

ENVIRONMENTAL

RADIATION

DATA

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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).

# 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  $2\sigma$  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  $2\sigma$  (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 <sup>3</sup>	0.01 pCi/m <sup>3</sup>	0.0015 pCi/m <sup>3</sup>
	Water	pCi/L	1 pCi/L	2 pCi/L
	Precipitation	nCi/m <sup>2</sup>	0.01 nCi/m <sup>2</sup>	0.005 nCi/m <sup>2</sup>
	(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 <sup>3</sup>	0.1 aCi/m <sup>3</sup>	1.5 aCi/m <sup>3</sup>
	Water	pCi/L	0.001 pCi/L	0.1 pCi/L
‡ Uranium-234,235,238	Air	aCi/m <sup>3</sup>	0.1 aCi/m <sup>3</sup>	1.5 aCi/m <sup>3</sup>
	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 m<sup>3</sup>. 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 m<sup>3</sup>.

‡‡ 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<sup>†</sup> at 5 hours and 29 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<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 those field stations collecting air filters. These samples are also sent to NAREL where they are composited monthly for gamma scans, tritium, and gross beta activity measurements. A composite of the March, April, and May precipitation samples is analyzed for plutonium-238, -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 April–June 1994. Tables 5–7 contain the data from precipitation samples for April–June 1994. Table 8 contains the data from tritium in precipitation samples for April–June 1994 at the selected sites.

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<sup>†</sup> 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**  
 April 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
AK:Juneau	8	0.0	0.0	0.0	0.01	0.00	0.00
AL:Montgomery	8	0.6	0.0	0.3	0.02	0.01	0.01
AR:Little Rock	9	0.3	0.1	0.2	0.01	0.00	0.01
AZ:Phoenix	4	0.6	0.2	0.4	0.02	0.01	0.01
CA:Berkeley	9	0.3	0.0	0.1	0.01	0.00	0.01
CA:Los Angeles	9	0.2	0.0	0.1	0.01	0.00	0.01
CO:Denver	8	1.0	0.2	0.5	0.02	0.01	0.01
CT:Hartford	8	0.1	0.0	0.0	0.01	0.01	0.01
DE:Wilmington	8	0.2	0.0	0.1	0.01	0.01	0.01
FL:Jacksonville	8	0.1	0.0	0.1	0.01	0.01	0.01
FL:Miami	8	0.0	0.0	0.0	0.01	0.00	0.01
HI:Honolulu	4	0.1	0.1	0.1	0.00	0.00	0.00
IA:Iowa City	8	0.3	0.1	0.2	0.02	0.00	0.01
ID:Boise	9	0.8	0.2	0.3	0.02	0.00	0.01
ID:Idaho Falls	8	0.0	0.0	0.0	0.01	0.01	0.01
IL:Chicago	6	0.4	0.2	0.3	0.02	0.01	0.01
IN:Indianapolis	8	0.6	0.1	0.3	0.02	0.01	0.01
KS:Topeka	7	1.1	0.3	0.7	0.02	0.01	0.01
KY:Frankfort	3	0.1	0.1	0.1	0.01	0.01	0.01
LA:New Orleans	5	0.3	0.1	0.1	0.01	0.01	0.01
MA:Lawrence	3	0.0	0.0	0.0	0.01	0.01	0.01
ME:Augusta	8	0.1	0.1	0.1	0.01	0.00	0.01
MI:Lansing	8	0.2	0.1	0.2	0.01	0.01	0.01
MN:Minneapolis	4	0.1	0.1	0.1	0.02	0.01	0.01
MO:Jefferson City	9	0.7	0.1	0.3	0.01	0.01	0.01
MS:Jackson	7	0.4	0.0	0.2	0.02	0.01	0.01
NC:Charlotte	6	0.2	0.0	0.1	0.02	0.01	0.01
NC:Wilmington	2	0.0	0.0	0.0	0.01	0.01	0.01
ND:Bismarck	6	1.3	0.2	0.8	0.02	0.01	0.01
NH:Concord	9	0.1	0.0	0.1	0.01	0.01	0.01
NJ:Trenton	8	0.5	0.1	0.2	0.01	0.01	0.01
NM:Santa Fe	6	0.4	0.2	0.3	0.01	0.00	0.01
NV:Las Vegas	8	0.2	0.1	0.1	0.02	0.01	0.01
NY:Albany	4	0.1	0.0	0.1	0.01	0.01	0.01
NY:Niagara Falls	8	0.3	0.0	0.1	0.01	0.01	0.01
NY:Syracuse	3	0.0	0.0	0.0	0.01	0.01	0.01
NY:Yaphank	9	0.2	0.1	0.1	0.01	0.01	0.01

**Table 2 (continued)**  
**Gross Beta in Airborne Particulates**  
 April 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Columbus	5	0.2	0.0	0.1	0.01	0.01	0.01
OH:Painesville	9	0.4	0.1	0.2	0.02	0.01	0.01
OH:Ross	8	0.0	0.0	0.0	0.02	0.01	0.01
OH:Toledo	8	0.4	0.0	0.1	0.02	0.01	0.01
OR:Portland	8	0.0	0.0	0.0	0.01	0.00	0.00
PA:Harrisburg	8	0.9	0.1	0.3	0.01	0.00	0.01
PA:Pittsburgh	9	0.1	0.1	0.1	0.01	0.00	0.01
SC:Barnwell	2	0.0	0.0	0.0	0.01	0.01	0.01
SC:Columbia	9	0.5	0.1	0.2	0.03	0.01	0.01
SD:Pierre	7	0.7	0.2	0.4	0.02	0.01	0.01
TN:Knoxville	4	0.0	0.0	0.0	0.02	0.01	0.01
TN:Nashville	8	0.3	0.1	0.2	0.02	0.01	0.01
TX:Austin	7	0.2	0.1	0.2	0.01	0.01	0.01
TX:El Paso	8	1.4	0.3	0.6	0.02	0.00	0.01
UT:Salt Lake City	8	0.4	0.0	0.2	0.02	0.00	0.01
VA:Lynchburg	8	0.5	0.1	0.3	0.01	0.01	0.01
VA:Virginia Beach	3	0.1	0.1	0.1	0.01	0.01	0.01
WA:Olympia	8	0.1	0.0	0.1	0.01	0.00	0.00
WA:Spokane	7	0.3	0.2	0.2	0.02	0.00	0.01
WI:Madison	8	1.0	0.2	0.4	0.01	0.00	0.01

Minimum Detectable Concentration for field estimates – 0.1 pCi/m<sup>3</sup>.

**Table 3**  
**Gross Beta in Airborne Particulates**  
 May 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
AK:Juneau	9	0.0	0.0	0.0	0.01	0.00	0.00
AL:Montgomery	9	0.7	0.1	0.3	0.13	0.01	0.04
AR:Little Rock	9	0.4	0.1	0.2	0.02	0.01	0.01
AZ:Phoenix	5	0.7	0.3	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	0.6	0.0	0.1	0.01	0.00	0.01
CO:Denver	8	0.7	0.2	0.4	0.02	0.01	0.01
CT:Hartford	9	0.1	0.0	0.1	0.01	0.00	0.01
DE:Wilmington	9	0.2	0.1	0.1	0.01	0.00	0.01
FL:Jacksonville	8	0.1	0.0	0.0	0.01	0.01	0.01
FL:Miami	9	0.1	0.0	0.0	0.01	0.01	0.01
HI:Honolulu	4	0.2	0.1	0.1	0.01	0.00	0.00
IA:Iowa City	9	0.3	0.1	0.2	0.01	0.01	0.01
ID:Boise	9	0.7	0.2	0.4	0.01	0.01	0.01
ID:Idaho Falls	9	0.0	0.0	0.0	0.01	0.01	0.01
IL:Chicago	5	0.5	0.1	0.3	0.01	0.00	0.01
IN:Indianapolis	9	0.4	0.1	0.3	0.02	0.01	0.01
KS:Topeka	8	1.9	0.2	1.0	0.01	0.01	0.01
KY:Frankfort	5	0.3	0.0	0.2	0.01	0.01	0.01
LA:New Orleans	6	0.3	0.1	0.2	0.02	0.01	0.01
MA:Lawrence	3	0.1	0.0	0.0	0.01	0.00	0.01
ME:Augusta	9	0.1	0.0	0.1	0.01	0.00	0.01
MI:Lansing	9	0.4	0.0	0.2	0.01	0.00	0.01
MN:Minneapolis	4	0.3	0.0	0.2	0.03	0.01	0.02
MO:Jefferson City	9	0.7	0.2	0.4	0.01	0.01	0.01
MS:Jackson	9	0.5	0.1	0.3	0.02	0.01	0.01
NC:Charlotte	9	0.2	0.0	0.1	0.02	0.00	0.01
NC:Wilmington	3	0.0	0.0	0.0	0.01	0.01	0.01
ND:Bismarck	6	0.9	0.0	0.5	0.01	0.01	0.01
NH:Concord	9	0.1	0.0	0.1	0.01	0.00	0.01
NJ:Trenton	9	0.5	0.1	0.3	0.02	0.00	0.01
NM:Santa Fe	8	0.3	0.1	0.2	0.01	0.01	0.01
NV:Las Vegas	9	0.2	0.1	0.1	0.01	0.01	0.01
NY:Albany	4	0.1	0.1	0.1	0.01	0.01	0.01
NY:Niagara Falls	9	1.4	0.1	0.3	0.01	0.00	0.01
NY:Syracuse	5	0.2	0.0	0.1	0.01	0.00	0.01
NY:Yaphank	9	0.2	0.0	0.1	0.01	0.00	0.01



