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ENVIRONMENTAL RADIATION DATA

REPORT 147

July - September 2011

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/radnet-radnet-data/erd.html.

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 routinely, and field measurements are made with a dual-phosphor scintillation counter at least 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 gas proportional 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.

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 tritium and gamma-emitting radionuclides. NAREL discontinued gross beta analysis of precipitation in January 2010.

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 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
AK: Anchorage	9	0.0	-0.0	0.0	0.002	0.000	0.001
AK: Fairbanks	5	0.0	0.0	0.0	0.010	0.002	0.005
AK: Juneau	5	0.0	-0.0	0.0	0.002	0.001	0.001
AL: Birmingham	8	0.1	0.0	0.0	0.019	0.010	0.014
AL: Montgomery/408	8	0.2	0.0	0.1	0.017	0.007	0.012
AR: Fort Smith	3	0.0	0.0	0.0	0.013	0.010	0.012
AR: Little Rock	7	0.2	0.0	0.1	0.016	0.008	0.011
AZ: Phoenix	7	1.7	0.2	0.7	0.017	0.008	0.012
AZ: Phoenix/956	9	0.4	0.2	0.3	0.013	0.005	0.009
AZ: Tucson	9	0.0	0.0	0.0	0.013	0.006	0.008
CA: Anaheim	9	0.0	0.0	0.0	0.007	0.003	0.005
CA: Bakersfield	7	0.3	0.0	0.2	0.012	0.003	0.007
CA: Eureka	3	0.0	0.0	0.0	0.001	0.001	0.001
CA: Fresno	7	0.3	0.1	0.1	0.009	0.003	0.006
CA: Los Angeles	4	0.0	0.0	0.0	0.007	0.005	0.006
CA: Richmond	4	0.0	0.0	0.0	0.003	0.001	0.002
CA: Riverside	9	0.0	0.0	0.0	0.011	0.004	0.006
CA: Sacramento	9	0.3	0.1	0.2	0.007	0.002	0.004
CA: San Bernardino Cty.	9	0.0	0.0	0.0	0.015	0.006	0.010
CA: San Diego	4	0.0	0.0	0.0	0.005	0.003	0.004
CA: San Francisco	8	0.0	0.0	0.0	0.002	0.001	0.001
CA: San Jose	6	0.2	0.0	0.1	0.006	0.001	0.003
CO: Denver	8	1.1	0.1	0.4	0.018	0.009	0.012
CO: Grand Junction	4				0.013	0.006	0.008
CT: Hartford	9	0.1	0.0	0.1	0.011	0.003	0.006
DC: Washington	9	0.1	-0.0	0.1	0.012	0.004	0.009
DE: Dover	4	0.1	0.0	0.0	0.010	0.004	0.007
FL: Jacksonville	8	0.0	0.0	0.0	0.007	0.004	0.005
FL: Miami	3	0.0	0.0	0.0	0.006	0.002	0.004
FL: Orlando	4	0.0	0.0	0.0	0.005	0.004	0.004
FL: Tallahassee	2	0.1	0.0	0.0	0.010	0.008	0.009
FL: Tampa	6	0.1	0.0	0.0	0.009	0.004	0.006
GA: Atlanta	3	0.1	0.0	0.0	0.016	0.012	0.014
GA: Augusta	6	0.4	0.0	0.2	0.012	0.005	0.008
HI: Hilo	8	0.0	-0.0	0.0	0.004	0.002	0.003
HI: Honolulu	9	0.0	0.0	0.0	0.002	0.001	0.002
IA: Des Moines	6	0.5	0.1	0.3	0.016	0.009	0.013
IA: Mason City	7	0.8	0.2	0.5	0.013	0.004	0.008

