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ENVIRONMENTAL RADIATION DATA

REPORT 139

July - September 2009

United States Environmental Protection Agency

Office of Radiation and Indoor Air

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Preface

Environmental Radiation Data(ERD) is compiled and published quarterly by the Office of Radiation and Indoor Air's National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama, and contains data from the RadNet monitoring system (formerly ERAMS). ERD is published in both hard-copy and electronic formats. Electronic reports are available online at www.epa.gov/narel.

The United States Environmental Protection Agency established RadNet in 1973 with an emphasis on identifying trends in the accumulation of long-lived radionuclides in the environment. RadNet is comprised of a nationwide network of sampling stations that provide air particulate, precipitation, drinking water, and milk samples.

Sampling locations are selected to provide population and geographic coverage for the United States. The radiation analyses performed on these samples include gross alpha and gross beta analysis, gamma analyses, and radionuclide-specific analyses for uranium, plutonium, strontium, iodine, radium, and tritium. This monitoring effort also provides ancillary information on natural background levels and on routine and accidental releases into the environment from stationary sources.

The radiochemical procedures used by NAREL to analyze the RadNet samples are contained in the *NAREL Radiochemistry Procedures Manual*. Station operation and sample collection are in accordance with procedures contained in the *ERAMS Manual*(EPA 520/5-84-007, 008, 009).

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Acknowledgments

All sampling for the RadNet monitoring system (formerly ERAMS) is performed by volunteer collectors who are frequently members of health departments or related environmental agencies of their respective states. The National Air and Radiation Environmental Laboratory (NAREL), on behalf of the U.S. Environmental Protection Agency, would like to acknowledge the time and effort of these volunteer collectors, who are so essential to the successful operation of RadNet. The efforts of the sample collectors are especially appreciated during times of emergency operation when sampling frequencies are increased and schedules are sometimes demanding.

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Data Reporting Conventions

Every laboratory measurement involves uncertainty. When there is little or no radioactivity in a sample, one consequence of measurement uncertainty is the possibility of obtaining a measured value that is less than zero. Such a negative result occurs when random effects in the measurement process cause the measured value for the sample to be less than that of the blank or background, which is subtracted from it. From April 1991 to December 1995, negative results were reported as "not detected" or "ND," and gamma analysis results that were less than their estimated measurement uncertainties were also reported as "ND." In January 1996, both of these practices were discontinued. Although negative activities are physically impossible, the inclusion of negative results in the report allows better statistical analysis of the data.

Results of gamma analyses are still reported as "ND" when gamma-emitting radionuclides are not detected.

Measurement Uncertainty

Each measured value $y$is reported with an expanded uncertainty $U = k\,u_c(y)$, which is determined from the combined standard uncertainty $u_c(y)$ and the coverage factor $k = 2$. The interval from $y - U$to $y + U$is estimated to have a level of confidence of approximately 95 %.

Significant Figures

Expanded uncertainties are reported to two significant figures. Measurement results are rounded to the corresponding number of decimal places.

Detection Capability

The minimum detectable concentrations (MDCs) for each radionuclide are shown in Table 1. The MDC is defined as the minimum concentration that gives a 95 % probability of detection when the detection criteria are chosen to give only a 5 % probability of false detection in a sample that is analyte-free.

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Table 1

Reporting Units and Minimum Detectable Concentrations for Radionuclide Analyses

Radionuclide	Media	Reporting Unit	Minimum Detectable Concentration
Gross Alpha	Water	pCi/L	2
Gross Beta	Air	pCi/m³	0.0015
	Water	pCi/L	2
	Precipitation	pCi/L	2
Tritium	Water	pCi/L	150
	Milk	pCi/L	150
* Plutonium-238,239/240	Air	aCi/m³	0.75
	Water	pCi/L	0.1
† Uranium-234,235,238	Air	aCi/m³	0.75
	Water	pCi/L	0.1
Radium-226	Water	pCi/L	0.02
Strontium-90	Milk	pCi/L	2
	Water	pCi/L	1
‡ Iodine-131	Milk (gamma)	pCi/L	4
	Water (gamma)	pCi/L	4
	Water	pCi/L	0.3
Cesium-137	Milk	pCi/L	5
	Water	pCi/L	5
‡ Barium-140	Milk	pCi/L	15
	Water	pCi/L	15
Potassium	Milk	g/L	0.06
	Water	g/L	0.06
Potassium-40	Water	pCi/L	50

* The MDC for air is based on an assumed total sample volume of 120,000 m³. Measurement by alpha spectrometry includes combined activities of ^{239}Pu and ^{240}Pu, since the relative contributions of these two isotopes cannot be determined.

† The MDC for air is based on an assumed total sample volume of 120,000 m^3.

‡ Activity as of the day of counting.

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1. Air Program

Airborne Particulates and Precipitation

Gross beta radioactivity measurements and certain specific analyses are performed on air particulates and precipitation samples as indicator measurements in assessing the general (national) impact of all contributing sources on environmental levels of radiation. Airborne particulates are collected continuously at field stations representing wide geographic coverage 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 5 hours after collection to allow natural radon isotopes and their progeny to 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 analysis in a low background beta counter. Gamma scans are performed on all filters showing gross beta activity greater than 1 pCi/m^3. The laboratory obtained values are usually lower than the field estimates because of the decay of naturally occurring radionuclides during the time between the two measurements.

Precipitation samples are collected at most field stations that collect air filters. These samples are also sent to NAREL where they are composited monthly for gamma scans, tritium, and gross beta activity measurements.

A compilation of individual measurements is available from the National Air and Radiation Environmental Laboratory, 540 South Morris Avenue, Montgomery, AL 36115-2601.