**Table 3 (continued)**  
**Gross Beta in Airborne Particulates**  
 May 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Columbus	5	0.3	0.1	0.2	0.01	0.00	0.01
OH:Painesville	9	0.3	0.1	0.2	0.01	0.00	0.01
OH:Ross	9	0.0	0.0	0.0	0.03	0.00	0.01
OH:Toledo	9	0.4	0.0	0.2	0.01	0.00	0.01
OR:Portland	9	0.0	0.0	0.0	0.01	0.00	0.00
PA:Harrisburg	9	0.3	0.1	0.2	0.01	0.00	0.01
PA:Pittsburgh	9	0.1	0.1	0.1	0.01	0.00	0.01
SC:Barnwell	2	0.1	0.0	0.1	0.01	0.01	0.01
SC:Columbia	9	0.4	0.1	0.2	0.04	0.01	0.01
SD:Pierre	9	0.6	0.2	0.4	0.02	0.01	0.01
TN:Knoxville	1	0.0	0.0	0.0	0.03	0.03	0.03
TN:Nashville	9	0.4	0.0	0.1	0.02	0.01	0.01
TX:Austin	9	0.2	0.1	0.1	0.02	0.00	0.01
TX:El Paso	9	0.8	0.3	0.5	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	9	0.7	0.1	0.4	0.01	0.00	0.01
VA:Virginia Beach	2	0.1	0.1	0.1	0.01	0.01	0.01
WA:Olympia	9	0.1	0.0	0.1	0.01	0.00	0.00
WA:Spokane	9	0.4	0.1	0.2	0.01	0.00	0.01
WI:Madison	9	1.0	0.2	0.4	0.01	0.01	0.01

Minimum Detectable Concentration for field estimates – 0.1 pCi/m<sup>3</sup>.

**Table 4**  
**Gross Beta in Airborne Particulates**  
 June 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
AK:Juneau	7	0.0	0.0	0.0	0.01	0.00	0.00
AL:Montgomery	9	0.4	0.2	0.3	0.06	0.00	0.02
AR:Little Rock	7	0.6	0.1	0.3	0.02	0.01	0.01
AZ:Phoenix	4	0.6	0.3	0.5	0.02	0.01	0.01
CA:Berkeley	8	0.1	0.0	0.1	0.01	0.00	0.00
CA:Los Angeles	8	0.2	0.0	0.1	0.01	0.00	0.01
CO:Denver	8	0.6	0.3	0.5	0.01	0.01	0.01
CT:Hartford	8	0.1	0.0	0.1	0.01	0.01	0.01
DE:Wilmington	8	0.3	0.1	0.2	0.01	0.01	0.01
FL:Jacksonville	7	0.1	0.0	0.0	0.01	0.00	0.01
FL:Miami	8	0.0	0.0	0.0	0.01	0.00	0.01
HI:Honolulu	6	0.1	0.1	0.1	0.00	0.00	0.00
IA:Iowa City	9	1.1	0.0	0.2	0.01	0.01	0.01
ID:Boise	8	0.7	0.2	0.4	0.02	0.00	0.01
ID:Idaho Falls	9	0.0	0.0	0.0	0.01	0.00	0.01
IL:Chicago	8	0.8	0.1	0.3	0.02	0.00	0.01
IN:Indianapolis	8	0.5	0.2	0.3	0.02	0.01	0.01
KS:Topeka	9	3.2	0.2	1.2	0.02	0.01	0.01
KY:Frankfort	4	0.3	0.1	0.2	0.02	0.01	0.01
LA:New Orleans	4	0.4	0.1	0.2	0.01	0.01	0.01
MA:Lawrence	3	0.0	0.0	0.0	0.01	0.00	0.01
ME:Augusta	8	0.1	0.0	0.1	0.01	0.01	0.01
MI:Lansing	9	0.3	0.0	0.2	0.01	0.01	0.01
MN:Minneapolis	5	0.1	0.0	0.1	0.01	0.01	0.01
MO:Jefferson City	8	0.8	0.2	0.4	0.02	0.01	0.01
MS:Jackson	8	0.3	0.1	0.2	0.02	0.01	0.01
NC:Charlotte	7	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	8	0.9	0.1	0.4	0.01	0.01	0.01
NH:Concord	8	0.2	0.1	0.1	0.01	0.01	0.01
NJ:Trenton	9	0.9	0.2	0.4	0.02	0.01	0.01
NM:Santa Fe	6	0.7	0.1	0.4	0.01	0.01	0.01
NV:Las Vegas	9	0.2	0.1	0.1	0.01	0.01	0.01
NY:Albany	5	0.1	0.0	0.0	0.01	0.01	0.01
NY:Niagara Falls	8	5.1	0.1	0.8	0.01	0.01	0.01
NY:Syracuse	3	0.0	0.0	0.0	0.01	0.01	0.01
NY:Yaphank	8	0.2	0.0	0.1	0.02	0.01	0.01

**Table 4 (continued)**  
**Gross Beta in Airborne Particulates**  
 June 1994

Location	Number of Samples	5-Hour Field Estimate			NAREL Lab Measurement		
		Max	Min	Avg	Max	Min	Avg
OH:Columbus	7	0.3	0.1	0.2	0.02	0.00	0.01
OH:Painesville	8	0.5	0.1	0.3	0.02	0.01	0.01
OH:Ross	8	0.0	0.0	0.0	0.02	0.01	0.01
OH:Toledo	9	0.6	0.0	0.2	0.02	0.01	0.01
OR:Portland	8	0.0	0.0	0.0	0.01	0.00	0.00
PA:Harrisburg	8	0.6	0.1	0.3	0.02	0.01	0.01
PA:Pittsburgh	8	0.1	0.1	0.1	0.01	0.01	0.01
SC:Barnwell	1	0.0	0.0	0.0	0.00	0.00	0.00
SC:Columbia	8	0.3	0.0	0.2	0.01	0.01	0.01
SD:Pierre	8	0.7	0.2	0.4	0.01	0.01	0.01
TN:Nashville	8	0.4	0.0	0.2	0.02	0.01	0.01
TX:Austin	8	0.1	0.1	0.1	0.02	0.01	0.01
TX:El Paso	9	0.9	0.3	0.7	0.02	0.01	0.01
UT:Salt Lake City	7	0.2	0.1	0.1	0.01	0.01	0.01
VA:Lynchburg	9	1.1	0.2	0.6	0.02	0.01	0.01
VA:Virginia Beach	3	0.1	0.0	0.0	0.01	0.01	0.01
WA:Olympia	7	0.1	0.0	0.1	0.01	0.00	0.00
WA:Spokane	8	0.2	0.1	0.2	0.01	0.00	0.01
WI:Madison	8	0.4	0.2	0.3	0.01	0.00	0.01

Minimum Detectable Concentration for field estimates – 0.1 pCi/m<sup>3</sup>.