Table 2 (continued)
Gross Beta in Airborne Particulates
July 2011

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)
ID: Idaho Falls	8	0.3	0.1	0.2	0.013	0.006	0.010
IL: Aurora	4	0.3	0.1	0.2	0.012	0.006	0.009
IL: Chicago	5	0.3	0.0	0.1	0.013	0.007	0.009
IN: Fort Wayne	3				0.014	0.009	0.011
IN: Indianapolis	8	0.4	0.1	0.2	0.017	0.007	0.012
KS: Kansas City	8	0.2	0.1	0.2	0.012	0.006	0.009
KS: Topeka	8	0.5	0.0	0.2	0.015	0.008	0.012
KS: Wichita	5	0.3	0.0	0.1	0.013	0.006	0.010
KY: Lexington	6	0.0	0.0	0.0	0.029	0.006	0.020
KY: Louisville	8	0.5	0.0	0.2	0.013	0.005	0.009
LA: Baton Rouge	8	0.1	0.0	0.1	0.008	0.003	0.005
LA: Shreveport	8	0.2	-0.0	0.0	0.011	0.004	0.006
MA: Boston	9	0.4	0.0	0.1	0.008	0.003	0.006
MA: Worcester	8	0.1	0.0	0.1	0.011	0.004	0.008
MD: Baltimore	5	0.1	0.0	0.1	0.013	0.006	0.010
ME: Orono	3	0.0	0.0	0.0	0.007	0.003	0.005
ME: Portland	2	0.0	-0.0	0.0	0.009	0.006	0.008
MI: Bay City 48708	7	0.2	0.0	0.1	0.010	0.003	0.006
MI: Detroit	6	0.2	0.1	0.2	0.011	0.003	0.008
MI: Grand Rapids	7	0.1	0.0	0.0	0.012	0.003	0.008
MI: Lansing	2	0.4	0.2	0.3	0.021	0.006	0.014
MN: Duluth	6	0.1	0.0	0.1	0.007	0.003	0.005
MN: St. Paul	3	0.1	0.1	0.1	0.011	0.009	0.010
MO: Jefferson City	9	0.3	0.0	0.2	0.012	0.006	0.009
MO: Springfield	4	0.1	0.0	0.0	0.014	0.007	0.010
MS: Jackson/Deq	8	0.4	0.1	0.2	0.018	0.007	0.010
MT: Billings	9	1.7	0.0	0.2	0.020	0.008	0.012
NC: Raleigh	4	0.4	0.0	0.1	0.012	0.007	0.009
NC: Wilmington	4				0.009	0.007	0.008
ND: Bismarck	5	0.2	0.0	0.1	0.009	0.004	0.007
NE: Kearney	5	0.5	0.2	0.4	0.010	0.008	0.009
NE: Lincoln	8	0.7	0.1	0.4	0.013	0.006	0.009
NE: Omaha	4	0.1	0.0	0.0	0.009	0.008	0.008
NH: Concord	4	0.0	0.0	0.0	0.008	0.007	0.007
NJ: Edison	7	0.1	0.0	0.0	0.012	0.004	0.007
NJ: Trenton	7	0.8	0.1	0.4	0.018	0.007	0.012
NM: Albuquerque	5	0.0	0.0	0.0	0.011	0.005	0.008
NM: Carlsbad	5	0.6	0.0	0.3	0.020	0.011	0.014