Table 2
Gross Beta in Airborne Particulates
July 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
AK: Fairbanks	3	0.2	0.1	0.2	0.007	0.003	0.005
AL: Birmingham	9	0.2	0.0	0.1	0.042	0.007	0.019
AL: Montgomery/408	9	0.1	0.0	0.1	0.019	0.010	0.014
AR: Little Rock	6	0.1	0.0	0.1	0.017	0.009	0.012
AZ: Phoenix	9	0.8	0.3	0.5	0.016	0.010	0.012
AZ: Phoenix/956	9	0.8	0.0	0.4	0.022	0.014	0.017
AZ: Tucson	9	0.5	-0.0	0.1	0.012	0.005	0.008
CA: Anaheim	6	0.0	0.0	0.0	0.012	0.009	0.011
CA: Bakersfield	9	1.5	0.0	0.3	0.016	0.006	0.009
CA: Eureka	5	0.0	0.0	0.0	0.004	0.001	0.002
CA: Los Angeles	9	0.1	0.1	0.1	0.012	0.007	0.009
CA: Richmond	4	0.1	0.0	0.1	0.005	0.001	0.003
CA: Riverside	9	0.0	0.0	0.0	0.014	0.005	0.007
CA: San Bernardino Cty.	4	0.0	0.0	0.0	0.014	0.010	0.012
CA: San Diego	3	0.1	0.0	0.0	0.009	0.007	0.008
CA: San Francisco	5	0.0	0.0	0.0	0.003	0.001	0.002
CA: San Jose	6	0.1	0.0	0.0	0.006	0.001	0.004
CO: Colorado Springs	4				0.012	0.008	0.010
CO: Denver	9	0.6	0.2	0.3	0.049	0.007	0.014
DC: Washington	8	0.1	0.0	0.1	0.008	0.004	0.006
DE: Dover	5	0.0	0.0	0.0	0.009	0.004	0.007
FL: Jacksonville	7	0.0	0.0	0.0	0.010	0.004	0.007
FL: Miami	7	0.0	0.0	0.0	0.011	0.006	0.008
FL: Orlando	5	0.1	0.0	0.0	0.013	0.004	0.009
FL: Tallahassee	8				0.015	0.004	0.009
GA: Atlanta	4	0.2	0.0	0.1	0.009	0.002	0.007
GA: Augusta	4	0.2	0.1	0.1	0.012	0.010	0.011
HI: Hilo	9	0.0	0.0	0.0	0.005	0.002	0.004
HI: Honolulu	9	0.0	-0.0	0.0	0.004	0.001	0.003
IA: Des Moines	8	0.3	0.1	0.2	0.008	0.004	0.006
ID: Idaho Falls	7	0.6	0.0	0.2	0.015	0.008	0.011
IL: Chicago	9	0.1	0.0	0.1	0.013	0.002	0.007
IN: Indianapolis	8	0.2	0.0	0.1	0.012	0.006	0.009
KS: Kansas City	9	0.3	0.0	0.2	0.014	0.007	0.011
KS: Topeka	9	1.6	0.1	0.4	0.013	0.008	0.011
KS: Wichita	9	0.6	0.0	0.2	0.012	0.007	0.010
KY: Lexington	3	0.1	0.0	0.0	0.009	0.008	0.008
KY: Louisville	9	0.4	0.1	0.2	0.018	0.005	0.011

Table 2 (continued)
Gross Beta in Airborne Particulates
July 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
LA: Baton Rouge	9	0.4	0.1	0.2	0.014	0.007	0.011
MA: Worcester	1				0.013	0.013	0.013
MD: Baltimore	9	0.2	0.0	0.1	0.012	0.006	0.008
ME: Portland	9	0.0	-0.0	0.0	0.011	0.003	0.005
MI: Detroit	9	0.2	0.1	0.1	0.010	0.002	0.006
MN: Duluth	9	0.3	0.0	0.1	0.005	0.002	0.004
MN: St. Paul	4	0.1	0.0	0.1	0.006	0.004	0.005
MN: Welch/510	8	0.2	0.0	0.1	0.022	0.004	0.007
MO: Jefferson City	7	0.5	0.1	0.3	0.016	0.006	0.010
MO: St. Louis	3	0.0	0.0	0.0	0.010	0.005	0.007
MS: Jackson/Deq	5	0.3	-0.0	0.1	0.016	0.007	0.011
MT: Billings	1	0.0	0.0	0.0	0.012	0.012	0.012
NC: Charlotte	7	0.1	0.0	0.1	0.029	0.007	0.014
NC: Raleigh	9	0.3	-0.7	-0.0	0.040	0.008	0.016
NC: Wilmington	2				0.013	0.009	0.011
ND: Bismarck	8	0.2	0.0	0.1	0.007	0.004	0.006
NE: Kearney	9	0.7	0.2	0.5	0.014	0.007	0.011
NJ: Edison	9	0.1	0.0	0.0	0.010	0.004	0.007
NJ: Trenton	9	0.3	0.1	0.2	0.020	0.006	0.010
NM: Carlsbad	7				0.011	0.007	0.009
NM: Santa Fe	7	0.3	0.0	0.1	0.011	0.008	0.009
NV: Las Vegas/913	5	0.0	0.0	0.0	0.010	0.008	0.009
NV: Washoe County	9	0.4	0.1	0.2	0.015	0.006	0.009
NY: Albany	9	0.2	0.0	0.1	0.011	0.005	0.008
NY: Hauppauge	9	0.1	0.0	0.0	0.010	0.005	0.007
NY: Lockport	9	0.0	-0.0	0.0	0.007	0.002	0.005
NY: Rochester	5	0.2	0.0	0.1	0.006	0.003	0.005
NY: Yaphank	8	0.1	0.0	0.0	0.010	0.003	0.006
OH: Cincinnati	7	0.2	0.0	0.1	0.009	0.003	0.006
OH: Cleveland	4	0.2	0.0	0.1	0.015	0.006	0.009
OH: Painesville	6	0.1	0.0	0.1	0.011	0.006	0.009
OK: Oklahoma City	9	0.1	0.0	0.0	0.012	0.006	0.007
OK: Tulsa	8	0.0	0.0	0.0	0.015	0.010	0.012
OR: Corvallis	9	0.2	0.0	0.1	0.004	0.001	0.003
OR: Portland	9	0.2	0.0	0.1	0.013	0.005	0.009
PA: Harrisburg	9	0.4	0.1	0.2	0.014	0.006	0.009
PA: Pittsburgh	7	0.2	0.1	0.1	0.016	0.006	0.009
SC: Barnwell	4	0.1	0.0	0.0	0.013	0.009	0.010