**Table 5**  
**Gross Beta and Specific Gamma in Precipitation**  
**April 1994**

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m <sup>2</sup>	±2σ	Activity pCi/L ±2σ
AK:Juneau	40.0	0.02	0.01	<sup>7</sup> Be: 58.2±38.3
AL:Montgomery	70.0	0.07	0.02	ND
AR:Little Rock	84.0	0.10	0.03	ND
CA:Berkeley	39.4	0.02	0.01	ND
CO:Denver	35.6	0.08	0.01	ND
CT:Hartford	50.0	0.13	0.02	ND
DE:Wilmington	61.0	0.09	0.02	<sup>7</sup> Be: 53.4±25.6
FL:Jacksonville	90.4	0.09	0.03	ND
FL:Miami	130.0	0.12	0.04	ND
HI:Honolulu	19.0	0.03	0.01	ND
ID:Boise	9.0	0.01	0.00	ND
IL:Chicago	24.0	0.02	0.01	<sup>7</sup> Be: 50.9±33.0
LA:New Orleans	65.0	0.08	0.02	<sup>7</sup> Be: 68.7±25.8
ME:Augusta	94.0	0.15	0.03	<sup>7</sup> Be: 66.0±32.7
MI:Lansing	48.6	0.04	0.01	<sup>7</sup> Be: 52.6±38.0
MN:Minneapolis	77.0	0.11	0.03	ND
MO:Jefferson City	145.0	0.16	0.05	<sup>7</sup> Be: 27.9±25.2
NC:Charlotte	43.0	0.08	0.02	<sup>7</sup> Be: 54.5±32.3
NC:Wilmington	15.0	0.03	0.01	<sup>214</sup> Bi: 8.0±6.5
NH:Concord	19.2	0.06	0.01	<sup>7</sup> Be: 95.8±36.5
NJ:Trenton	46.6	0.07	0.02	<sup>7</sup> Be: 51.8±35.9
NY:Albany	68.4	0.07	0.02	<sup>7</sup> Be: 35.5±28.1
NY:Niagara Falls	56.0	0.06	0.02	ND
NY:Syracuse	16.0	0.01	0.00	<sup>7</sup> Be: 32.7±24.4
NY:Yaphank	24.0	0.05	0.01	<sup>7</sup> Be: 43.0±23.4
OH:Painesville	92.6	0.27	0.04	<sup>7</sup> Be: 82.8±36.2
OH:Toledo	93.6	0.13	0.03	<sup>7</sup> Be: 41.2±25.8
OR:Portland	22.0	0.02	0.01	<sup>7</sup> Be: 66.3±32.4
PA:Harrisburg	85.8	0.09	0.03	ND
SC:Barnwell	81.4	0.15	0.03	ND
TN:Knoxville	99.0	0.12	0.03	ND
TN:Nashville	122.2	0.13	0.04	<sup>7</sup> Be: 34.4±30.5
UT:Salt Lake City	93.2	0.29	0.04	ND
VA:Lynchburg	133.6	0.15	0.04	ND
WA:Olympia	52.0	0.04	0.01	<sup>7</sup> Be: 47.8±27.2
WI:Madison	37.2	0.07	0.01	<sup>7</sup> Be: 34.5±29.1

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

**Table 6**  
**Gross Beta and Specific Gamma in Precipitation**  
**May 1994**

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m <sup>2</sup>	±2σ	Activity pCi/L ±2σ
AK:Juneau	56.0	0.05	0.02	<sup>7</sup> Be: 58.8±27.7
AL:Montgomery	29.2	0.04	0.01	ND
AR:Little Rock	126.0	0.21	0.04	<sup>7</sup> Be: 61.9±34.8
CA:Berkeley	35.8	0.02	0.01	ND
CO:Denver	48.4	0.09	0.02	<sup>7</sup> Be: 49.4±23.1
CT:Hartford	72.0	0.10	0.02	<sup>7</sup> Be: 67.6±23.9
DE:Wilmington	137.0	0.37	0.06	<sup>7</sup> Be: 53.8±29.8
FL:Jacksonville	65.2	0.07	0.02	<sup>7</sup> Be: 56.2±30.8
FL:Miami	25.8	0.02	0.01	ND
IL:Chicago	20.8	0.02	0.01	ND
LA:New Orleans	102.0	0.09	0.03	<sup>7</sup> Be: 27.8±21.1
ME:Augusta	79.0	0.15	0.03	<sup>7</sup> Be: 58.6±29.7
MI:Lansing	57.0	0.05	0.02	ND
MN:Minneapolis	55.0	0.09	0.02	<sup>7</sup> Be: 57.5±29.5
MO:Jefferson City	64.0	0.06	0.02	<sup>7</sup> Be: 29.2±27.2
NC:Charlotte	37.0	0.03	0.01	<sup>7</sup> Be: 64.7±36.2
NC:Wilmington	34.0	0.02	0.01	ND
ND:Bismarck	15.6	0.05	0.01	ND
NH:Concord	120.2	0.10	0.04	<sup>7</sup> Be: 41.6±19.3
NJ:Trenton	67.0	0.11	0.02	<sup>7</sup> Be: 45.0±29.4
NM:Santa Fe	68.0	0.05	0.02	<sup>7</sup> Be: 38.6±28.2
NY:Albany	79.8	0.08	0.02	<sup>7</sup> Be: 66.4±34.9
NY:Niagara Falls	71.0	0.07	0.02	<sup>7</sup> Be: 69.6±40.0
NY:Syracuse	31.0	0.02	0.01	ND
NY:Yaphank	16.0	0.03	0.01	<sup>7</sup> Be: 72.9±35.1
OH:Painesville	32.4	0.06	0.01	<sup>7</sup> Be: 61.9±22.6
OH:Toledo	42.0	0.08	0.02	ND
PA:Harrisburg	55.2	0.09	0.02	ND
SC:Barnwell	34.6	0.29	0.02	ND
SC:Columbia	45.6	0.11	0.02	<sup>7</sup> Be: 33.5±23.2
TN:Knoxville	41.0	0.03	0.01	ND
TN:Nashville	172.4	0.15	0.05	ND
TX:Austin	110.0	0.09	0.03	<sup>212</sup> Pb: 5.5±5.3 <sup>7</sup> Be: 24.5±21.0
UT:Salt Lake City	35.0	0.07	0.01	<sup>7</sup> Be: 45.0±26.0
VA:Lynchburg	19.0	0.17	0.01	ND
WA:Olympia	38.6	0.03	0.01	<sup>7</sup> Be: 29.4±24.9
WI:Madison	54.2	0.04	0.02	ND

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

**Table 7**  
**Gross Beta and Specific Gamma in Precipitation**  
 June 1994

Location	Depth (mm)	Gross Beta Activity		Specific Gamma
		nCi/m <sup>2</sup>	±2σ	Activity pCi/L ±2σ
AK:Juneau	30.4	0.05	0.01	ND
AL:Montgomery	133.0	0.27	0.05	<sup>7</sup> Be: 57.8±19.5
AR:Little Rock	188.0	0.25	0.06	<sup>7</sup> Be: 31.8±28.4
CO:Denver	13.6	0.04	0.01	<sup>7</sup> Be: 39.2±31.1
CT:Hartford	40.0	0.17	0.02	<sup>7</sup> Be: 56.6±30.8
DE:Wilmington	29.0	0.05	0.01	ND
FL:Jacksonville	290.6	0.26	0.08	ND
FL:Miami	128.6	0.06	0.03	ND
IL:Chicago	52.6	0.06	0.02	ND
LA:New Orleans	26.0	0.02	0.01	ND
ME:Augusta	32.0	0.25	0.02	ND
MI:Lansing	101.0	0.17	0.03	<sup>7</sup> Be: 47.7±42.7
MN:Minneapolis	76.0	0.08	0.02	<sup>7</sup> Be: 40.1±23.1
MO:Jefferson City	93.0	0.11	0.03	<sup>7</sup> Be: 25.3±20.2
MS:Jackson	79.8	0.03	0.02	<sup>7</sup> Be: 26.1±20.7
NC:Charlotte	85.0	0.21	0.03	<sup>7</sup> Be: 41.2±28.5
NC:Wilmington	18.0	0.01	0.01	ND
ND:Bismarck	67.6	0.06	0.02	ND
NH:Concord	38.8	0.19	0.02	<sup>7</sup> Be: 89.6±32.8
NJ:Trenton	33.4	0.11	0.01	<sup>7</sup> Be: 40.5±29.3
NY:Albany	96.6	0.53	0.05	<sup>7</sup> Be: 115±36
NY:Niagara Falls	76.2	0.11	0.03	ND
NY:Syracuse	16.0	0.02	0.00	ND
OH:Painesville	96.2	0.38	0.05	<sup>7</sup> Be: 68.3±34.1
OH:Toledo	66.0	0.13	0.02	<sup>7</sup> Be: 34.0±23.1
OR:Portland	26.0	0.02	0.01	ND
PA:Harrisburg	61.6	0.19	0.03	<sup>7</sup> Be: 52.2±34.7
SC:Barnwell	32.2	0.19	0.02	ND
SC:Columbia	196.4	0.35	0.07	<sup>7</sup> Be: 41.1±23.1 <sup>7</sup> Be: 41.1±23.1
TN:Knoxville	8.0	0.02	0.00	<sup>7</sup> Be: 42.8±23.8
TN:Nashville	81.6	0.12	0.03	<sup>7</sup> Be: 48.2±26.3
TX:El Paso	36.0	0.08	0.02	ND
VA:Lynchburg	19.0	0.13	0.01	ND
WA:Olympia	69.0	0.02	0.02	ND
WI:Madison	73.6	0.09	0.02	<sup>7</sup> Be: 47.2±23.0

