	116.2	0.06	0.03	⁷ Be: 31.6±22.1
FL:Miami	68.0	0.04	0.02	²¹² Pb: 6.1±4.0
HI:Honolulu	12.6	0.10	0.01	ND
IA:Iowa City	18.8	0.04	0.01	ND
ID:Boise	38.0	0.04	0.01	ND
ID:Idaho Falls	23.0	0.02	0.01	ND
IL:Chicago	34.8	0.02	0.01	ND
MN:Minneapolis	11.0	0.02	0.00	⁷ Be: 36.2±29.6
MO:Jefferson City	128.0	0.13	0.04	ND
MS:Jackson	8.0	0.00	0.00	ND
NC:Charlotte	131.0	0.25	0.05	⁷ Be: 39.6±29.4
NC:Wilmington	87.0	0.06	0.02	ND
ND:Bismarck	4.8	0.05	0.00	ND
NJ:Trenton	60.6	0.09	0.02	⁷ Be: 42.4±33.6
NV:Las Vegas	136.0	0.34	0.06	ND
NY:Albany	78.6	0.08	0.02	ND
NY:Niagara Falls	60.0	0.14	0.02	ND
NY:Yaphank	17.0	0.01	0.00	²¹⁴ Bi: 15.3±9.3
OH:Painesville	60.8	0.30	0.03	⁷ Be: 71.4±34.9
OH:Toledo	58.0	0.11	0.02	⁷ Be: 32.7±25.3
OR:Portland	127.0	0.05	0.03	ND
PA:Harrisburg	82.4	0.13	0.03	ND
SC:Barnwell	175.8	0.07	0.05	ND
SC:Columbia	30.8	0.03	0.01	ND
TN:Knoxville	91.0	0.04	0.02	ND
TN:Nashville	111.2	0.14	0.03	ND
UT:Salt Lake City	59.0	0.09	0.02	ND
VA:Lynchburg	23.8	0.09	0.01	ND
WA:Olympia	107.0	0.06	0.03	ND
WI:Madison	43.0	0.07	0.02	²¹² Bi: 13.0±12.9

Note: σ = Counting Error. ND = Not Detectable.

Table 6
Gross Beta and Specific Gamma in Precipitation
February 1995

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m ²	±2σ	Activity pCi/L ±2σ
AL:Montgomery	119.0	0.09	0.03	⁷ Be: 33.5±26.6
AR:Little Rock	21.0	0.04	0.01	⁷ Be: 73.2±27.3
AZ:Phoenix	4.0	0.01	0.00	⁷ Be: 41.5±26.7
CO:Denver	12.0	0.01	0.00	ND
CT:Hartford	30.0	0.07	0.01	⁷ Be: 26.8±20.4 ²¹⁴ Bi: 7.6±6.1
DE:Wilmington	45.0	0.05	0.01	⁷ Be: 61.5±22.0
FL:Jacksonville	57.2	0.04	0.02	⁷ Be: 53.1±39.1
FL:Miami	34.8	0.04	0.01	ND
HI:Honolulu	30.6	0.03	0.01	ND
ID:Boise	15.0	0.02	0.00	ND
ID:Idaho Falls	34.6	0.05	0.01	ND
IL:Chicago	19.4	0.01	0.01	ND
MN:Minneapolis	5.0	0.01	0.00	ND
MO:Jefferson City	51.0	0.14	0.02	²¹⁴ Pb: 4.9±4.7 ⁷ Be: 53.5±27.1 ²¹⁴ Bi: 11.8±6.5
MS:Jackson	42.0	0.03	0.01	ND
NC:Charlotte	105.6	0.22	0.04	⁷ Be: 63.3±23.3
NC:Wilmington	67.0	0.10	0.02	ND
ND:Bismarck	4.0	0.01	0.00	ND
NJ:Trenton	31.8	0.03	0.01	ND
NM:Santa Fe	13.0	0.02	0.00	ND
NY:Yaphank	57.0	0.17	0.02	⁷ Be: 67.3±27.8
OH:Painesville	26.0	0.22	0.02	⁷ Be: 86.5±36.0
OH:Toledo	11.0	0.04	0.01	²¹⁴ Bi: 7.7±5.8
OR:Portland	101.0	0.05	0.02	ND
PA:Harrisburg	51.0	0.26	0.03	⁷ Be: 65.7±24.0
SC:Barnwell	74.0	0.05	0.02	ND
SC:Columbia	185.2	0.24	0.06	⁷ Be: 41.0±23.3
TN:Knoxville	41.0	0.03	0.01	ND
TN:Nashville	48.4	0.09	0.02	⁷ Be: 20.8±20.0
TX:Austin	40.0	0.04	0.01	ND
TX:El Paso	19.0	0.02	0.01	ND
UT:Salt Lake City	32.0	0.02	0.01	ND
VA:Lynchburg	83.4	0.06	0.02	²¹² Bi: 28.7±20.5
WA:Olympia	92.4	0.04	0.02	⁷ Be: 40.4±24.9

Note: σ = Counting Error. ND = Not Detectable.