Table 2 (continued)
Gross Beta in Airborne Particulates
July 2009

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
SC: Columbia	5	0.1	0.0	0.1	0.015	0.009	0.013
SD: Pierre	9	0.9	0.4	0.7	0.012	0.008	0.010
SD: Rapid City	9	0.6	0.1	0.3	0.012	0.006	0.008
TN: Knoxville	8	0.4	0.0	0.2	0.011	0.005	0.007
TN: Memphis	6	0.0	0.0	0.0	0.012	0.002	0.008
TN: Nashville	8	0.0	0.0	0.0	0.011	0.005	0.008
TN: Oak Ridge/Bethel	8	0.7	0.1	0.3	0.014	0.009	0.012
TN: Oak Ridge/K25	8	0.7	0.1	0.4	0.016	0.009	0.012
TN: Oak Ridge/Melton	8	0.7	0.1	0.4	0.015	0.008	0.012
TN: Oak Ridge/Y12 E	8	0.8	0.2	0.4	0.014	0.010	0.012
TN: Oak Ridge/Y12 W	8	0.4	0.1	0.2	0.014	0.008	0.011
TX: Corpus Christi	4				0.012	0.006	0.010
TX: Dallas	8	0.6	0.1	0.3	0.012	0.006	0.009
TX: Ft. Worth	4	0.2	0.1	0.2	0.015	0.009	0.012
TX: Houston	7	0.2	0.2	0.2	0.013	0.008	0.011
TX: San Antonio	5	1.0	0.3	0.6	0.014	0.008	0.011
UT: Salt Lake City	5	0.3	0.0	0.2	0.034	0.008	0.015
VA: Harrisonburg	9	1.9	0.2	0.7	0.010	0.006	0.009
VA: Lynchburg	6	1.2	0.3	0.6	0.012	0.007	0.010
VA: Richmond	9	0.1	0.0	0.0	0.010	0.004	0.008
VA: Virginia Beach	2	0.0	0.0	0.0	0.008	0.008	0.008
WA: Olympia	9	0.1	0.0	0.0	0.006	0.001	0.003
WA: Seattle	9	0.0	-0.0	0.0	0.006	0.001	0.003
WA: Spokane	8	0.3	0.0	0.1	0.010	0.007	0.008
WI: Madison	9	0.3	0.1	0.2	0.008	0.002	0.005

Table 3
Gross Beta in Airborne Particulates
August 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
AK: Fairbanks	5	0.0	0.0	0.0	0.004	0.003	0.003
AL: Birmingham	8	0.1	0.0	0.1	0.023	0.007	0.014
AL: Montgomery/408	8	0.1	0.0	0.1	0.017	0.008	0.011
AR: Little Rock	8	0.2	0.0	0.1	0.016	0.007	0.011
AZ: Phoenix	9	1.1	0.4	0.8	0.018	0.011	0.014
AZ: Phoenix/956	8	1.0	0.2	0.6	0.026	0.014	0.018
AZ: Tucson	7	1.0	0.0	0.2	0.010	0.006	0.008
CA: Anaheim	7	0.0	0.0	0.0	0.021	0.005	0.014
CA: Bakersfield	9	0.4	0.0	0.1	0.021	0.005	0.013
CA: Eureka	4	0.0	0.0	0.0	0.008	0.002	0.004
CA: Los Angeles	8	0.2	0.1	0.1	0.016	0.005	0.011
CA: Richmond	4	0.1	0.0	0.1	0.005	0.001	0.003
CA: Riverside	8	0.0	0.0	0.0	0.013	0.005	0.009
CA: Sacramento	6	0.3	0.1	0.2	0.009	0.005	0.007
CA: San Bernardino Cty.	4	0.0	0.0	0.0	0.017	0.013	0.015
CA: San Diego	5	0.1	0.0	0.1	0.014	0.006	0.010
CA: San Francisco	4	0.0	0.0	0.0	0.003	0.001	0.002
CA: San Jose	4	0.1	0.0	0.0	0.006	0.002	0.004
CO: Colorado Springs	4				0.013	0.010	0.011
CO: Denver	9	1.0	0.3	0.4	0.022	0.008	0.012
DC: Washington	7	0.1	0.0	0.1	0.010	0.005	0.008
DE: Dover	4	0.0	0.0	0.0	0.012	0.008	0.009
FL: Jacksonville	7	0.0	0.0	0.0	0.008	0.005	0.007
FL: Miami	8	0.0	0.0	0.0	0.012	0.006	0.008
FL: Orlando	3	0.1	0.0	0.1	0.011	0.005	0.007
FL: Tallahassee	9				0.009	0.005	0.007
FL: Tampa	4	0.1	0.0	0.0	0.025	0.005	0.012
GA: Atlanta	4	0.1	0.0	0.0	0.011	0.007	0.008
GA: Augusta	4	0.2	0.1	0.2	0.016	0.007	0.010
HI: Hilo	9	0.0	0.0	0.0	0.006	0.002	0.004
HI: Honolulu	5	0.0	0.0	0.0	0.005	0.001	0.003
IA: Des Moines	8	0.2	0.1	0.1	0.010	0.005	0.007
ID: Idaho Falls	9	1.5	0.0	0.4	0.013	0.007	0.011
IL: Chicago	7	0.2	0.0	0.1	0.013	0.003	0.008
IN: Indianapolis	9	0.3	0.0	0.1	0.015	0.004	0.009
KS: Kansas City	7	0.2	0.0	0.1	0.016	0.008	0.012
KS: Topeka	6	0.5	0.2	0.3	0.018	0.009	0.013
KS: Wichita	9	0.8	0.1	0.4	0.017	0.006	0.011