Table 2 (continued)
Gross Beta in Airborne Particulates
July 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
NM: Navajo Lake St Park	1	0.0	0.0	0.0	0.005	0.005	0.005
NM: Santa Fe	5	0.5	0.0	0.2	0.011	0.003	0.007
NV: Las Vegas/913	2	0.4	0.1	0.3	0.010	0.007	0.009
NV: Reno	9	0.8	0.1	0.3	0.016	0.008	0.011
NY: Albany	8	0.5	0.1	0.2	0.016	0.005	0.011
NY: Lockport	9	0.0	-0.0	0.0	0.011	0.005	0.007
NY: New York City	5				0.014	0.005	0.009
NY: Rochester	6	0.1	0.0	0.1	0.008	0.003	0.006
NY: Syracuse	1				0.004	0.004	0.004
OH: Cincinnati	9	0.5	0.1	0.2	0.016	0.006	0.013
OH: Cleveland	5	0.1	0.0	0.1	0.008	0.005	0.007
OH: Painesville	8	0.1	0.1	0.1	0.011	0.006	0.009
OH: Toledo	6	0.9	0.2	0.4	0.020	0.007	0.013
OK: Oklahoma City	7	0.3	0.0	0.1	0.013	0.007	0.009
OK: Tulsa	4	0.0	-0.0	0.0	0.019	0.009	0.013
OR: Corvallis	8	0.1	0.0	0.0	0.003	0.001	0.002
OR: Portland	9	0.0	0.0	0.0	0.003	0.001	0.002
PA: Harrisburg	8	0.3	0.0	0.2	0.011	0.005	0.008
PA: Philadelphia	4				0.013	0.007	0.010
PA: Pittsburgh	2	0.1	0.1	0.1	0.011	0.007	0.009
PR: San Juan	8	0.0	0.0	0.0	0.008	0.004	0.006
RI: Providence	5	0.1	0.0	0.0	0.008	0.005	0.007
SC: Barnwell	1	0.0	0.0	0.0	0.011	0.011	0.011
SC: Columbia	4	0.2	0.0	0.1	0.015	0.008	0.012
SD: Pierre	7	0.8	0.0	0.3	0.012	0.006	0.008
SD: Rapid City	2	0.2	0.2	0.2	0.009	0.007	0.008
TN: Knoxville	5	0.4	0.0	0.2	0.016	0.008	0.012
TN: Memphis	4	0.1	0.0	0.0	0.013	0.007	0.010
TN: Nashville	7	0.1	-0.0	0.0	0.014	0.008	0.011
TN: Oak Ridge/Bethel	7	0.9	0.3	0.7	0.016	0.010	0.014
TN: Oak Ridge/K25	7	1.3	0.5	0.9	0.015	0.012	0.013
TN: Oak Ridge/Melton	7	1.2	0.4	0.8	0.016	0.012	0.014
TN: Oak Ridge/Y12 E	6	1.0	0.3	0.6	0.015	0.011	0.014
TN: Oak Ridge/Y12 W	7	0.5	0.2	0.4	0.018	0.013	0.015
TX: Austin	4	0.3	0.0	0.2	0.012	0.008	0.010
TX: Corpus Christi	3	0.1	0.0	0.0	0.008	0.004	0.006
TX: Dallas	9	0.8	0.3	0.6	0.016	0.005	0.008
TX: El Paso	2	1.1	0.5	0.8	0.014	0.012	0.013

Table 2 (continued)
Gross Beta in Airborne Particulates
July 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
TX: Ft. Worth	7	0.2	0.0	0.1	0.013	0.005	0.009
TX: Harlingen	8	0.7	0.1	0.3	0.012	0.006	0.008
TX: Houston	9	0.0	0.0	0.0	0.001	0.000	0.000
TX: Laredo	7	0.5	0.0	0.3	0.010	0.006	0.008
TX: San Angelo	8	0.0	0.0	0.0	0.015	0.006	0.009
TX: San Antonio	8	0.7	0.3	0.4	0.012	0.005	0.008
UT: Salt Lake City	8	0.3	0.1	0.2	0.017	0.010	0.012
VA: Harrisonburg	8	2.3	0.5	1.1	0.017	0.008	0.014
VA: Lynchburg	6	1.0	0.4	0.8	0.017	0.010	0.014
VA: Richmond	9	0.1	0.0	0.0	0.013	0.004	0.008
VA: Virginia Beach	7	0.1	0.0	0.1	0.010	0.004	0.008
WA: Olympia	8	0.0	0.0	0.0	0.003	0.001	0.002
WA: Richland	8	0.1	0.0	0.1	0.006	0.003	0.004
WA: Seattle	4	0.0	0.0	0.0	0.002	0.001	0.002
WA: Spokane	8	0.2	0.1	0.1	0.007	0.003	0.005
WI: Madison	6	0.6	0.2	0.4	0.013	0.006	0.008
WI: Milwaukee	8	0.2	0.0	0.0	0.010	0.004	0.006
WV: Charleston	6	0.0	0.0	0.0	0.015	0.008	0.011