Table 7
Gross Beta and Specific Gamma in Precipitation
March 1995

Location	Depth (mm)	Gross Beta Activity		Specific Gamma Activity	
		nCi/m ²	±2σ	pCi/L	±2σ
AL:Montgomery	78.0	0.20	0.03	⁷ Be: 65.3±41.1 ²¹⁴ Bi: 10.8±7.0	
AR:Little Rock	123.0	0.09	0.03	ND	
AZ:Phoenix	20.0	0.02	0.01	ND	
CA:Berkeley	276.6	0.07	0.07	ND	
CO:Denver	9.4	0.01	0.00	ND	
CT:Hartford	40.0	0.11	0.02	²¹² Pb: 5.9±5.8 ⁷ Be: 28.3±27.5	
DE:Wilmington	95.0	0.09	0.03	²¹² Pb: 6.4±5.6	
FL:Jacksonville	83.4	0.08	0.02	ND	
FL:Miami	75.6	0.08	0.02	ND	
HI:Honolulu	85.0	0.10	0.03	ND	
IA:Iowa City	32.8	0.09	0.01	ND	
ID:Boise	23.0	0.03	0.01	ND	
ID:Idaho Falls	7.8	0.02	0.00	ND	
IL:Chicago	28.8	0.09	0.01	⁷ Be: 36.6±36.3	
MI:Lansing	14.0	0.01	0.00	ND	
MN:Minneapolis	54.0	0.06	0.02	ND	
MN:Welch	6.0	0.03	0.00	ND	
MO:Jefferson City	44.0	0.12	0.02	⁷ Be: 41.4±23.2	
MS:Jackson	58.0	0.06	0.02	⁴⁰ K: 41.2±37.8	
NC:Charlotte	52.0	0.18	0.02	⁷ Be: 70.9±28.7	
NC:Wilmington	3.0	0.01	0.00	⁷ Be: 33.6±24.3	
ND:Bismarck	47.0	0.11	0.02	ND	
NJ:Trenton	49.0	0.07	0.02	ND	
NV:Las Vegas	12.0	0.08	0.01	²¹⁴ Bi: 14.2±6.9 ⁷ Be: 43.6±36.9 ²¹² Pb: 6.8±5.3	
NY:Albany	32.4	0.05	0.01	ND	
NY:Yaphank	51.0	0.11	0.02	⁷ Be: 41.5±24.9	
OH:Painesville	42.2	0.08	0.02	⁷ Be: 86.6±44.8	
OH:Toledo	58.0	0.09	0.02	ND	
OR:Portland	86.0	0.08	0.02	ND	
PA:Harrisburg	29.2	0.02	0.01	⁴⁰ K: 33.3±32.9	
SC:Columbia	57.2	0.12	0.02	ND	
TN:Knoxville	79.0	0.07	0.02	⁷ Be: 51.8±38.4	
TN:Nashville	76.4	0.10	0.03	ND	
TX:Austin	50.0	0.01	0.01	ND	
TX:El Paso	10.0	0.01	0.00	²¹⁴ Bi: 18.4±5.6	
UT:Salt Lake City	56.0	0.06	0.02	ND	

Table 7 (continued)

Gross Beta and Specific Gamma in Precipitation

March 1995

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m ²	$\pm 2\sigma$	Activity pCi/L $\pm 2\sigma$
VA:Lynchburg	44.2	0.03	0.01	ND
WA:Olympia	218.0	0.27	0.07	ND
WI:Madison	42.4	0.05	0.01	ND

Note: σ = Counting Error. ND = Not Detectable.