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

**Table 8**  
**Tritium in Precipitation**

April–June 1994

Location	April 1994		May 1994		June 1994	
	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$	nCi/L	$\pm 2\sigma$
AK:Juneau	0.1	0.1	0.1	0.1	0.1	0.2
AL:Montgomery	0.1	0.2	0.1	0.1	0.1	0.2
AR:Little Rock	0.1	0.1	0.1	0.1	0.1	0.1
CA:Berkeley	0.1	0.1	0.1	0.1	NS	
CO:Denver	0.2	0.2	0.1	0.2	0.1	0.1
CT:Hartford	0.1	0.1	0.1	0.2	0.1	0.2
DE:Wilmington	0.1	0.1	0.1	0.2	0.1	0.2
FL:Jacksonville	0.1	0.1	0.1	0.2	0.1	0.2
FL:Miami	0.1	0.2	0.2	0.2	0.1	0.1
HI:Honolulu	0.1	0.1	NS		NS	
ID:Boise	0.1	0.1	NS		NS	
IL:Chicago	0.1	0.1	0.1	0.2	0.1	0.2
LA:New Orleans	0.1	0.2	0.2	0.2	0.1	0.1
ME:Augusta	0.1	0.1	0.1	0.1	0.1	0.1
MI:Lansing	0.2	0.1	0.1	0.2	0.1	0.2
MN:Minneapolis	0.1	0.1	0.1	0.1	0.1	0.2
MO:Jefferson City	0.1	0.1	0.1	0.1	0.2	0.2
MS:Jackson	NS		NS		0.1	0.1
NC:Charlotte	0.2	0.2	0.1	0.2	0.1	0.1
NC:Wilmington	0.1	0.1	0.1	0.2	0.1	0.2
ND:Bismarck	NS		0.1	0.1	0.1	0.1
NH:Concord	0.2	0.1	0.1	0.1	0.1	0.2
NJ:Trenton	0.1	0.1	0.1	0.1	0.1	0.1
NM:Santa Fe	NS		0.2	0.2	NS	
NY:Albany	0.1	0.1	0.1	0.1	0.1	0.2
NY:Niagara Falls	0.4	0.2	0.2	0.2	0.1	0.1
NY:Syracuse	0.3	0.1	0.1	0.2	0.1	0.1
NY:Yaphank	0.2	0.2	0.1	0.1	NS	
OH:Painesville	0.1	0.1	0.1	0.2	0.1	0.1
OH:Toledo	0.1	0.1	0.1	0.1	0.1	0.2
OR:Portland	0.1	0.2	NS		0.2	0.1
PA:Harrisburg	0.2	0.2	0.1	0.2	0.1	0.1
SC:Barnwell	0.6	0.2	0.8	0.2	0.2	0.2
SC:Columbia	NS		0.1	0.1	0.1	0.2
TN:Knoxville	0.1	0.2	0.1	0.1	0.1	0.1
TN:Nashville	0.1	0.1	0.1	0.1	0.1	0.1
TX:Austin	NS		0.1	0.1	NS	
TX:El Paso	NS		NS		0.1	0.2
UT:Salt Lake City	0.1	0.2	0.1	0.1	NS	
VA:Lynchburg	0.1	0.1	0.1	0.1	0.1	0.1
WA:Olympia	0.1	0.1	0.1	0.1	0.1	0.1
WI:Madison	0.2	0.2	0.1	0.2	0.1	0.2

## **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.

Table 9 contains the plutonium and uranium results for the period January–June 1994. Table 10 contains the plutonium and uranium in precipitation data for January–June 1994. Values are based upon composites of the March, April, and May samples. Samples from these three months only are analyzed annually because, due to the spring rains, they usually contain the year's highest concentrations of plutonium and uranium.



**Table 9**  
**Plutonium and Uranium In Airborne Particulates**  
 January–June 1994 Composites

Location	$^{238}\text{Pu}$		$^{239-240}\text{Pu}$		$^{234}\text{U}$		$^{235}\text{U}$		$^{238}\text{U}$	
	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$
AK: Juneau	0.1	0.2	ND		4.6	0.9	0.8	0.3	4.3	0.8
AL: Montgomery	0.2	0.3	0.1	0.2	10.9	1.7	0.6	0.4	9.9	1.6
AR: Little Rock	0.4	0.8	0.1	0.3	26.3	3.6	1.3	0.7	22.8	3.3
AZ: Phoenix	0.5	0.7	0.1	0.3	34.4	4.4	1.9	1.0	30.6	4.1
CA: Berkeley	ND		ND		6.0	1.2	0.5	0.4	6.4	1.3
CA: Los Angeles	0.8	0.7	0.3	0.3	20.8	3.2	1.5	0.8	17.2	2.9
CO: Denver	0.4	0.5	0.4	0.3	38.3	5.8	3.3	1.6	42.6	6.2
CT: Hartford	0.2	0.6	0.1	0.4	15.6	2.0	0.6	0.4	15.3	2.0
DE: Wilmington	ND		0.1	0.3	16.7	2.3	0.9	0.5	16.1	2.3
FL: Jacksonville	ND		ND		12.0	2.1	1.0	0.6	10.9	2.0
FL: Miami	0.2	0.3	0.1	0.2	11.4	1.2	0.5	0.2	10.6	1.1
HI: Honolulu	0.1	0.4	ND		4.0	1.1	1.1	0.5	3.6	1.0
IA: Iowa City	ND		0.2	0.2	11.5	1.3	0.4	0.2	11.4	1.3
ID: Boise	0.7	1.0	0.8	0.6	19.2	2.4	1.0	0.5	17.6	2.3
ID: Idaho Falls	ND		ND		10.3	1.8	0.5	0.4	12.1	1.9
IL: Chicago	ND		0.1	0.1	13.1	1.4	0.5	0.2	15.1	1.6
IN: Indianapolis	ND		0.3	0.4	29.3	3.1	1.5	0.6	29.2	3.1
KS: Topeka	ND		0.2	0.2	21.0	1.9	0.9	0.3	22.0	2.0
KY: Frankfort	ND		0.2	0.2	12.0	1.5	0.5	0.3	12.9	1.5
LA: New Orleans	0.1	0.3	ND		8.2	1.6	0.5	0.4	8.8	1.7
MA: Lawrence	0.1	0.3	ND		12.0	1.8	0.9	0.4	11.3	1.7
ME: Augusta	0.1	0.6	ND		19.6	3.1	0.8	0.6	17.4	2.9
MI: Lansing	ND		0.1	0.2	9.5	1.4	0.4	0.3	10.2	1.4
MN: Minneapolis	0.3	0.5	0.4	0.4	10.3	1.4	0.4	0.3	9.1	1.3
MO: Jefferson City	0.4	0.5	0.3	0.3	19.0	1.8	0.7	0.3	19.5	1.8
MS: Jackson	0.3	0.4	0.2	0.2	15.8	1.8	0.6	0.3	13.8	1.6
NC: Charlotte	0.1	0.5	ND		17.4	2.8	0.8	0.6	17.7	2.8
NC: Wilmington	ND		0.1	0.1	8.3	1.3	0.2	0.2	8.9	1.3
ND: Bismarck	0.5	0.6	0.3	0.3	12.8	1.8	0.5	0.3	13.6	1.8
NH: Concord	0.1	0.2	0.1	0.1	10.4	1.5	0.6	0.3	8.9	1.3
NJ: Trenton	ND		ND		11.3	1.7	0.5	0.3	11.3	1.7
NM: Santa Fe	0.3	0.4	0.2	0.2	15.5	2.3	1.0	0.5	13.5	2.1
NV: Las Vegas	0.5	1.2	0.3	0.6	112	11	4.6	1.8	74.7	8.2
NY: Albany	ND		0.4	0.4	19.2	2.9	0.9	0.6	17.9	2.8
NY: Niagara Falls	ND		0.2	0.3	30.5	3.7	2.0	0.9	29.7	3.7
NY: Syracuse	0.3	0.3	0.1	0.1	10.5	1.3	0.5	0.3	10.2	1.3
NY: Yaphank	0.1	0.3	0.1	0.1	6.1	1.0	0.4	0.2	5.8	1.0