Table 3 (continued)
Gross Beta in Airborne Particulates
August 2009

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
KY: Lexington	9	0.1	0.0	0.0	0.017	0.004	0.009
KY: Louisville	7	0.3	0.1	0.2	0.078	0.006	0.020
LA: Baton Rouge	9	0.4	0.1	0.2	0.016	0.005	0.010
MA: Worcester	7				0.013	0.006	0.009
MD: Baltimore	9	0.1	0.0	0.0	0.016	0.007	0.012
ME: Portland	3	0.0	-0.0	0.0	0.010	0.006	0.007
MI: Detroit	5	0.3	0.1	0.2	0.022	0.008	0.012
MN: Duluth	8	0.2	0.0	0.1	0.013	0.003	0.006
MN: St. Paul	4	0.1	0.0	0.1	0.014	0.005	0.009
MN: Welch/510	6	0.2	0.0	0.1	0.010	0.005	0.007
MO: Jefferson City	8	0.3	0.1	0.2	0.016	0.007	0.012
MO: St. Louis	3	0.0	0.0	0.0	0.009	0.004	0.007
MS: Jackson/Deq	9	0.8	0.1	0.3	0.015	0.007	0.012
MT: Billings	5	0.0	-0.0	0.0	0.020	0.009	0.014
NC: Charlotte	8	0.2	0.1	0.1	0.014	0.008	0.011
NC: Raleigh	3	0.3	0.0	0.1	0.016	0.010	0.012
NC: Wilmington	3				0.023	0.008	0.016
ND: Bismarck	9	0.4	0.0	0.2	0.016	0.004	0.008
NE: Kearney	9	0.7	0.2	0.4	0.012	0.006	0.010
NE: Lincoln	9	0.4	0.1	0.2	0.013	0.006	0.009
NE: Omaha	5	0.3	0.0	0.1	0.012	0.007	0.010
NJ: Edison	6	0.1	-0.0	0.0	0.011	0.006	0.009
NJ: Trenton	8	0.3	0.1	0.1	0.014	0.007	0.010
NM: Carlsbad	6				0.011	0.008	0.009
NM: Santa Fe	7	1.4	-0.0	0.4	0.018	0.007	0.011
NV: Las Vegas/913	6	0.0	0.0	0.0	0.012	0.005	0.008
NV: Washoe County	8	0.6	0.1	0.3	0.021	0.012	0.015
NY: Albany	7	0.3	0.0	0.1	0.048	0.009	0.016
NY: Hauppauge	7	0.1	0.0	0.0	0.013	0.006	0.009
NY: Lockport	9	0.0	0.0	0.0	0.017	0.004	0.008
NY: Rochester	1	0.1	0.1	0.1	0.007	0.007	0.007
NY: Syracuse	1	0.0	0.0	0.0	0.005	0.005	0.005
NY: Yaphank	7	0.1	0.0	0.0	0.014	0.003	0.008
OH: Cincinnati	9	0.2	0.0	0.1	0.018	0.000	0.009
OH: Cleveland	3	0.1	0.0	0.0	0.014	0.008	0.010
OH: Painesville	8	0.2	0.0	0.1	0.021	0.006	0.011
OK: Oklahoma City	7	0.1	0.0	0.0	0.009	0.006	0.007
OK: Tulsa	6	0.0	0.0	0.0	0.013	0.006	0.010

Table 3 (continued)
Gross Beta in Airborne Particulates
August 2009

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
OR: Corvallis	2	0.2	0.0	0.1	0.003	0.003	0.003
OR: Portland	7	0.2	0.0	0.1	0.016	0.007	0.011
PA: Harrisburg	9	0.5	0.1	0.2	0.014	0.008	0.011
PA: Philadelphia	1				0.018	0.018	0.018
PA: Pittsburgh	6	0.2	0.1	0.1	0.015	0.007	0.011
SC: Barnwell	4	0.1	0.1	0.1	0.014	0.007	0.009
SC: Columbia	4	0.1	0.0	0.1	0.011	0.006	0.008
SD: Pierre	8	1.1	0.0	0.5	0.015	0.006	0.010
SD: Rapid City	8	2.2	0.2	0.5	0.056	0.005	0.015
TN: Knoxville	7	0.4	0.1	0.2	0.013	0.004	0.008
TN: Memphis	6	0.0	0.0	0.0	0.015	0.008	0.011
TN: Nashville	6	0.0	0.0	0.0	0.012	0.006	0.009
TN: Oak Ridge/Bethel	9	0.7	0.2	0.4	0.023	0.007	0.014
TN: Oak Ridge/K25	8	1.0	0.3	0.6	0.024	0.008	0.014
TN: Oak Ridge/Melton	9	0.9	0.2	0.5	0.022	0.008	0.014
TN: Oak Ridge/Y12 E	9	0.9	0.1	0.4	0.024	0.009	0.015
TN: Oak Ridge/Y12 W	9	0.4	0.1	0.2	0.021	0.008	0.013
TX: Amarillo	3	1.1	0.4	0.7	0.009	0.008	0.008
TX: Austin	5	0.4	0.1	0.3	0.013	0.007	0.009
TX: Austin/Concordia	1	0.0	0.0	0.0	0.007	0.007	0.007
TX: Corpus Christi	5				0.011	0.007	0.009
TX: Dallas	8	0.3	0.2	0.3	0.009	0.005	0.008
TX: Ft. Worth	7	0.3	0.1	0.2	0.015	0.009	0.011
TX: Houston	8	0.2	0.0	0.1	0.016	0.007	0.011
TX: Laredo	9	0.5	0.1	0.3	0.028	0.005	0.011
TX: San Antonio	2	0.5	0.1	0.3	0.015	0.013	0.014
UT: Salt Lake City	9	0.2	0.1	0.2	0.014	0.009	0.011
VA: Harrisonburg	8	2.0	0.3	1.3	0.025	0.006	0.014
VA: Lynchburg	9	1.3	0.2	0.7	0.020	0.009	0.013
VA: Richmond	8	0.1	0.0	0.0	0.015	0.006	0.010
VA: Virginia Beach	5	0.1	0.0	0.0	0.014	0.006	0.009
WA: Olympia	8	0.1	0.0	0.0	0.005	0.003	0.004
WA: Seattle	8	0.0	0.0	0.0	0.006	0.003	0.004
WA: Spokane	7	0.1	0.1	0.1	0.012	0.004	0.009
WI: Madison	8	0.4	0.1	0.2	0.012	0.004	0.008
WI: Milwaukee	8	0.1	-0.0	0.0	0.011	0.004	0.007
WV: Charleston	4	0.0	0.0	0.0	0.020	0.008	0.016