Table 8
Tritium in Precipitation

January–March 1995

Location	January 1995		February 1995		March 1995	
	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$
AL:Montgomery	0.1	0.1	0.1	0.1	0.1	0.1
AR:Little Rock	0.1	0.1	0.1	0.1	0.2	0.1
AZ:Phoenix	0.1	0.2	0.1	0.1	0.2	0.1
CA:Berkeley	0.1	0.1	NS		0.1	0.1
CO:Denver	NS		0.1	0.1	0.1	0.1
CT:Hartford	0.3	0.2	0.1	0.1	0.1	0.2
DE:Wilmington	0.1	0.1	0.2	0.2	0.1	0.1
FL:Jacksonville	0.1	0.2	0.1	0.1	0.1	0.1
FL:Miami	0.2	0.2	0.1	0.1	0.1	0.1
HI:Honolulu	0.1	0.1	0.1	0.1	0.2	0.1
IA:Iowa City	0.2	0.2	NS		0.2	0.1
ID:Boise	0.1	0.2	0.1	0.1	0.1	0.1
ID:Idaho Falls	0.1	0.1	0.1	0.1	0.2	0.1
IL:Chicago	0.1	0.1	0.1	0.2	0.1	0.1
MI:Lansing	NS		NS		0.2	0.2
MN:Minneapolis	0.1	0.2	0.1	0.1	0.2	0.1
MN:Welch	NS		NS		0.1	0.1
MO:Jefferson City	0.2	0.2	0.1	0.1	0.2	0.2
MS:Jackson	0.1	0.2	0.1	0.1	0.1	0.1
NC:Charlotte	0.1	0.1	0.2	0.2	0.1	0.1
NC:Wilmington	0.2	0.2	0.1	0.1	0.1	0.1
ND:Bismarck	0.1	0.1	0.1	0.2	0.3	0.1
NJ:Trenton	0.2	0.2	0.1	0.2	0.0	0.1
NM:Santa Fe	NS		0.1	0.2	NS	
NV:Las Vegas	0.1	0.1	NS		0.1	0.1
NY:Albany	0.2	0.1	NS		0.1	0.1
NY:Niagara Falls	0.2	0.1	NS		NS	
NY:Yaphank	0.1	0.2	0.1	0.1	0.1	0.1
OH:Painesville	0.2	0.2	0.1	0.2	0.2	0.2
OH:Toledo	0.2	0.2	0.2	0.2	0.1	0.1
OR:Portland	0.1	0.1	0.1	0.1	0.1	0.1
PA:Harrisburg	0.1	0.2	0.1	0.1	0.1	0.1
SC:Barnwell	0.1	0.1	0.4	0.2	NS	
SC:Columbia	0.1	0.1	0.1	0.1	0.1	0.1
TN:Knoxville	0.2	0.1	0.1	0.1	0.2	0.2
TN:Nashville	0.2	0.1	0.2	0.2	0.1	0.1
TX:Austin	NS		0.1	0.1	0.2	0.1
TX:El Paso	NS		0.1	0.1	0.2	0.2
UT:Salt Lake City	0.1	0.2	0.1	0.1	0.1	0.1

Table 8 (continued)
Tritium in Precipitation
January–March 1995

Location	January 1995		February 1995		March 1995	
	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$
VA:Lynchburg	0.1	0.2	0.1	0.1	0.1	0.2
WA:Olympia	0.1	0.1	0.1	0.1	0.3	0.1
WI:Madison	0.1	0.1	NS		0.1	0.1

Note: σ = Counting Error. NS = No Sample.

Plutonium and Uranium in Airborne Particulates and Precipitation

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

Concentrations of the specific isotopes of plutonium-238, -239, and -240 and uranium-234, -235, and -238 are determined by alpha spectroscopy following chemical separation. The volume of air represented by the semiannual composite ranges from 60,000 to 250,000 cubic meters.

Plutonium and uranium results are published when they become available.

2. Water Program

The ERAMS water program provides data on ambient radiation levels 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 specific gamma activity annually. Tritium is a primary radioactive pollutant from nuclear power plants and weapons production activities. Tritium concentrations are determined by liquid scintillation counting of distilled samples. Gamma scans are performed annually to determine levels of gamma emitting radionuclides.

Table 9 contains the tritium concentration data for January–March 1995.