Table 3
Gross Beta in Airborne Particulates
August 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
AK: Anchorage	8	0.0	0.0	0.0	0.002	0.000	0.001
AK: Fairbanks	9	0.0	0.0	0.0	0.004	0.001	0.002
AK: Juneau	7	0.0	0.0	0.0	0.002	0.001	0.001
AL: Birmingham	9	0.2	0.0	0.1	0.028	0.007	0.017
AL: Montgomery/408	9	0.2	0.0	0.1	0.020	0.008	0.015
AR: Fort Smith	2	0.2	0.0	0.1	0.018	0.011	0.014
AR: Little Rock	9	0.2	0.0	0.1	0.015	0.005	0.011
AZ: Phoenix	8	1.4	0.2	0.7	0.018	0.009	0.013
AZ: Phoenix/956	8	0.7	0.2	0.4	0.017	0.006	0.011
AZ: Tucson	9	0.0	0.0	0.0	0.012	0.006	0.009
CA: Anaheim	6	0.0	0.0	0.0	0.014	0.004	0.008
CA: Bakersfield	7	8.7	0.0	1.5	0.011	0.006	0.008
CA: Eureka	4	0.0	0.0	0.0	0.003	0.001	0.002
CA: Fresno	9	0.4	0.1	0.2	0.013	0.006	0.008
CA: Los Angeles	5	0.0	0.0	0.0	0.014	0.005	0.008
CA: Richmond	5	0.1	0.0	0.0	0.005	0.002	0.004
CA: Riverside	9	0.0	0.0	0.0	0.012	0.005	0.009
CA: Sacramento	9	0.3	0.2	0.2	0.008	0.002	0.005
CA: San Bernardino Cty.	9	0.1	0.0	0.0	0.019	0.008	0.012
CA: San Diego	5	0.1	0.0	0.1	0.011	0.004	0.007
CA: San Francisco	8	0.0	0.0	0.0	0.004	0.001	0.002
CA: San Jose	7	0.5	0.0	0.1	0.006	0.002	0.004
CO: Denver	8	0.9	0.4	0.6	0.015	0.008	0.012
CO: Grand Junction	7	0.4	0.4	0.4	0.011	0.006	0.009
CT: Hartford	7	0.1	0.0	0.0	0.010	0.004	0.006
DC: Washington	8	0.1	0.0	0.1	0.013	0.005	0.008
DE: Dover	5	0.1	0.0	0.0	0.012	0.004	0.008
FL: Jacksonville	9	0.0	0.0	0.0	0.013	0.006	0.008
FL: Miami	6	0.0	-0.0	0.0	0.006	0.002	0.004
FL: Orlando	9	0.0	-0.1	0.0	0.009	0.003	0.006
FL: Tallahassee	4	0.1	0.1	0.1	0.016	0.011	0.014
FL: Tampa	7	0.1	0.0	0.0	0.014	0.005	0.008
GA: Atlanta	5	0.0	0.0	0.0	0.017	0.009	0.013
GA: Augusta	7	0.5	0.1	0.2	0.013	0.005	0.009
HI: Hilo	9	0.0	0.0	0.0	0.003	0.002	0.003
HI: Honolulu	9	0.0	0.0	0.0	0.003	0.001	0.002
IA: Des Moines	8	0.4	0.1	0.3	0.018	0.007	0.013
IA: Mason City	2	0.3	0.2	0.2	0.009	0.007	0.008