Table 4
Gross Beta in Airborne Particulates
September 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
AK: Fairbanks	9	0.1	0.0	0.0	0.008	0.002	0.004
AL: Birmingham	5	0.1	0.0	0.0	0.023	0.008	0.015
AL: Montgomery/408	8	0.2	0.0	0.1	0.022	0.007	0.014
AR: Little Rock	8	0.3	0.0	0.1	0.021	0.006	0.013
AZ: Phoenix	8	1.2	0.6	0.9	0.019	0.009	0.014
AZ: Phoenix/956	8	1.1	0.1	0.6	0.021	0.016	0.018
AZ: Tucson	9	0.0	0.0	0.0	0.012	0.006	0.009
CA: Anaheim	9	0.0	0.0	0.0	0.019	0.010	0.014
CA: Bakersfield	8	2.7	0.0	0.8	0.022	0.010	0.014
CA: Eureka	4	0.0	0.0	0.0	0.006	0.003	0.004
CA: Los Angeles	6	0.7	0.0	0.2	0.030	0.009	0.016
CA: Richmond	5	0.1	0.1	0.1	0.007	0.002	0.004
CA: Riverside	9	0.0	0.0	0.0	0.014	0.007	0.009
CA: Sacramento	8	0.4	0.0	0.2	0.016	0.003	0.007
CA: San Bernardino Cty.	6	0.1	0.0	0.0	0.021	0.014	0.017
CA: San Diego	2	0.0	0.0	0.0	0.010	0.008	0.009
CA: San Francisco	4	0.0	0.0	0.0	0.003	0.002	0.002
CA: San Jose	4	0.0	0.0	0.0	0.005	0.003	0.004
CO: Colorado Springs	5				0.016	0.012	0.014
CO: Denver	8	1.1	0.2	0.5	0.022	0.007	0.014
DC: Washington	9	0.1	0.0	0.1	0.010	0.005	0.008
DE: Dover	5	0.0	0.0	0.0	0.008	0.005	0.007
FL: Jacksonville	9	0.0	0.0	0.0	0.008	0.004	0.006
FL: Miami	7	0.0	0.0	0.0	0.006	0.003	0.004
FL: Orlando	8	0.1	0.0	0.0	0.013	0.004	0.007
FL: Tallahassee	1				0.013	0.013	0.013
FL: Tampa	8	0.0	0.0	0.0	0.009	0.005	0.007
GA: Atlanta	4	0.0	0.0	0.0	0.015	0.006	0.011
GA: Augusta	5	0.3	0.1	0.2	0.024	0.008	0.014
HI: Hilo	8	0.0	0.0	0.0	0.006	0.003	0.004
IA: Des Moines	8	0.8	0.2	0.3	0.021	0.006	0.014
IA: Mason City	3	1.0	0.2	0.7	0.024	0.007	0.015
ID: Idaho Falls	7	0.7	0.0	0.3	0.012	0.007	0.010
IL: Chicago	7	0.1	0.0	0.1	0.019	0.007	0.012
IN: Indianapolis	8	0.2	0.0	0.1	0.019	0.009	0.014
KS: Kansas City	7	0.7	0.0	0.2	0.032	0.009	0.018
KS: Topeka	8	0.6	0.2	0.4	0.028	0.006	0.017
KS: Wichita	7	0.9	0.0	0.4	0.023	0.005	0.015

Table 4 (continued)
Gross Beta in Airborne Particulates
September 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
KY: Lexington	8	0.2	0.0	0.0	0.014	0.006	0.010
KY: Louisville	8	0.5	0.0	0.2	0.023	0.007	0.015
LA: Baton Rouge	7	0.4	0.0	0.1	0.015	0.004	0.008
MA: Worcester	7	0.0	0.0	0.0	0.009	0.003	0.006
MD: Baltimore	8	0.2	0.0	0.1	0.014	0.004	0.009
ME: Portland	4	0.0	0.0	0.0	0.011	0.004	0.007
MN: Duluth	7	0.5	0.0	0.2	0.024	0.005	0.012
MN: St. Paul	5	0.2	0.0	0.1	0.023	0.007	0.014
MN: Welch/510	9	0.7	0.0	0.1	0.023	0.006	0.017
MO: Jefferson City	8	1.0	0.1	0.4	0.031	0.007	0.017
MO: Springfield	2	0.2	0.1	0.1	0.013	0.009	0.011
MO: St. Louis	3	0.0	0.0	0.0	0.011	0.005	0.008
MS: Jackson	2	0.2	0.1	0.1	0.016	0.011	0.013
MS: Jackson/Deq	8	0.5	0.0	0.2	0.014	0.004	0.010
MT: Billings	3	0.0	0.0	0.0	0.020	0.013	0.017
NC: Charlotte	9	0.1	0.0	0.1	0.024	0.005	0.012
NC: Raleigh	5	0.0	0.0	0.0	0.012	0.005	0.009
NC: Wilmington	5				0.010	0.005	0.007
ND: Bismarck	8	0.3	0.0	0.1	0.034	0.004	0.015
NE: Kearney	8	1.2	0.1	0.6	0.025	0.004	0.015
NE: Lincoln	7	1.1	0.1	0.6	0.026	0.003	0.014
NE: Omaha	4	0.1	0.0	0.1	0.022	0.007	0.015
NH: Concord	1				0.006	0.006	0.006
NJ: Edison	8	0.0	0.0	0.0	0.008	0.005	0.006
NJ: Trenton	6	0.3	0.1	0.2	0.013	0.007	0.009
NM: Carlsbad	5				0.029	0.008	0.015
NM: Santa Fe	7	1.4	0.0	0.4	0.018	0.009	0.013
NV: Las Vegas/913	9	0.0	0.0	0.0	0.019	0.006	0.012
NV: Washoe County	8	0.6	0.1	0.2	0.017	0.010	0.014
NY: Albany	9	0.4	0.0	0.2	0.014	0.004	0.009
NY: Hauppauge	7	0.1	0.0	0.1	0.009	0.004	0.007
NY: Lockport	8	0.0	0.0	0.0	0.013	0.005	0.008
NY: Rochester	7	0.2	0.0	0.1	0.011	0.005	0.008
NY: Syracuse	5	0.0	0.0	0.0	0.013	0.009	0.011
NY: Yaphank	7	0.1	0.0	0.1	0.006	0.002	0.005
OH: Cincinnati	9	0.1	0.0	0.1	0.011	0.006	0.009
OH: Painesville	9	0.3	0.0	0.1	0.018	0.006	0.013
OK: Oklahoma City	7	0.0	0.0	0.0	0.030	0.004	0.013