Table 9
Tritium in Surface Water
January–March 1995

Location	Source	Date Collected	³ H	
			nCi/L	±2σ
AL:Decatur	Tennessee River	01/10/95	0.1	0.3
AL:Gordon	Chattahoochee River	01/24/95	0.7	0.2
AL:Scottsboro	Tennessee River	01/10/95	0.1	0.1
AR:Little Rock	Arkansas River	01/03/95	0.2	0.2
CA:Clay Station	Folsom S. Canal	01/10/95	0.1	0.1
CA:Diablo Canyon	Pacific Ocean	01/05/95	0.1	0.1
CA:Eureka	Humboldt Bay	01/12/95	0.1	0.1
CA:San Onofre	Pacific Ocean	02/22/95	0.1	0.2
CO:Platteville	South Platte River	01/04/95	0.2	0.2
CT:East Haddam	Connecticut River	01/17/95	0.1	0.1
CT:Waterford	Long Island Sound	01/17/95	0.1	0.1
FL:Crystal River	Gulf Of Mexico	01/03/95	0.1	0.1
FL:Ft. Pierce	Atlantic Ocean	01/12/95	0.1	0.1
FL:Homestead	Biscayne Bay	01/18/95	0.1	0.1
GA:Baxley	Altamaha River	01/09/95	0.1	0.1
IA:Cedar Rapids	Cedar River	01/17/95	0.1	0.1
ID:Buhl	Snake River	01/10/95	0.2	0.1
IL:E. Moline	Mississippi River	01/19/95	0.1	0.1
IL:Morris	Illinois River	01/10/95	0.2	0.2
IL:Zion	Lake Michigan	03/20/95	0.3	0.2
KS:Le Roy	Neosho River	03/30/95	0.1	0.1
LA:New Orleans	Mississippi River	01/30/95	0.1	0.1
MA:Plymouth	Cape Cod Bay	01/25/95	0.2	0.1
MD:Conowingo	Susquehanna River	01/03/95	0.1	0.1
MD:Lusby	Chesapeake Bay	01/09/95	0.2	0.2
ME:Wiscasset	Montseway Bay	01/11/95	0.3	0.2
MI:Bridgman	Lake Michigan	01/15/95	0.3	0.2
MI:Charlevoix	Lake Michigan	01/12/95	0.1	0.2
MI:Monroe	Lake Erie	01/09/95	0.1	0.1
MI:South Haven	Lake Michigan	01/15/95	0.1	0.1
MN:Monticello	Mississippi River	01/25/95	0.2	0.2
MN:Red Wing	Mississippi River	01/19/95	0.1	0.2
MS:Port Gibson	Mississippi River	01/10/95	0.2	0.2
NC:Charlotte	Catawba River	01/18/95	0.2	0.1
NC:Southport	Atlantic Ocean	01/05/95	0.1	0.1
NE:Rulo	Missouri River	01/04/95	0.2	0.2
NJ:Bayside	Delaware River	01/10/95	0.2	0.1

Table 9 (continued)
Tritium in Surface Water
January–March 1995

Location	Source	Date Collected	³ H	
			nCi/L	±2σ
NJ:Oyster Creek	Oyster Creek	01/19/95	0.1	0.2
NV:Boulder City	Colorado River	02/01/95	0.2	0.1
NY:Chelsea	Hudson River	02/14/95	0.1	0.1
NY:Croton-On-Hudson	Hudson River	03/01/95	0.1	0.1
NY:Oswego	Lake Ontario	03/20/95	0.2	0.1
OH:Toledo	Lake Erie	01/12/95	0.1	0.1
OR:Bradwood	Columbia River	01/25/95	0.1	0.1
PA:Danville	Susquehanna River	01/04/95	0.4	0.2
PA:Philadelphia	Delaware River	02/03/95	0.1	0.1
PA:Philadelphia	Schuylkill R.-Belmont	02/03/95	0.2	0.1
PA:Philadelphia	Schuylkill R.-Queen	02/03/95	0.1	0.1
SC:Allendale	Savannah River	01/31/95	0.8	0.2
SC:Broad River	Broad River	01/17/95	0.1	0.1
SC:Hartsville	Lake Robinson	01/04/95	0.1	0.2
TN:Kingston	Clinch River	01/18/95	0.3	0.2
TN:Oak Ridge	Clinch River	02/20/95	0.5	0.1
TX:El Paso	Rio Grande	02/09/95	0.1	0.1
TX:Matagorda	Colorado River	01/10/95	0.2	0.2
VA:Doswell	North Anna River	01/04/95	0.4	0.2
VA:Newport News	James River	01/17/95	0.4	0.1
VT:Vernon	Connecticut River	03/23/95	0.1	0.2
WA:Northport	Columbia River	03/21/95	0.2	0.2
WA:Richland	Columbia River	01/04/95	0.2	0.2
WI:Two Creeks	Lake Michigan	01/10/95	0.3	0.1
WI:Victory	Mississippi River	01/09/95	0.1	0.1
WV:Wheeling	Ohio River	01/03/95	0.1	0.1

Note: σ = Counting Error.

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, -239, and -240 and uranium-234, -235, and -238 for stations that demonstrate gross alpha levels greater than 2 pCi/L.

Tritium analyses are performed by scintillation counting of the distilled samples. Gross beta and alpha are determined by evaporating an aliquot on a stainless steel planchet for counting. Radium-226 is determined by the standard emanation technique. Strontium-90 is determined by beta counting a strontium carbonate precipitate isolated by ion exchange.

Table 10 contains the data from drinking water samples for January–March 1995.