**Table 9 (continued)**

Plutonium and Uranium In Airborne Particulates

January–June 1994 Composites

Location	$^{238}\text{Pu}$		$^{239-240}\text{Pu}$		$^{234}\text{U}$		$^{235}\text{U}$		$^{238}\text{U}$	
	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$	aCi/m <sup>3</sup>	$\pm 2\sigma$
OH:Columbus	0.1	0.3	0.1	0.1	17.0	2.0	0.9	0.4	16.7	2.0
OH:Painesville	ND		0.1	0.2	11.8	1.4	0.4	0.2	12.5	1.5
OH:Ross	ND		ND		31.4	3.4	1.7	0.7	26.9	3.1
OH:Toledo	0.1	0.3	0.3	0.2	17.8	2.1	0.9	0.4	20.0	2.3
OR:Portland	0.1	0.5	ND		9.7	2.4	1.4	0.9	8.6	2.2
PA:Harrisburg	ND		ND		11.6	1.9	0.7	0.5	11.2	1.9
PA:Pittsburgh	0.6	0.6	0.1	0.2	25.9	3.1	1.1	0.6	22.1	2.8
SC:Barnwell	0.1	0.4	0.5	0.3	11.5	1.7	0.6	0.4	10.6	1.6
SC:Columbia	0.7	0.7	0.1	0.3	27.4	3.6	2.2	0.9	23.5	3.3
SD:Pierre	0.3	0.4	0.1	0.2	11.1	1.4	0.6	0.3	9.6	1.2
TN:Knoxville	ND		0.1	0.2	7.8	1.5	0.4	0.4	9.0	1.6
TN:Nashville	ND		ND		22.4	3.2	0.8	0.7	22.0	3.3
TX:Austin	ND		0.2	0.3	10.5	1.6	0.8	0.4	9.1	1.5
TX:El Paso	0.4	1.3	0.6	0.8	51.4	6.2	1.8	1.1	43.7	5.7
UT:Salt Lake City	0.5	1.0	0.6	0.6	26.8	4.6	2.0	1.1	25.7	4.5
VA:Lynchburg	0.3	0.3	ND		61.3	4.9	1.9	0.6	9.2	1.3
VA:Virginia Beach	ND		ND		16.8	2.1	0.6	0.4	14.4	1.9
WA:Olympia	ND		ND		3.5	0.9	0.3	0.3	2.1	0.7
WA:Spokane	0.6	0.9	0.3	0.4	18.2	4.4	1.9	1.5	17.5	4.4
WI:Madison	0.2	0.3	0.2	0.2	11.9	1.6	0.5	0.3	10.2	1.5

Note:  $\sigma$  = Counting Error. NA = No Analysis. ND = Not Detectable.

**Table 10**  
**Plutonium and Uranium Analyses**  
**Selected Precipitation Composite Samples**  
**January–June 1994**

Location	<sup>238</sup> Pu		<sup>239–240</sup> Pu		<sup>234</sup> U		<sup>235</sup> U		<sup>238</sup> U	
	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
AK:Juneau	ND		0.001	0.003	0.024	0.010	0.003	0.005	0.007	0.006
AL:Montgomery	ND		0.004	0.006	0.018	0.010	ND		0.005	0.006
AR:Little Rock	0.000	0.011	0.001	0.003	0.009	0.008	0.002	0.004	0.011	0.007
AZ:Phoenix	0.017	0.015	ND		0.045	0.029	ND		0.042	0.029
CA:Berkeley	0.004	0.013	0.001	0.004	0.011	0.008	0.003	0.004	0.011	0.008
CO:Denver	0.005	0.010	0.003	0.005	0.019	0.010	0.005	0.005	0.021	0.011
CT:Hartford	0.005	0.009	0.001	0.005	0.094	0.030	0.041	0.019	0.044	0.020
DE:Wilmington	ND		0.001	0.004	0.015	0.010	0.005	0.005	0.006	0.005
FL:Jacksonville	ND		ND		0.022	0.015	0.017	0.011	0.043	0.017
FL:Miami	ND		ND		0.019	0.010	ND		0.016	0.009
HI:Honolulu	ND		ND		0.016	0.010	0.002	0.005	0.010	0.009
ID:Boise	0.007	0.016	ND		0.015	0.015	0.007	0.009	0.023	0.015
ID:Idaho Falls	0.011	0.016	0.001	0.005	0.149	0.030	0.033	0.013	0.083	0.022
IL:Chicago	0.004	0.010	0.002	0.004	0.015	0.009	0.002	0.004	0.006	0.006
LA:New Orleans	ND		0.003	0.005	0.007	0.009	0.009	0.008	0.011	0.009
ME:Augusta	ND		0.001	0.003	0.009	0.007	0.004	0.004	0.008	0.006
MI:Lansing	ND		0.004	0.005	0.021	0.011	0.001	0.002	0.023	0.010
MN:Minneapolis	0.002	0.010	ND		0.013	0.011	0.005	0.006	0.009	0.009
MO:Jefferson City	0.001	0.011	ND		0.007	0.010	0.004	0.006	0.010	0.008
MS:Jackson	ND		0.006	0.009	0.026	0.014	0.008	0.007	0.004	0.007
NC:Charlotte	0.008	0.011	0.001	0.004	0.016	0.007	0.002	0.003	0.004	0.004
NC:Wilmington	0.004	0.061	ND		0.021	0.012	0.009	0.008	0.009	0.009
ND:Bismarck	0.002	0.023	ND		0.033	0.019	0.005	0.008	0.029	0.016
NH:Concord	0.000	0.006	0.000	0.003	0.006	0.005	0.001	0.002	0.005	0.005
NJ:Trenton	0.009	0.010	0.002	0.004	0.019	0.010	0.004	0.004	0.006	0.005
NM:Santa Fe	ND		ND		0.014	0.007	0.004	0.004	0.001	0.003
NY:Albany	0.000	0.009	0.006	0.005	0.016	0.008	0.001	0.003	0.002	0.004
NY:Niagara Falls	0.004	0.011	0.001	0.003	0.007	0.008	0.006	0.005	0.018	0.010
NY:Syracuse	0.001	0.009	0.001	0.003	0.027	0.014	0.006	0.009	0.011	0.013
NY:Yaphank	0.005	0.013	ND		0.018	0.010	ND		ND	
OH:Painesville	ND		0.000	0.003	0.029	0.013	0.001	0.003	0.012	0.009
OH:Toledo	0.002	0.012	0.001	0.004	0.007	0.006	0.000	0.001	0.009	0.006
OR:Portland	0.005	0.013	ND		0.016	0.011	0.002	0.004	0.004	0.006
PA:Harrisburg	0.008	0.008	0.000	0.002	0.018	0.010	0.007	0.006	0.003	0.006
SC:Barnwell	ND		0.000	0.004	0.026	0.016	0.002	0.005	0.005	0.006
SC:Columbia	0.001	0.009	0.001	0.004	0.019	0.011	0.002	0.003	0.009	0.007
TN:Knoxville	ND		ND		0.013	0.008	ND		0.006	0.006

**Table 10 (continued)**

Plutonium and Uranium Analyses  
Selected Precipitation Composite Samples

January–June 1994

Location	$^{238}\text{Pu}$		$^{239-240}\text{Pu}$		$^{234}\text{U}$		$^{235}\text{U}$		$^{238}\text{U}$	
	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
TN:Nashville	0.006	0.008	0.000	0.001	0.013	0.011	0.001	0.003	0.009	0.009
TX:Austin	0.000	0.010	0.001	0.003	0.031	0.019	0.001	0.008	0.019	0.014
TX:El Paso	ND		ND		0.053	0.033	0.005	0.014	0.021	0.025
UT:Salt Lake City	0.015	0.015	ND		0.008	0.006	0.002	0.003	0.011	0.007
VA:Lynchburg	ND		0.003	0.005	0.076	0.024	0.005	0.006	0.004	0.006
WA:Olympia	0.009	0.010	ND		0.014	0.009	0.002	0.003	0.002	0.004
WI:Madison	0.000	0.010	0.000	0.003	0.010	0.012	0.008	0.012	0.013	0.017

Note:  $\sigma$  = Counting Error. NA = No Analysis. ND = Not Detectable.