Table 3 (continued)
Gross Beta in Airborne Particulates
August 2011

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)
ID: Idaho Falls	9	0.7	0.1	0.3	0.015	0.008	0.011
IL: Aurora	6	0.7	0.1	0.3	0.017	0.006	0.012
IL: Chicago	9	0.2	0.0	0.1	0.012	0.005	0.008
IN: Fort Wayne	2				0.014	0.013	0.013
IN: Indianapolis	9	0.5	0.1	0.2	0.017	0.006	0.011
KS: Kansas City	6	0.2	0.1	0.1	0.008	0.005	0.007
KS: Topeka	9	0.4	0.0	0.2	0.015	0.007	0.011
KS: Wichita	8	0.6	0.1	0.3	0.016	0.007	0.011
KY: Lexington	9	0.0	0.0	0.0	0.024	0.013	0.019
KY: Louisville	9	0.4	0.1	0.2	0.016	0.005	0.009
LA: Baton Rouge	8	0.2	0.0	0.1	0.011	0.004	0.007
LA: Shreveport	7	0.1	0.0	0.0	0.012	0.005	0.007
MA: Boston	9	0.1	0.0	0.0	0.007	0.003	0.005
MA: Worcester	8	0.1	0.0	0.1	0.012	0.006	0.008
MD: Baltimore	5	0.1	0.0	0.0	0.016	0.010	0.013
ME: Orono	2	0.0	0.0	0.0	0.012	0.003	0.008
MI: Bay City 48708	7	0.1	0.0	0.0	0.011	0.004	0.007
MI: Detroit	9	0.5	0.1	0.2	0.013	0.005	0.008
MI: Grand Rapids	8	0.1	0.0	0.0	0.012	0.006	0.009
MI: Lansing	9	0.4	0.0	0.2	0.033	0.015	0.021
MN: Duluth	5	0.2	0.0	0.1	0.008	0.004	0.005
MN: St. Paul	5	0.1	0.1	0.1	0.015	0.006	0.010
MO: Jefferson City	9	0.5	0.1	0.3	0.020	0.006	0.010
MO: Springfield	8	0.2	0.0	0.1	0.013	0.007	0.010
MS: Jackson/Deq	8	0.5	0.1	0.2	0.019	0.008	0.013
MT: Billings	7	0.3	-0.0	0.1	0.018	0.010	0.012
NC: Charlotte	7	0.2	0.0	0.1	0.019	0.011	0.013
NC: Raleigh	5	0.0	0.0	0.0	0.011	0.005	0.009
NC: Wilmington	5				0.012	0.005	0.008
ND: Bismarck	9	0.8	0.0	0.2	0.013	0.006	0.008
NE: Kearney	8	0.8	0.1	0.4	0.014	0.006	0.010
NE: Lincoln	5	0.7	-0.0	0.2	0.012	0.006	0.009
NE: Omaha	3	0.0	0.0	0.0	0.011	0.008	0.009
NH: Concord	4	0.0	0.0	0.0	0.009	0.004	0.005
NJ: Edison	7	0.0	-0.0	0.0	0.007	0.003	0.005
NJ: Trenton	6	0.5	0.0	0.2	0.011	0.006	0.009
NM: Albuquerque	4	0.0	0.0	0.0	0.007	0.005	0.006
NM: Carlsbad	7	0.6	0.0	0.2	0.020	0.011	0.015

Table 3 (continued)
Gross Beta in Airborne Particulates
August 2011

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)
NM: Navajo Lake St Park	3	0.2	0.1	0.1	0.006	0.004	0.005
NM: Santa Fe	2	0.0	0.0	0.0	0.007	0.004	0.006
NV: Reno	9	0.4	0.1	0.3	0.018	0.007	0.012
NY: Albany	6	0.3	0.0	0.1	0.012	0.005	0.009
NY: Lockport	9	0.1	0.0	0.0	0.011	0.004	0.007
NY: New York City	5				0.008	0.004	0.006
NY: Rochester	7	0.3	0.0	0.1	0.008	0.004	0.006
NY: Syracuse	2				0.007	0.007	0.007
NY: Yaphank	2	0.0	0.0	0.0	0.006	0.005	0.005
OH: Cincinnati	9	0.2	0.1	0.1	0.018	0.006	0.011
OH: Cleveland	7	0.1	0.0	0.1	0.013	0.006	0.009
OH: Painesville	8	0.1	0.0	0.1	0.011	0.005	0.009
OH: Toledo	9	1.4	0.0	0.3	0.019	0.007	0.013
OK: Oklahoma City	8	0.5	0.0	0.2	0.029	0.006	0.011
OR: Corvallis	9	0.2	0.0	0.1	0.004	0.001	0.003
OR: Portland	9	0.0	0.0	0.0	0.004	0.002	0.003
PA: Harrisburg	7	0.3	0.0	0.1	0.010	0.004	0.007
PA: Philadelphia	4				0.008	0.004	0.006
PA: Pittsburgh	5	0.1	0.1	0.1	0.017	0.007	0.011
PR: San Juan	7	0.0	0.0	0.0	0.010	0.002	0.007
RI: Providence	4	0.1	0.0	0.0	0.007	0.004	0.006
SC: Barnwell	3	0.1	0.0	0.0	0.014	0.007	0.011
SC: Columbia	4	0.1	0.0	0.0	0.015	0.011	0.013
SD: Pierre	6	1.0	0.0	0.3	0.010	0.006	0.009
SD: Rapid City	1	0.2	0.2	0.2	0.016	0.016	0.016
TN: Knoxville	4	0.7	0.1	0.3	0.016	0.009	0.013
TN: Memphis	2	0.0	0.0	0.0	0.017	0.011	0.014
TN: Nashville	4	0.1	0.0	0.1	0.013	0.009	0.011
TN: Oak Ridge/Bethel	9	0.9	0.4	0.6	0.020	0.008	0.014
TN: Oak Ridge/K25	9	1.1	0.6	0.8	0.020	0.009	0.014
TN: Oak Ridge/Melton	9	1.4	0.5	0.8	0.025	0.009	0.015
TN: Oak Ridge/Y12 E	9	0.9	0.4	0.6	0.020	0.010	0.014
TN: Oak Ridge/Y12 W	9	0.3	0.2	0.3	0.019	0.009	0.013
TX: Amarillo	3	2.0	0.1	1.2	0.025	0.013	0.018
TX: Austin	3	0.3	0.0	0.1	0.009	0.007	0.008
TX: Corpus Christi	2	0.0	0.0	0.0	0.007	0.003	0.005
TX: Dallas	6	1.3	0.0	0.7	0.012	0.005	0.008
TX: El Paso	5	1.1	0.5	0.8	0.017	0.013	0.015