Table 10
Tritium in Drinking Water
January–March 1995

Location	Date Collected	³ H	
		nCi/L	±2σ
AK:Fairbanks	01/09/95	0.1	0.1
AL:Dothan	01/24/95	0.1	0.1
AL:Montgomery	01/18/95	0.2	0.2
AL:Muscle Shoals	01/10/95	0.1	0.2
AL:Scottsboro	01/10/95	0.1	0.2
AR:Little Rock	01/03/95	0.4	0.1
CA:Berkeley	01/03/95	0.1	0.2
CA:Los Angeles	01/03/95	0.2	0.2
CO:Denver	01/09/95	0.1	0.1
CO:Platteville	01/11/95	0.2	0.1
CT:Hartford	01/03/95	0.1	0.2
CT:Hartford	03/31/95	0.1	0.1
DE:Dover	01/05/95	0.1	0.2
FL:Miami	01/10/95	0.1	0.1
FL:Tampa	01/30/95	0.1	0.1
GA:Baxley	01/09/95	0.2	0.2
GA:Savannah	03/28/95	0.1	0.1
HI:Honolulu	01/03/95	0.2	0.2
IA:Cedar Rapids	01/17/95	0.1	0.1
ID:Boise	01/03/95	0.1	0.2
ID:Idaho Falls	02/06/95	0.1	0.1
IL:Morris	01/17/95	0.1	0.1
KS:Topeka	01/03/95	0.2	0.1
LA:New Orleans	01/03/95	0.3	0.2
MA:Lawrence	03/27/95	0.1	0.1
MD:Baltimore	01/06/95	0.2	0.2
MD:Conowingo	01/03/95	0.1	0.1
ME:Portland	01/10/95	0.1	0.1
MI:Detroit	01/05/95	0.4	0.2
MI:Grand Rapids	01/23/95	0.1	0.2
MN:Minneapolis	01/09/95	2.0	1.0
MN:Red Wing	01/18/95	0.1	0.2
MO:Jefferson City	03/31/95	0.1	0.1
MS:Jackson	01/10/95	0.1	0.2
MS:Port Gibson	01/10/95	0.1	0.1
MT:Helena	01/04/95	0.1	0.1
NC:Charlotte	01/18/95	0.2	0.2
NC:Wilmington	01/05/95	0.1	0.1
ND:Bismarck	01/03/95	0.1	0.1
NE:Lincoln	01/10/95	0.1	0.3
NH:Concord	03/31/95	0.2	0.2

Table 10 (continued)
Tritium in Drinking Water
January–March 1995

Location	Date Collected	³ H	
		nCi/L	±2σ
NJ:Trenton	01/04/95	0.1	0.1
NJ:Waretown	01/19/95	0.2	0.2
NM:Santa Fe	01/03/95	0.1	0.2
NV:Las Vegas	01/03/95	0.2	0.1
NY:Albany	01/04/95	0.2	0.1
NY:New York City	01/03/95	0.2	0.1
NY:Niagara Falls	01/03/95	0.4	0.1
NY:Syracuse	01/10/95	0.1	0.1
OH:Cincinnati	03/09/95	0.1	0.1
OH:Columbus	03/31/95	0.1	0.2
OH:Columbus	01/30/95	0.1	0.1
OH:East Liverpool	02/17/95	0.1	0.1
OH:Painesville	01/06/95	0.4	0.2
OH:Toledo	03/31/95	0.1	0.1
OH:Toledo	01/03/95	0.2	0.2
OK:Oklahoma City	02/02/95	0.1	0.1
OR:Portland	01/09/95	0.1	0.1
PA:Columbia	01/05/95	0.3	0.2
PA:Harrisburg	01/06/95	0.1	0.1
PA:Philadelphia	02/03/95	0.1	0.1
PA:Philadelphia-Queen	02/03/95	0.1	0.2
PA:Philadelphia-Baxter	02/03/95	0.1	0.1
PA:Pittsburgh	02/17/95	0.1	0.1
PC:Corozal	01/04/95	0.1	0.3
SC:Barnwell	02/09/95	0.1	0.1
SC:Barnwell	01/12/95	0.1	0.1
SC:Columbia	01/03/95	0.3	0.2
SC:Seneca	01/10/95	0.1	0.2
TN:Chattanooga	01/11/95	0.1	0.1
TN:Knoxville	03/31/95	0.2	0.2
TX:Austin	01/03/95	0.1	0.1
VA:Doswell	03/13/95	0.1	0.1
VA:Lynchburg	01/03/95	0.2	0.2
VA:Virginia Beach	01/03/95	0.1	0.2
WA:Richland	01/04/95	0.1	0.2
WI:Genoa City	01/09/95	0.1	0.1
WI:Madison	01/03/95	0.1	0.2

Note: σ = Counting Error.