## 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 11 contains the tritium concentration data for April–June 1994.

**Table 11**  
**Tritium in Surface Water**  
 April–June 1994

Location	Source	Date Collected	<sup>3</sup> H	
			nCi/L	±2σ
AL:Decatur	Tennessee River	04/06/94	0.1	0.1
AL:Scottsboro	Tennessee River	04/05/94	0.1	0.2
AR:Little Rock	Arkansas River	04/12/94	0.1	0.2
CA:Clay Station	Folsom S. Canal	04/05/94	0.1	0.1
CA:Eureka	Humboldt Bay	04/07/94	0.1	0.2
CA:San Onofre	Pacific Ocean	05/18/94	0.1	0.2
CO:Platteville	South Platte River	04/13/94	0.1	0.1
CT:East Haddam	Connecticut River	04/13/94	0.2	0.2
CT:Waterford	Long Island Sound	04/13/94	0.1	0.1
FL:Crystal River	Gulf Of Mexico	05/04/94	0.1	0.2
FL:Ft. Pierce	Atlantic Ocean	05/02/94	0.2	0.2
FL:Homestead	Biscayne Bay	04/22/94	0.3	0.1
GA:Baxley	Altamaha River	04/12/94	0.1	0.2
IA:Cedar Rapids	Cedar River	06/28/94	0.1	0.2
ID:Buhl	Snake River	06/30/94	0.1	0.2
IL:Moline	Mississippi River	04/01/94	0.2	0.2
IL:Morris	Illinois River	04/02/94	0.1	0.1
IL:Morris	Illinois River	04/02/94	0.1	0.1
IL:Zion	Lake Michigan	06/28/94	0.2	0.2
KS:Le Roy	Neosho River	06/23/94	0.1	0.1
LA>New Orleans	Mississippi River	04/30/94	0.1	0.2
MA:Plymouth	Cape Cod Bay	04/20/94	0.1	0.1
MD:Conowingo	Susquehanna River	04/19/94	0.2	0.1
MD:Lusby	Chesapeake Bay	04/11/94	0.1	0.1
ME:Wiscasset	Montseway Bay	04/12/94	0.1	0.1
MI:Bridgman	Lake Michigan	04/12/94	0.1	0.1
MI:Charlevoix	Lake Michigan	04/07/94	0.1	0.2
MI:Monroe	Lake Erie	04/11/94	0.2	0.2
MI:South Haven	Lake Michigan	04/12/94	0.2	0.2
MN:Monticello	Mississippi River	05/05/94	0.1	0.2
MN:Red Wing	Mississippi River	04/13/94	0.1	0.1
MS:Port Gibson	Mississippi River	04/26/94	0.1	0.2
NC:Charlotte	Catawba River	05/09/94	0.3	0.2
NC:Southport	Atlantic Ocean	04/14/94	0.2	0.2
NE:Rulo	Missouri River	04/25/94	0.3	0.2
NJ:Bayside	Delaware River	04/12/94	0.1	0.1
NJ:Oyster Creek	Oyster Creek	04/21/94	0.1	0.1

**Table 11 (continued)**  
**Tritium in Surface Water**  
 April–June 1994

Location	Source	Date Collected	<sup>3</sup> H	
			nCi/L	±2σ
NV:Boulder City	Colorado River	05/04/94	0.1	0.2
NY:Chelsea	Hudson River	04/04/94	0.1	0.1
NY:Croton-On-Hudson	Hudson River	04/22/94	0.2	0.2
NY:Oswego	Lake Ontario	06/28/94	0.1	0.2
OH:Toledo	Lake Erie	04/14/94	0.1	0.1
OR:Bradwood	Columbia River	06/06/94	0.1	0.2
PA:Danville	Susquehanna River	04/20/94	0.2	0.2
PA:Philadelphia	Delaware River	04/21/94	0.1	0.2
PA:Philadelphia	Schuylkill R.-Baxter	04/21/94	0.1	0.1
PA:Philadelphia	Schuylkill R.-Queen	04/21/94	0.1	0.1
SC:Allendale	Savannah River	04/29/94	0.9	0.2
SC:Broad River	Broad River	04/07/94	0.2	0.2
SC:Hartsville	Lake Robinson	04/11/94	0.9	0.2
TN:Daisy	Tennessee River	04/14/94	0.1	0.2
TN:Kingston	Clinch River	04/05/94	0.3	0.2
TN:Oak Ridge	Clinch River	05/15/94	0.3	0.2
TX:El Paso	Rio Grande	04/11/94	0.3	0.2
TX:Matagorda	Colorado River	04/11/94	0.1	0.2
VA:Doswell	North Anna River	04/06/94	1.0	0.2
VA:Newport News	James River	04/15/94	0.1	0.1
VT:Vernon	Connecticut River	04/13/94	0.1	0.2
WA:Northport	Columbia River	05/16/94	0.1	0.2
WA:Richland	Columbia River	04/20/94	0.1	0.2
WI:Two Creeks	Lake Michigan	04/11/94	0.1	0.2
WI:Victory	Mississippi River	04/11/94	0.1	0.2
WV:Wheeling	Ohio River	04/05/94	0.1	0.1

Note:  $\sigma$  = 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 12 contains the data from drinking water samples for April–June 1994.



**Table 12**  
**Tritium in Drinking Water**

April–June 1994

Location	Date Collected	<sup>3</sup> H	
		nCi/L	±2σ
AK:Fairbanks	04/06/94	0.2	0.1
AL:Muscle Shoals	04/06/94	0.1	0.2
AL:Scottsboro	04/05/94	0.1	0.2
AR:Little Rock	04/12/94	0.1	0.1
CA:Berkeley	04/27/94	0.1	0.2
CA:Los Angeles	04/05/94	0.1	0.2
CO:Denver	04/06/94	0.1	0.2
CO:Platteville	04/06/94	0.1	0.2
CT:Hartford	04/04/94	0.1	0.1
DC:Washington	04/03/94	0.1	0.2
DE:Dover	04/12/94	0.1	0.2
FL:Miami	04/01/94	0.1	0.1
FL:Tampa	04/20/94	0.1	0.1
GA:Baxley	04/12/94	0.1	0.1
GA:Savannah	05/20/94	0.1	0.1
HI:Honolulu	04/08/94	0.1	0.2
IA:Cedar Rapids	06/28/94	0.1	0.2
ID:Boise	04/04/94	0.1	0.1
ID:Idaho Falls	05/02/94	0.1	0.1
IL:Morris	05/02/94	0.1	0.1
IL:W. Chicago	04/01/94	0.1	0.1
KS:Topeka	04/01/94	0.1	0.1
LA:New Orleans	04/04/94	0.1	0.1
MA:Lawrence	04/06/94	0.1	0.1
MD:Baltimore	04/04/94	0.1	0.1
MD:Conowingo	04/19/94	0.1	0.2
ME:Augusta	04/07/94	0.2	0.2
MI:Detroit	04/05/94	0.3	0.2
MI:Grand Rapids	04/15/94	0.1	0.2
MN:Minneapolis	04/11/94	0.1	0.1
MN:Red Wing	04/05/94	0.1	0.2
MO:Jefferson City	04/01/94	0.1	0.2
MS:Jackson	04/26/94	0.1	0.1
MS:Port Gibson	04/26/94	0.1	0.2
MT:Helena	04/04/94	0.1	0.1
NC:Charlotte	05/09/94	0.2	0.2
NC:Wilmington	04/14/94	0.1	0.2
ND:Bismarck	04/04/94	0.1	0.2
NH:Concord	04/11/94	0.1	0.2
NH:Concord	06/30/94	0.1	0.1
NJ:Trenton	04/06/94	0.1	0.1