Table 3 (continued)
Gross Beta in Airborne Particulates
August 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
TX: Ft. Worth	9	0.5	0.0	0.1	0.019	0.005	0.011
TX: Harlingen	7	1.0	0.0	0.6	0.018	0.004	0.008
TX: Houston	7	0.1	0.0	0.0	0.001	0.000	0.000
TX: Laredo	8	0.5	0.1	0.3	0.012	0.004	0.008
TX: San Angelo	8	0.2	0.0	0.0	0.012	0.004	0.008
TX: San Antonio	7	0.5	0.3	0.4	0.008	0.003	0.005
UT: Salt Lake City	8	0.4	0.0	0.1	0.017	0.009	0.013
VA: Harrisonburg	9	2.7	0.4	1.2	0.031	0.007	0.015
VA: Lynchburg	9	1.3	0.2	0.7	0.018	0.008	0.012
VA: Richmond	8	0.0	0.0	0.0	0.012	0.006	0.008
VA: Virginia Beach	9	0.2	0.0	0.1	0.016	0.006	0.009
VT: Burlington	2	0.0	0.0	0.0	0.007	0.004	0.005
WA: Olympia	9	0.0	0.0	0.0	0.005	0.001	0.003
WA: Richland	10	0.3	0.0	0.1	0.008	0.004	0.006
WA: Seattle	4	0.0	0.0	0.0	0.004	0.002	0.002
WA: Spokane	10	0.3	0.1	0.1	0.010	0.005	0.007
WI: Madison	9	1.6	0.1	0.6	0.015	0.006	0.009
WI: Milwaukee	8	0.0	0.0	0.0	0.009	0.004	0.006
WV: Charleston	6	0.0	0.0	0.0	0.015	0.008	0.011