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 important 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 most states, 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. All samples collected in July are analyzed for strontium-90.

Note: As of the first quarter of 1995, NAREL has discontinued regional compositing of milk samples for strontium-90 analysis.

Iodine-131, barium-140, cesium-137, and potassium 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.

Tables 11-13 contain the concentrations of radionuclides in pasteurized milk for January-March 1995.

Table 11
Radionuclides in Pasteurized Milk
January 1995

Location	Date Collected	K		¹³⁷ Cs		¹⁴⁰ Ba		¹³¹ I	
		g/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
AL:Montgomery	01/09/95	1.64	0.14	ND		ND		ND	
AR:Little Rock	01/03/95	1.64	0.08	ND		ND		ND	
AZ:Phoenix	01/20/95	1.58	0.07	ND		ND		ND	
CA:Los Angeles	01/04/95	1.60	0.14	ND		ND		ND	
CA:Sacramento	01/09/95	1.57	0.08	ND		ND		ND	
CA:San Francisco	01/06/95	1.70	0.09	ND		ND		ND	
DE:Wilmington	01/10/95	1.58	0.09	ND		ND		ND	
FL:Tampa	01/03/95	1.57	0.09	ND		ND		ND	
GA:Atlanta	01/09/95	1.45	0.10	ND		ND		ND	
HI:Honolulu	01/05/95	1.62	0.08	ND		ND		ND	
IA:Des Moines	01/09/95	1.62	0.08	ND		ND		ND	
IL:Chicago	01/12/95	1.62	0.07	ND		ND		ND	
IN:Indianapolis	01/09/95	1.62	0.09	ND		ND		ND	
KS:Wichita	01/30/95	1.66	0.08	ND		ND		ND	
KY:Louisville	01/04/95	1.55	0.11	ND		ND		ND	
MA:Boston	01/06/95	1.54	0.08	ND		ND		ND	
MD:Baltimore	01/06/95	1.69	0.09	ND		ND		ND	
ME:Portland	01/04/95	1.72	0.09	ND		ND		ND	
MI:Detroit	01/12/95	1.75	0.08	ND		ND		ND	
MI:Grand Rapids	01/03/95	1.64	0.08	ND		ND		ND	
MN:St. Paul	01/05/95	1.60	0.09	ND		ND		ND	
MO:Kansas City	01/31/95	1.63	0.08	ND		ND		ND	
MS:Jackson	01/03/95	1.54	0.09	ND		ND		ND	
NC:Charlotte	01/10/95	1.61	0.08	ND		ND		ND	
NM:Albuquerque	01/25/95	1.51	0.08	ND		ND		ND	
NV:Las Vegas	01/09/95	1.70	0.15	ND		ND		ND	
NY:Buffalo	01/03/95	1.73	0.09	ND		ND		ND	
NY:Syracuse	01/03/95	1.64	0.09	ND		ND		ND	
OH:Cincinnati	01/10/95	1.53	0.12	ND		ND		ND	
OH:Cleveland	01/20/95	1.68	0.08	ND		ND		ND	
OK:Oklahoma City	01/04/95	1.60	0.08	ND		ND		ND	
OR:Portland	01/04/95	1.64	0.08	ND		ND		ND	
PA:Philadelphia	01/04/95	1.61	0.11	ND		ND		ND	
PA:Pittsburgh	01/04/95	1.56	0.09	ND		ND		ND	
PC:Cristobal	01/12/95	1.57	0.06	6	1	ND		ND	
PR:San Juan	01/12/95	1.56	0.12	ND		ND		ND	
SC:Charleston	01/06/95	1.61	0.09	ND		ND		ND	

Table 11 (continued)
Radionuclides in Pasteurized Milk
January 1995

Location	Date Collected	K		¹³⁷ Cs		¹⁴⁰ Ba		¹³¹ I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
SD:Rapid City	01/09/95	1.56	0.08	ND		ND		ND	
TN:Chattanooga	01/01/95	1.66	0.09	ND		ND		ND	
TN:Knoxville	01/01/95	1.66	0.09	ND		ND		ND	
TN:Memphis	01/03/95	1.60	0.09	ND		ND		ND	
TX:Austin	01/02/95	1.50	0.11	ND		ND		ND	
TX:Ft. Worth	01/09/95	1.47	0.11	ND		ND		ND	
VA:Norfolk	01/03/95	1.66	0.09	ND		ND		ND	
VT:Burlington	01/13/95	1.66	0.09	ND		ND		ND	
WA:Seattle	01/03/95	1.58	0.08	ND		ND		ND	
WA:Spokane	01/09/95	1.62	0.08	ND		ND		ND	
WV:Charleston	01/09/95	1.55	0.12	ND		ND		ND	

Note: σ = Counting Error. ND = Not Detectable.