Table 4 (continued)
Gross Beta in Airborne Particulates
September 2009

Location	Number of Samples	5-hour Field Estimate Max (pCi/m³)	5-hour Field Estimate Min (pCi/m³)	5-hour Field Estimate Avg (pCi/m³)	NAREL Lab Measurement Max (pCi/m³)	NAREL Lab Measurement Min (pCi/m³)	NAREL Lab Measurement Avg (pCi/m³)
OK: Tulsa	8	0.0	0.0	0.0	0.020	0.005	0.013
OR: Portland	6	0.1	0.0	0.1	0.020	0.006	0.011
PA: Harrisburg	8	0.2	0.1	0.1	0.016	0.005	0.011
PA: Philadelphia	4				0.019	0.015	0.018
PA: Pittsburgh	6	0.1	0.0	0.1	0.013	0.009	0.011
SC: Barnwell	4	0.1	0.0	0.0	0.014	0.007	0.011
SC: Columbia	2	0.0	0.0	0.0	0.015	0.010	0.012
SD: Pierre	7	1.5	0.4	0.8	0.028	0.013	0.017
SD: Rapid City	7	0.8	0.1	0.5	0.017	0.007	0.012
TN: Knoxville	7	0.4	0.0	0.2	0.014	0.004	0.010
TN: Memphis	5	0.0	0.0	0.0	0.020	0.008	0.013
TN: Nashville	2	0.0	0.0	0.0	0.020	0.006	0.013
TN: Oak Ridge/Bethel	7	0.7	0.1	0.4	0.025	0.010	0.017
TN: Oak Ridge/K25	7	1.0	0.2	0.5	0.023	0.010	0.016
TN: Oak Ridge/Melton	7	1.0	0.2	0.6	0.026	0.009	0.017
TN: Oak Ridge/Y12 E	7	0.8	0.1	0.4	0.027	0.009	0.018
TN: Oak Ridge/Y12 W	7	0.4	0.1	0.2	0.026	0.009	0.016
TX: Amarillo	8	1.8	0.3	0.7	0.023	0.005	0.013
TX: Austin	3	0.2	0.0	0.1	0.020	0.004	0.012
TX: Corpus Christi	4				0.018	0.002	0.011
TX: Dallas	5	0.3	0.0	0.2	0.014	0.006	0.009
TX: Ft. Worth	3	0.3	0.1	0.2	0.012	0.008	0.010
TX: Houston	9	0.4	0.1	0.2	0.020	0.004	0.011
TX: Laredo	8	0.9	0.1	0.4	0.014	0.003	0.008
TX: San Angelo	8	2.1	0.0	0.3	0.030	0.006	0.014
TX: San Antonio	8	0.8	0.1	0.6	0.018	0.003	0.011
UT: Salt Lake City	7	0.3	0.0	0.2	0.019	0.008	0.013
VA: Harrisonburg	9	1.6	0.2	0.9	0.018	0.006	0.012
VA: Lynchburg	6	1.0	0.2	0.7	0.017	0.008	0.012
VA: Richmond	9	0.1	0.0	0.0	0.014	0.005	0.009
VA: Virginia Beach	6	0.0	0.0	0.0	0.008	0.005	0.006
WA: Olympia	8	0.1	0.0	0.0	0.006	0.003	0.004
WA: Seattle	7	0.0	-0.0	0.0	0.006	0.003	0.004
WA: Spokane	9	0.1	0.0	0.1	0.012	0.004	0.008
WI: Madison	9	0.6	0.1	0.4	0.017	0.006	0.011
WI: Milwaukee	9	0.1	0.0	0.0	0.016	0.005	0.011
WV: Charleston	6	0.0	0.0	0.0	0.027	0.009	0.015

Table 5
Gross Beta and Specific Gamma in Precipitation
July 2009

Location	Gross Beta Activity pCi/L	± 2*u*	Gamma-Emitting Radionuclides Nuclide	pCi/L	± 2*u*
AL: Montgomery/408	2.32	0.52	Be7	23	17
AR: Little Rock	0.66	0.62		ND	
AZ: Phoenix	2.04	0.77	Be7	56	57
			Pb212	4.0	6.1
CO: Denver	1.25	0.67	Be7	41	12
CT: Hartford	1.20	0.41	Be7	33	21
FL: Jacksonville	1.36	0.44	Be7	31	12
GA: Atlanta	1.69	0.45	Be7	53	33
ID: Idaho Falls	0.30	0.59		ND	
KS: Kansas City	2.29	0.51		ND	
	0.40	0.60		ND	
MI: Lansing	2.64	0.58		ND	
MN: St. Paul	0.85	0.63	Pb212	5.1	6.6
MN: Welch/510	7.0	1.4	K40	20	11
	4.5	2.1	K40	20	11
NC: Charlotte	1.39	0.44	Be7	71	21
NC: Wilmington	2.39	0.53	Be7	49	23
NM: Santa Fe	1.7	1.5	K40	16	12
NY: Albany	2.59	0.56	Be7	26	20
NY: Yaphank	1.26	0.44		ND	
OH: Painesville	2.83	0.88	Be7	64	23
OR: Portland	10.7	2.4		ND	
PA: Harrisburg	3.15	0.59	Be7	85	40
TN: Nashville	0.49	0.36	Be7	35	20
TN: Oak Ridge/K25	2.02	0.73	Be7	57	17
TN: Oak Ridge/Melton	2.27	0.52	Be7	44	20
TN: Oak Ridge/Y12 E	1.35	0.68	Be7	42	14
UT: Salt Lake City	11.2	2.3	Be7	321	74
VA: Lynchburg	2.52	0.84		ND	