**Table 12 (continued)**  
**Tritium in Drinking Water**  
**April–June 1994**

Location	Date Collected	<sup>3</sup> H	
		nCi/L	±2σ
NJ:Waretown	04/21/94	0.1	0.2
NM:Santa Fe	04/29/94	0.1	0.1
NV:Las Vegas	04/04/94	0.2	0.2
NY:Albany	04/05/94	0.1	0.1
NY:New York City	04/04/94	0.1	0.2
NY:Niagara Falls	04/08/94	0.3	0.2
NY:Syracuse	04/15/94	0.1	0.2
OH:Cincinnati	06/30/94	0.1	0.2
OH:East Liverpool	05/10/94	0.1	0.2
OH:Painesville	04/04/94	0.1	0.2
OH:Toledo	04/14/94	0.2	0.1
OK:Oklahoma City	04/01/94	0.1	0.2
OR:Portland	04/15/94	0.2	0.2
PA:Columbia	04/21/94	0.2	0.1
PA:Harrisburg	04/22/94	0.1	0.1
PA:Philadelphia-Baxter	04/21/94	0.1	0.1
PA:Philadelphia-Queen	04/21/94	0.1	0.1
PA:Philadelphia	04/21/94	0.1	0.2
PA:Pittsburgh	05/10/94	0.1	0.1
PC:Corozal	04/05/94	0.1	0.1
RI:Providence	04/01/94	0.1	0.1
SC:Barnwell	04/14/94	0.1	0.1
SC:Columbia	04/05/94	0.3	0.2
SC:Jenkinsville	04/08/94	0.1	0.2
SC:Seneca	04/12/94	0.1	0.2
TN:Chattanooga	05/13/94	0.2	0.2
TN:Knoxville	04/06/94	0.1	0.1
TX:Austin	04/05/94	0.1	0.2
VA:Doswell	05/19/94	0.1	0.1
VA:Lynchburg	04/04/94	0.1	0.2
WA:Richland	04/20/94	0.1	0.1
WA:Seattle	04/01/94	0.2	0.2
WI:Genoa City	04/11/94	0.1	0.1
WI:Madison	04/04/94	0.1	0.2

Note:  $\sigma$  = 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 65 sampling sites with at least one located in each state, Puerto Rico, and the Panama Canal Zone. The samples are composited, according to production, from the major milk suppliers representing more than 80 percent of the milk consumed in a given population center.

The samples are analyzed for gamma emitting nuclides, including iodine-131, barium-140, cesium-137, and potassium. All samples collected in July are analyzed for strontium-90. Also, for the first month of the three quarters beginning January, April, and October, 10 regional composite samples of milk made up from the states within each of EPA's 10 regions are analyzed for strontium-90.

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 13–15 contain the concentrations of radionuclides in pasteurized milk for April–June 1994. Table 16 contains the concentrations of strontium-90 in pasteurized milk EPA Regional Composites for April 1994.

**Table 13**  
**Radionuclides in Pasteurized Milk**  
 April 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	±2σ	pCi/L	±2σ	pCi/L	±2σ	pCi/L	±2σ
AL:Montgomery	04/06/94	1.55	0.08	ND		ND		ND	
AR:Little Rock	04/06/94	1.50	0.08	ND		ND		ND	
AZ:Phoenix	04/20/94	1.61	0.08	ND		ND		ND	
CA:Los Angeles	04/12/94	1.68	0.09	ND		ND		ND	
CA:San Francisco	04/06/94	1.58	0.08	ND		ND		ND	
CT:Hartford	04/04/94	1.56	0.09	ND		ND		ND	
DE:Wilmington	04/13/94	1.66	0.08	ND		ND		ND	
FL:Tampa	04/04/94	1.62	0.09	3	2	ND		ND	
GA:Atlanta	04/11/94	1.49	0.06	ND		ND		ND	
HI:Honolulu	04/07/94	1.62	0.08	ND		ND		ND	
IA:Des Moines	04/04/94	1.69	0.09	ND		ND		ND	
IL:Chicago	04/07/94	1.62	0.09	ND		ND		ND	
IN:Indianapolis	04/04/94	1.61	0.08	ND		ND		ND	
KS:Wichita	04/19/94	1.57	0.08	ND		ND		ND	
KY:Louisville	04/05/94	1.57	0.08	ND		ND		ND	
LA:New Orleans	04/18/94	1.64	0.06	ND		ND		ND	
MA:Boston	04/04/94	1.54	0.10	ND		ND		ND	
MD:Baltimore	04/08/94	1.70	0.09	ND		ND		ND	
ME:Portland	04/04/94	1.64	0.09	ND		ND		ND	
MI:Detroit	04/05/94	1.66	0.08	ND		ND		ND	
MI:Grand Rapids	04/04/94	1.48	0.07	ND		ND		ND	
MO:Kansas City	04/12/94	1.54	0.10	ND		ND		ND	
MS:Jackson	04/07/94	1.51	0.14	ND		ND		ND	
MT:Helena	04/18/94	1.57	0.09	ND		ND		ND	
NC:Charlotte	04/05/94	1.64	0.05	ND		ND		ND	
ND:Minot	04/05/94	1.55	0.14	ND		ND		ND	
NJ:Trenton	04/06/94	1.60	0.08	ND		ND		ND	
NM:Albuquerque	04/20/94	1.68	0.09	ND		ND		ND	
NV:Las Vegas	04/04/94	1.54	0.09	ND		ND		ND	
NY:Buffalo	04/27/94	1.62	0.08	ND		ND		ND	
NY:Syracuse	04/07/94	1.60	0.08	ND		ND		ND	
OH:Cincinnati	04/20/94	1.64	0.07	ND		ND		ND	
OH:Cleveland	04/08/94	1.53	0.10	ND		ND		ND	
OR:Portland	04/06/94	1.63	0.08	ND		ND		ND	
PA:Philadelphia	04/06/94	1.57	0.08	ND		ND		ND	
PA:Pittsburgh	04/05/94	1.56	0.14	ND		ND		ND	
PC:Cristobal	04/14/94	1.76	0.14	7	3	ND		ND	

**Table 13 (continued)**  
**Radionuclides in Pasteurized Milk**  
 April 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
PR:San Juan	04/08/94	1.71	0.06	ND		ND		ND	
SC:Charleston	04/08/94	1.58	0.09	ND		ND		ND	
SD:Rapid City	04/04/94	1.57	0.06	ND		ND		ND	
TN:Chattanooga	04/04/94	1.55	0.09	ND		ND		ND	
TN:Memphis	04/06/94	1.58	0.08	ND		ND		ND	
TX:Austin	04/11/94	1.56	0.09	ND		ND		ND	
TX:Ft. Worth	04/04/94	1.62	0.09	ND		ND		ND	
VA:Norfolk	04/28/94	1.52	0.06	ND		ND		ND	
VT:Montpelier	04/28/94	1.59	0.06	ND		ND		ND	
WA:Seattle	04/04/94	1.66	0.08	ND		ND		ND	
WA:Spokane	04/11/94	1.63	0.07	ND		ND		ND	
WV:Charleston	04/05/94	1.64	0.08	ND		ND		ND	

Note:  $\sigma$  = Counting Error. ND = Not Detectable.