Table 12
Radionuclides in Pasteurized Milk
February 1995

Location	Date Collected	K g/L $\pm 2\sigma$	^{137}Cs pCi/L $\pm 2\sigma$	^{140}Ba pCi/L $\pm 2\sigma$	^{131}I pCi/L $\pm 2\sigma$
AL:Montgomery	02/13/95	1.52 0.06	ND	ND	ND
AR:Little Rock	02/13/95	1.63 0.09	ND	ND	ND
AZ:Phoenix	02/14/95	1.68 0.08	ND	ND	ND
CA:Los Angeles	02/08/95	1.59 0.06	ND	ND	ND
CA:Sacramento	02/08/95	1.38 0.08	ND	ND	ND
CA:San Francisco	02/08/95	1.50 0.08	ND	ND	ND
CO:Denver	02/21/95	1.61 0.06	ND	ND	ND
DE:Wilmington	02/22/95	1.59 0.08	ND	ND	ND
FL:Tampa	02/06/95	1.66 0.08	ND	ND	ND
GA:Atlanta	02/13/95	1.50 0.11	ND	ND	ND
HI:Honolulu	02/21/95	1.62 0.08	ND	ND	ND
IA:Des Moines	02/06/95	1.45 0.08	ND	ND	ND
IL:Chicago	02/09/95	1.38 0.08	ND	ND	ND
IN:Indianapolis	02/06/95	1.66 0.09	ND	ND	ND
KS:Wichita	02/28/95	1.63 0.07	ND	ND	ND
KY:Louisville	02/07/95	1.61 0.08	ND	ND	ND
MA:Boston	02/06/95	1.42 0.08	ND	ND	ND
MD:Baltimore	02/03/95	1.69 0.06	ND	ND	ND
ME:Portland	02/10/95	1.62 0.07	ND	ND	ND
MI:Detroit	02/06/95	1.66 0.09	ND	ND	ND
MI:Grand Rapids	02/06/95	1.68 0.08	ND	ND	ND
MN:St. Paul	02/06/95	1.75 0.12	ND	ND	ND
MO:Kansas City	02/22/95	1.68 0.09	ND	ND	ND
MS:Jackson	02/11/95	1.37 0.08	ND	ND	ND
NC:Charlotte	02/09/95	1.41 0.08	ND	ND	ND
ND:Minot	02/15/95	1.60 0.09	ND	ND	ND
NJ:Trenton	02/08/95	1.43 0.08	ND	ND	ND
NM:Albuquerque	02/28/95	1.76 0.08	ND	ND	ND
NV:Las Vegas	02/07/95	1.43 0.08	ND	ND	ND
NY:Buffalo	02/08/95	1.55 0.06	ND	ND	ND
NY:Syracuse	02/07/95	1.67 0.14	ND	ND	ND
OH:Cincinnati	02/15/95	1.61 0.08	ND	ND	ND
OH:Cleveland	02/28/95	1.70 0.09	ND	ND	ND
OR:Portland	02/06/95	1.56 0.08	ND	ND	ND
PA:Philadelphia	02/07/95	1.39 0.08	ND	ND	ND
PA:Pittsburgh	02/06/95	1.51 0.08	ND	ND	ND
PC:Cristobal	02/16/95	1.54 0.14	8	4	ND

Table 12 (continued)
Radionuclides in Pasteurized Milk
February 1995

Location	Date Collected	K		¹³⁷ Cs		¹⁴⁰ Ba		¹³¹ I	
		g/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
PR:San Juan	02/10/95	1.48	0.08	ND		ND		ND	
SC:Charleston	02/09/95	1.50	0.08	ND		ND		ND	
SD:Rapid City	02/06/95	1.66	0.11	ND		ND		ND	
TN:Chattanooga	02/01/95	1.58	0.14	ND		ND		ND	
TN:Knoxville	02/02/95	1.61	0.08	ND		ND		ND	
TX:Austin	02/14/95	1.70	0.08	ND		ND		ND	
TX:Ft. Worth	02/06/95	1.44	0.08	ND		ND		ND	
VA:Norfolk	02/02/95	1.72	0.08	ND		ND		ND	
VT:Burlington	02/28/95	1.69	0.09	ND		ND		ND	
WA:Seattle	02/07/95	1.61	0.06	ND		ND		ND	
WA:Spokane	02/06/95	1.64	0.08	ND		ND		ND	
WV:Charleston	02/14/95	1.68	0.08	ND		ND		ND	

Note: σ = Counting Error. ND = Not Detectable.