Note: ND = Not Detected

Table 6
Gross Beta and Specific Gamma in Precipitation
August 2009

Location	Gross Beta Activity pCi/L	± 2*u*	Gamma-Emitting Radionuclides Nuclide	pCi/L	± 2*u*
AL: Montgomery/408	1.39	0.46	Be7	40	20
			K40	12	13
AR: Little Rock	0.63	0.33	Be7	22	16
CO: Denver	5.1	5.9	Be7	127	50
CT: Hartford	2.81	0.57	Be7	39	11
			K40	6.9	9.2
FL: Jacksonville	1.55	0.52	Be7	39	21
GA: Atlanta	2.17	0.53	Be7	54	39
ID: Idaho Falls	2.13	0.49	Tl208	2.1	3.1
KS: Kansas City	0.49	0.32	Be7	21	11
MI: Lansing	1.22	0.40	Be7	30	16
MN: St. Paul	0.72	0.34	Be7	17.2	9.9
MN: Welch/510	1.97	0.75		ND	
NC: Charlotte	1.23	0.45	Be7	38	18
NC: Wilmington	0.96	0.49	Be7	28	19
NM: Santa Fe	2.70	0.54	Be7	37	17
NY: Albany	1.95	0.60	Be7	23	11
			K40	6.1	9.0
NY: Yaphank	0.90	0.41		ND	
OH: Painesville	0.26	0.30	Pb212	7.1	6.0
OR: Portland	0.44	0.32		ND	
PA: Harrisburg	3.85	0.68	Be7	78	43
TN: Knoxville	0.19	0.43		ND	
TN: Nashville	1.10	0.44	Be7	28	16
TN: Oak Ridge/K25	0.86	0.36	Be7	42	22
TN: Oak Ridge/Melton	1.04	0.44	Be7	49	13
TN: Oak Ridge/Y12 E	0.46	0.32	Be7	23	20
VA: Lynchburg	7.6	1.1		ND	
WA: Olympia	2.56	0.54	Be7	61	20

Note: ND = Not Detected

Table 7
Gross Beta and Specific Gamma in Precipitation
September 2009

Location	Gross Beta Activity pCi/L	± 2*u*	Gamma-Emitting Radionuclides Nuclide	pCi/L	± 2*u*
AL: Montgomery/408	0.85	0.35	Be7	32	11
AR: Little Rock	0.80	0.36		ND	
CA: Richmond	2.74	0.88	Be7	27	30
CO: Denver	4.14	0.70	Be7	27	11
CT: Hartford	0.73	0.34	Be7	12	12
FL: Jacksonville	0.26	0.30	Be7	12.3	9.0
GA: Atlanta	0.93	0.36	K40	19	35
ID: Idaho Falls	1.89	0.48	Be7	12.6	8.8
KS: Kansas City	0.58	0.35	K40	9	13
MI: Lansing	1.40	0.41		ND	
MN: St. Paul	1.25	0.43	K40	35	48
MN: Welch/510	1.48	0.70	Be7	50	36
NC: Charlotte	0.60	0.33	Be7	21	14
NC: Wilmington	0.64	0.34	Be7	15.3	8.1
NM: Santa Fe	1.16	0.40	K40	25	30
NY: Albany	2.15	0.50	Be7	8.9	8.3
NY: Yaphank	0.95	0.36		ND	
OH: Painesville	1.63	0.43	Be7	33	11
OR: Portland	1.00	0.38		ND	
PA: Harrisburg	1.32	0.40		ND	
TN: Knoxville	0.54	0.32		ND	
TN: Nashville	1.04	0.38	Be7	43	16
TN: Oak Ridge/K25	1.25	0.41	Be7	45	13
TN: Oak Ridge/Melton	1.65	0.45	Be7	14	15
TN: Oak Ridge/Y12 E	0.74	0.36	Be7	27	12
TX: Austin	0.66	0.36		ND	
UT: Salt Lake City	3.34	0.68	Tl208	2.5	3.9
VA: Lynchburg	2.87	0.55		ND	
WA: Olympia	0.54	0.34	K40	30	34

Note: ND = Not Detected

Table 8
Tritium in Precipitation
July - September 2009

Location	July 2009 pCi/L	± 2*u*	August 2009 pCi/L	± 2*u*	September 2009 pCi/L	± 2*u*
AL: Montgomery/408	-49	74	-22	66	-15	97
AR: Little Rock	-71	73	-13	65	20	97
AZ: Phoenix	48	79	NS		NS	
CA: Richmond	NS		NS		4	90
CO: Denver	-23	75	38	82	-3	91
CT: Hartford	-17	77	-10	67	17	97
FL: Jacksonville	-21	74	-50	64	40	100
GA: Atlanta	-18	75	-10	67	-3	98
ID: Idaho Falls	44	79	-32	78	67	93
KS: Kansas City	-23	75	-27	66	-15	90
MI: Lansing	-63	73	8	67	25	99
MN: St. Paul	2	75	2	65	54	99
MN: Welch/510	-47	73	-68	64	80	100
NC: Charlotte	-39	75	74	70	150	110
NC: Wilmington	-27	74	21	69	5	97
NM: Santa Fe	10	76	-30	65	50	100
NY: Albany	-6	75	29	69	80	100
NY: Yaphank	-59	73	-19	66	-40	96
OH: Painesville	-24	75	5	67	15	96
OR: Portland	76	80	28	81	-6	90
PA: Harrisburg	-39	74	19	68	-20	98
TN: Knoxville	NS		21	68	-27	96
TN: Nashville	-18	75	-29	65	27	97
TN: Oak Ridge/K25	78	81	129	85	59	93
TN: Oak Ridge/Melton	24	77	34	68	103	99
TN: Oak Ridge/Y12 E	143	84	69	83	-14	90
TX: Austin	NS		NS		30	100
UT: Salt Lake City	26	77	NS		-16	90
VA: Lynchburg	11	75	10	68	57	99
WA: Olympia	NS		-25	79	154	97

Note: NS = No Sample

Plutonium and Uranium in Airborne Particulates

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

Concentrations of plutonium-238, combined plutonium-239 and 240, and uranium-234, 235, and 238 are determined by alpha-particle spectrometry following chemical separation. The volume of air represented by the annual composite typically ranges from 120,000 to 500,000 cubic meters.