**Table 14**  
**Radionuclides in Pasteurized Milk**  
 May 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
AL:Montgomery	05/10/94	1.50	0.09	ND		ND		ND	
AR:Little Rock	05/04/94	1.56	0.09	ND		ND		ND	
AZ:Phoenix	05/23/94	1.58	0.09	ND		ND		ND	
CA:Los Angeles	05/04/94	1.60	0.09	ND		ND		ND	
CA:Sacramento	05/03/94	1.56	0.09	ND		ND		ND	
CA:San Francisco	05/04/94	1.60	0.09	ND		ND		ND	
CO:Denver	05/02/94	1.61	0.09	ND		ND		ND	
CT:Hartford	05/03/94	1.63	0.05	ND		ND		ND	
FL:Tampa	05/05/94	1.68	0.09	ND		ND		ND	
GA:Atlanta	05/10/94	1.54	0.08	ND		ND		ND	
HI:Honolulu	05/05/94	1.63	0.08	ND		ND		ND	
IA:Des Moines	05/03/94	1.66	0.06	ND		ND		ND	
IL:Chicago	05/05/94	1.58	0.09	ND		ND		ND	
IN:Indianapolis	05/09/94	1.62	0.08	ND		ND		ND	
KS:Wichita	05/23/94	1.58	0.14	ND		ND		ND	
KY:Louisville	05/03/94	1.58	0.06	ND		ND		ND	
LA:New Orleans	05/20/94	1.68	0.08	ND		ND		ND	
MA:Boston	05/06/94	1.55	0.08	ND		ND		ND	
MD:Baltimore	05/06/94	1.53	0.11	ND		ND		ND	
ME:Portland	05/05/94	1.66	0.09	ND		ND		ND	
MI:Detroit	05/06/94	1.68	0.08	ND		ND		ND	
MI:Grand Rapids	05/02/94	1.58	0.09	ND		ND		ND	
MN:St. Paul	05/06/94	1.62	0.08	ND		ND		ND	
MO:Kansas City	05/16/94	1.54	0.08	ND		ND		ND	
MS:Jackson	05/04/94	1.57	0.09	ND		ND		ND	
MT:Helena	05/23/94	1.53	0.09	ND		ND		ND	
ND:Minot	05/02/94	1.59	0.06	ND		ND		ND	
NJ:Trenton	05/11/94	1.58	0.06	ND		ND		ND	
NM:Albuquerque	05/04/94	1.60	0.08	ND		ND		ND	
NV:Las Vegas	05/02/94	1.64	0.08	ND		ND		ND	
NY:Buffalo	05/26/94	1.61	0.09	ND		ND		ND	
NY:Syracuse	05/03/94	1.60	0.08	ND		ND		ND	
OH:Cincinnati	05/11/94	1.62	0.10	ND		ND		ND	
OH:Cleveland	05/25/94	1.58	0.09	ND		ND		ND	
OR:Portland	05/02/94	1.57	0.06	ND		ND		ND	
PA:Philadelphia	05/03/94	1.64	0.09	ND		ND		ND	
PA:Pittsburgh	05/02/94	1.63	0.09	ND		ND		ND	

**Table 14 (continued)**  
**Radionuclides in Pasteurized Milk**  
 May 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
PC:Cristobal	05/10/94	1.61	0.08	5	2	ND		ND	
PR:San Juan	05/05/94	1.68	0.09	ND		ND		ND	
SC:Charleston	05/05/94	1.51	0.09	ND		ND		ND	
SD:Rapid City	05/09/94	1.63	0.08	ND		ND		ND	
TN:Chattanooga	05/02/94	1.51	0.13	ND		ND		ND	
TN:Knoxville	05/02/94	1.50	0.08	ND		ND		ND	
TN:Memphis	05/18/94	1.58	0.09	ND		ND		ND	
TX:Austin	05/10/94	1.58	0.06	ND		ND		ND	
TX:Dallas	05/09/94	1.55	0.08	ND		ND		ND	
VT:Montpelier	05/10/94	1.61	0.07	ND		ND		ND	
WA:Seattle	05/03/94	1.62	0.06	ND		ND		ND	
WA:Spokane	05/10/94	1.61	0.08	ND		ND		ND	
WV:Charleston	05/02/94	1.60	0.07	ND		ND		ND	

Note:  $\sigma$  = Counting Error. ND = Not Detectable.

**Table 15**  
**Radionuclides in Pasteurized Milk**  
 June 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
AL:Montgomery	06/08/94	1.55	0.08	ND		ND		ND	
AR:Little Rock	06/06/94	1.67	0.09	ND		ND		ND	
AZ:Phoenix	06/14/94	1.68	0.08	ND		ND		ND	
CA:Los Angeles	06/08/94	1.69	0.15	ND		ND		ND	
CA:Sacramento	06/01/94	1.62	0.09	ND		ND		ND	
CA:San Francisco	06/01/94	1.63	0.09	ND		ND		ND	
CO:Denver	06/15/94	1.70	0.08	ND		ND		ND	
DE:Wilmington	06/14/94	1.68	0.08	ND		ND		ND	
FL:Tampa	06/06/94	1.57	0.09	4	3	ND		ND	
GA:Atlanta	06/14/94	1.47	0.14	ND		ND		ND	
HI:Honolulu	06/07/94	1.66	0.09	ND		ND		ND	
IA:Des Moines	06/06/94	1.60	0.09	ND		ND		ND	
IL:Chicago	06/02/94	1.66	0.12	ND		ND		ND	
IN:Indianapolis	06/06/94	1.66	0.08	ND		ND		ND	
KS:Wichita	06/20/94	1.63	0.07	ND		ND		ND	
KY:Louisville	06/07/94	1.68	0.14	ND		ND		ND	
MA:Boston	06/15/94	1.58	0.09	ND		ND		ND	
MD:Baltimore	06/03/94	1.51	0.09	ND		ND		ND	
ME:Portland	06/08/94	1.66	0.08	ND		ND		ND	
MI:Detroit	06/08/94	1.68	0.09	ND		ND		ND	
MI:Grand Rapids	06/06/94	1.67	0.08	ND		ND		ND	
MN:St. Paul	06/07/94	1.66	0.09	ND		ND		ND	
MO:Kansas City	06/13/94	1.51	0.09	ND		ND		ND	
MS:Jackson	06/08/94	1.62	0.06	ND		ND		ND	
NC:Charlotte	06/07/94	1.73	0.14	ND		ND		ND	
ND:Minot	06/01/94	1.66	0.09	ND		ND		ND	
NJ:Trenton	06/09/94	1.60	0.09	ND		ND		ND	
NY:Buffalo	06/27/94	1.66	0.08	ND		ND		ND	
NY:Syracuse	06/07/94	1.50	0.08	ND		ND		ND	
OH:Cincinnati	06/08/94	1.55	0.07	ND		ND		ND	
OH:Cleveland	06/16/94	1.64	0.08	ND		ND		ND	
OR:Portland	06/07/94	1.67	0.09	ND		ND		ND	
PA:Philadelphia	06/09/94	1.61	0.09	ND		ND		ND	
PA:Pittsburgh	06/07/94	1.63	0.08	ND		ND		ND	
PC:Cristobal	06/13/94	1.58	0.08	5	2	ND		ND	
PR:San Juan	06/10/94	1.57	0.15	ND		ND		ND	
SC:Charleston	06/10/94	1.57	0.09	ND		ND		ND	



**Table 15 (continued)**  
**Radionuclides in Pasteurized Milk**  
 June 1994

Location	Date Collected	K		<sup>137</sup> Cs		<sup>140</sup> Ba		<sup>131</sup> I	
		g/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$	pCi/L	$\pm 2\sigma$
SD:Rapid City	06/06/94	1.55	0.09	ND		ND		ND	
TN:Chattanooga	06/01/94	1.66	0.09	ND		ND		ND	
TN:Knoxville	06/06/94	1.64	0.08	ND		ND		ND	
TN:Memphis	06/06/94	1.54	0.08	ND		ND		ND	
TX:Austin	06/16/94	1.69	0.15	ND		ND		ND	
TX:Ft. Worth	06/13/94	1.48	0.06	ND		ND		ND	
VA:Norfolk	06/02/94	1.57	0.09	ND		ND		ND	
VT:Montpelier	06/07/94	1.63	0.10	ND		ND		ND	
WA:Seattle	06/09/94	1.67	0.08	ND		ND		ND	
WA:Spokane	06/16/94	1.54	0.06	ND		ND		ND	
WV:Charleston	06/08/94	1.64	0.06	ND		ND		ND	

Note:  $\sigma$  = Counting Error. ND = Not Detectable.

**Table 16**  
**Strontium-90 in Pasteurized Milk**  
**EPA Regional Composites**

April 1994

EPA Region	Collection Date	<sup>90</sup> Sr	
		pCi/L	$\pm 2\sigma$
I	04/10/94	1.2	0.4
II	04/07/94	1.0	0.3
III	04/11/94	1.2	0.4
IV	04/07/94	1.6	0.4
V	04/08/94	1.4	0.4
VI	04/14/94	1.1	0.4
VII	04/02/94	1.4	0.4
VIII	04/09/94	1.7	0.4
IX	04/09/94	0.4	0.3
X	04/07/94	1.1	0.3

Note:  $\sigma$  = Counting Error.

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