Table 13
Radionuclides in Pasteurized Milk
March 1995

Location	Date Collected	K		¹³⁷ Cs		¹⁴⁰ Ba		¹³¹ I	
		g/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
AL:Montgomery	03/09/95	1.61	0.09	ND		ND		ND	
AR:Little Rock	03/13/95	1.59	0.09	ND		ND		ND	
AZ:Phoenix	03/20/95	1.68	0.08	ND		ND		ND	
CA:Los Angeles	03/06/95	1.59	0.08	ND		ND		ND	
CA:Sacramento	03/13/95	1.44	0.08	ND		ND		ND	
CA:San Francisco	03/08/95	1.59	0.08	ND		ND		ND	
CO:Denver	03/20/95	1.69	0.14	ND		ND		ND	
DE:Wilmington	03/22/95	1.62	0.08	ND		ND		ND	
FL:Tampa	03/07/95	1.60	0.06	3	1	ND		ND	
GA:Atlanta	03/13/95	1.36	0.08	ND		ND		ND	
HI:Honolulu	03/13/95	1.47	0.08	ND		ND		ND	
IA:Des Moines	03/13/95	1.67	0.08	ND		ND		ND	
IL:Chicago	03/02/95	1.47	0.08	ND		ND		ND	
IN:Indianapolis	03/06/95	1.60	0.14	ND		ND		ND	
KS:Wichita	03/20/95	1.68	0.08	ND		ND		ND	
KY:Louisville	03/06/95	1.56	0.09	ND		ND		ND	
MA:Boston	03/10/95	1.50	0.06	ND		ND		ND	
MD:Baltimore	03/03/95	1.70	0.15	ND		ND		ND	
ME:Portland	03/09/95	1.59	0.10	ND		ND		ND	
MI:Detroit	03/15/95	1.60	0.06	ND		ND		ND	
MI:Grand Rapids	03/06/95	1.64	0.08	ND		ND		ND	
MO:Kansas City	03/27/95	1.64	0.09	ND		ND		ND	
MS:Jackson	03/07/95	1.41	0.08	ND		ND		ND	
NJ:Trenton	03/08/95	1.67	0.08	ND		ND		ND	
NV:Las Vegas	03/13/95	1.51	0.08	ND		ND		ND	
NY:Buffalo	03/06/95	1.51	0.11	ND		ND		ND	
NY:Syracuse	03/06/95	1.65	0.07	ND		ND		ND	
OH:Cincinnati	03/06/95	1.67	0.08	ND		ND		ND	
OR:Portland	03/06/95	1.52	0.11	ND		ND		ND	
PA:Philadelphia	03/06/95	1.62	0.09	ND		ND		ND	
PA:Pittsburgh	03/06/95	1.52	0.06	ND		ND		ND	
PR:San Juan	03/17/95	1.62	0.15	ND		ND		ND	
SC:Charleston	03/23/95	1.70	0.08	ND		ND		ND	
SD:Rapid City	03/07/95	1.63	0.07	ND		ND		ND	
TN:Chattanooga	03/06/95	1.55	0.09	ND		ND		ND	
TN:Knoxville	03/06/95	1.60	0.08	ND		ND		ND	
TN:Memphis	03/14/95	1.66	0.11	ND		ND		ND	

Table 13 (continued)
Radionuclides in Pasteurized Milk
March 1995

Location	Date Collected	K		¹³⁷ Cs		¹⁴⁰ Ba		¹³¹ I	
		g/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
TX:Austin	03/10/95	1.57	0.08	ND		ND		ND	
TX:Ft. Worth	03/07/95	1.62	0.08	ND		ND		ND	
VA:Norfolk	03/01/95	1.57	0.09	ND		ND		ND	
VT:Montpelier	03/28/95	1.43	0.14	ND		ND		ND	
WA:Seattle	03/06/95	1.69	0.08	ND		ND		ND	
WA:Spokane	03/06/95	1.64	0.07	ND		ND		ND	
WV:Charleston	03/07/95	1.76	0.10	ND		ND		ND	

Note: σ = Counting Error. ND = Not Detectable.

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

Requests for information concerning publication and distribution of ERD should be directed to:

Charles M. Petko
Office of the Director
National Air and Radiation Environmental Laboratory
540 South Morris Avenue
Montgomery, Alabama 36115-2601

Requests for information concerning the operation of ERAMS should be directed to:

John G. Griggs, Chief
Monitoring and Analytical Services Branch
National Air and Radiation Environmental Laboratory
540 South Morris Avenue
Montgomery, Alabama 36115-2601

or to:

William C. Conklin
Policy and Emergency Response Branch
Criteria and Standards Division (6602J)
USEPA Waterside Mall
401 M Street, S.W.
Washington, DC 20460