Plutonium and uranium results are published when they become available.

Beta Activity in Precipitation

All stations routinely submit precipitation samples as rainfall, snow, or sleet occurs. The precipitation samples are composited at NAREL into single monthly samples for each station. Each month that precipitation occurs, an aliquant of the composited sample is analyzed for gross beta, tritium, and gamma-emitting radionuclides.

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2. Drinking Water Program

The RadNet drinking water program provides data on radionuclide concentrations in the nation's drinking water supplies. Samples are taken at 78 sites which are either major population centers or selected nuclear facility environs.

Drinking water data are used 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.

The analyses include (a) tritium on a quarterly basis; (b) gross alpha, gross beta, strontium-90, and gamma on annual composites; (c) radium-226 if the gross alpha exceeds 2 pCi/L and radium-228 if the radium-226 falls between 3 and 5 pCi/L; (d) iodine-131 on one quarterly sample per year for each station; and (e) an annual composite for plutonium-238, combined plutonium-239 and 240, and uranium-234, 235, and 238 for stations that demonstrate gross alpha levels greater than 2 pCi/L.

Table 9
Tritium in Drinking Water
July - September 2009

Location	Date Collected	^{3}H pCi/L	± 2*u*
AK: Fairbanks	07/22/09	17	86
AL: Dothan	07/10/09	-44	81
AL: Montgomery	07/09/09	45	77
AL: Muscle Shoals	07/15/09	277	95
AL: Scottsboro	07/14/09	26	83
AR: Little Rock	07/07/09	-33	80
CA: Los Angeles	07/06/09	12	76
CA: Richmond	07/02/09	54	78
CO: Denver	07/27/09	-18	76
CT: Hartford	07/09/09	-40	81
DE: Dover	07/06/09	18	75
FL: Miami	07/27/09	6	77
FL: Tampa	07/20/09	-22	81
GA: Baxley	07/28/09	-8	76
GA: Savannah	09/29/09	6	79
HI: Honolulu	08/12/09	70	83
IA: Cedar Rapids	07/15/09	-10	82
ID: Boise	09/21/09	2	69
ID: Idaho Falls	07/21/09	33	85
IL: W. Chicago	08/04/09	52	82
LA: New Orleans	09/28/09	-8	83
MD: Baltimore	07/08/09	89	79
MD: Conowingo	07/28/09	-14	75
MI: Detroit	09/15/09	97	73
MN: S. St. Paul	07/13/09	-35	80
MN: Welch	07/13/09	-57	79
MO: Jefferson City	07/16/09	26	86
MS: Jackson	07/07/09	-51	80
MS: Port Gibson	07/07/09	-16	82
MT: Helena	07/10/09	-65	79
NC: Raleigh	07/02/09	71	78
ND: Bismarck	07/07/09	-40	81
NE: Lincoln	07/10/09	-36	81
NJ: Trenton	07/06/09	58	78
NJ: Waretown	07/07/09	-10	74
NM: Santa Fe	08/10/09	15	80
NV: Las Vegas	07/01/09	42	77
NV: Las Vegas	09/29/09	-25	82
NY: Albany	07/30/09	229	88
NY: New York City	07/22/09	-32	82

Table 9 (continued)
Tritium in Drinking Water
July - September 2009

Location	Date Collected	^{3}H pCi/L	± 2*u*
NY: Niagara Falls	07/22/09	62	88
NY: Syracuse	07/22/09	28	86
OH: Cincinnati	08/27/09	-62	79
OH: Columbus	09/29/09	-11	79
OH: E. Liverpool	07/29/09	92	81
OH: Painesville	07/30/09	355	93
OH: Toledo	07/06/09	115	81
OK: Oklahoma City	07/07/09	-64	80
OR: Portland	09/29/09	-4	79
PA: Columbia	07/29/09	25	77
PA: Harrisburg	07/27/09	60	78
PA: Philadelphia/Baxter	08/17/09	37	80
PA: Philadelphia/Belmont	08/17/09	142	86
PA: Philadelphia/Queen	08/17/09	51	82
PA: Pittsburgh	07/28/09	26	81
RI: Providence	08/25/09	-70	78
SC: Barnwell	07/21/09	-19	84
SC: Columbia	07/24/09	-24	83
SC: Jenkinsville	07/08/09	9	85
SC: Seneca	07/06/09	-19	84
TN: Chattanooga	07/07/09	161	83
TN: Knoxville	08/25/09	-47	78
TN: Oak Ridge/#360	07/07/09	56	78
TN: Oak Ridge/#371	07/07/09	-32	81
TN: Oak Ridge/#4442	07/07/09	63	78
TN: Oak Ridge/#768	07/07/09	-8	74
TN: Oak Ridge/#772	07/07/09	63	77
TX: Austin	07/03/09	32	76
VA: Lynchburg	07/07/09	-8	81
WA: Richland	07/13/09	-57	80
WA: Seattle	09/10/09	-15	69

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3. Milk Program

Pasteurized Milk

Milk is a reliable indicator of the general population's intake of certain radionuclides since it is consumed fresh by a large segment of the population and can contain several of the biologically significant radionuclides that result from environmental releases from nuclear activities. A primary function of this program is to obtain reliable monitoring data relative to current radionuclide concentrations and determine any long-term trends.

Quarterly samples are collected at approximately 55 sampling sites. The samples are composited, according to production, from the major milk suppliers representing more than 80 percent of the milk consumed in a given population center.

The samples are analyzed for gamma-emitting nuclides, including iodine-131, barium-140, cesium-137, and potassium-40. Total potassium concentrations in g/L are determined from potassium-40 activities assuming natural isotopic abundances. During the third quarter collection, one-fourth of the samples are also analyzed for strontium-90 on a four year rotating schedule.

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For More Information

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

Requests for information concerning the operation of RadNet and the data that are generated should be directed as follows:

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