Table 4
Gross Beta in Airborne Particulates
September 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
AK: Anchorage	8	0.0	-0.0	-0.0	0.002	0.001	0.001
AK: Fairbanks	9	0.1	0.0	0.0	0.003	0.002	0.002
AK: Juneau	7	0.0	-0.0	0.0	0.002	0.001	0.001
AL: Birmingham	9	0.1	0.0	0.1	0.021	0.006	0.012
AL: Montgomery/408	9	0.2	0.0	0.1	0.017	0.006	0.012
AR: Fort Smith	5	0.4	0.0	0.2	0.015	0.010	0.012
AR: Little Rock	8	0.2	0.0	0.1	0.015	0.009	0.012
AZ: Phoenix	9	2.8	0.3	1.3	0.017	0.012	0.015
AZ: Phoenix/956	9	0.8	0.1	0.5	0.018	0.007	0.012
AZ: Tucson	9	0.0	0.0	0.0	0.018	0.010	0.014
CA: Anaheim	7	0.0	0.0	0.0	0.018	0.006	0.013
CA: Bakersfield	5	3.6	0.1	1.4	0.018	0.011	0.013
CA: Eureka	5	0.0	0.0	0.0	0.004	0.001	0.003
CA: Fresno	3	0.6	0.5	0.5	0.014	0.010	0.012
CA: Los Angeles	4	0.1	0.0	0.0	0.018	0.011	0.014
CA: Richmond	4	0.1	0.0	0.1	0.009	0.006	0.007
CA: Riverside	9	0.0	0.0	0.0	0.020	0.008	0.013
CA: Sacramento	9	0.4	0.2	0.3	0.011	0.005	0.007
CA: San Bernardino Cty.	9	0.0	0.0	0.0	0.024	0.013	0.018
CA: San Diego	2	0.0	0.0	0.0	0.010	0.006	0.008
CA: San Francisco	9	0.0	0.0	0.0	0.006	0.002	0.003
CA: San Jose	9	0.2	0.0	0.1	0.011	0.006	0.008
CO: Denver	8	1.0	0.1	0.5	0.018	0.010	0.014
CO: Grand Junction	7	0.3	0.3	0.3	0.015	0.008	0.011
CT: Hartford	8	0.1	0.0	0.0	0.013	0.002	0.005
DC: Washington	9	0.1	0.0	0.0	0.011	0.002	0.006
FL: Jacksonville	8	0.0	0.0	0.0	0.013	0.003	0.006
FL: Miami	4	0.0	0.0	0.0	0.004	0.002	0.003
FL: Orlando	8	0.1	0.0	0.0	0.010	0.003	0.005
FL: Tallahassee	4	0.0	0.0	0.0	0.017	0.004	0.010
FL: Tampa	7	0.1	0.0	0.0	0.015	0.003	0.007
GA: Atlanta	4	0.1	0.0	0.0	0.011	0.007	0.009
GA: Augusta	6	0.4	0.1	0.2	0.012	0.003	0.008
HI: Hilo	9	0.0	0.0	0.0	0.005	0.002	0.003
HI: Honolulu	9	0.1	0.0	0.0	0.003	0.002	0.002
IA: Des Moines	7	0.3	0.1	0.2	0.015	0.007	0.010
IA: Mason City	1	0.3	0.3	0.3	0.006	0.006	0.006
ID: Idaho Falls	8	1.7	0.1	0.6	0.017	0.009	0.013

Table 4 (continued)
Gross Beta in Airborne Particulates
September 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
IL: Aurora	8	0.9	0.1	0.3	0.014	0.007	0.010
IL: Chicago	9	0.3	0.0	0.1	0.014	0.003	0.008
IN: Fort Wayne	2				0.017	0.009	0.013
IN: Indianapolis	8	0.4	0.1	0.1	0.015	0.004	0.009
KS: Kansas City	8	0.4	0.1	0.2	0.022	0.004	0.009
KS: Topeka	9	0.8	0.0	0.2	0.015	0.006	0.011
KS: Wichita	8	1.2	0.0	0.3	0.021	0.008	0.012
KY: Lexington	8	0.1	0.0	0.0	0.030	0.013	0.017
KY: Louisville	7	0.4	0.0	0.1	0.015	0.007	0.011
LA: Baton Rouge	8	0.2	0.1	0.1	0.010	0.004	0.006
LA: Shreveport	8	0.2	0.0	0.0	0.012	0.004	0.009
MA: Boston	9	0.0	0.0	0.0	0.010	0.002	0.004
MA: Worcester	8	0.1	0.0	0.1	0.016	0.004	0.008
MD: Baltimore	3	0.0	0.0	0.0	0.011	0.006	0.009
ME: Orono	4	0.0	0.0	0.0	0.008	0.003	0.006
ME: Portland	5	0.0	0.0	0.0	0.010	0.002	0.005
MI: Bay City 48708	9	0.1	0.0	0.1	0.012	0.003	0.007
MI: Detroit	8	0.3	0.0	0.1	0.014	0.004	0.008
MI: Grand Rapids	7	0.1	0.0	0.1	0.012	0.006	0.009
MI: Lansing	8	0.5	0.0	0.2	0.037	0.012	0.023
MN: Duluth	7	0.2	0.0	0.1	0.007	0.001	0.005
MN: St. Paul	4	0.2	0.0	0.1	0.011	0.004	0.007
MO: Jefferson City	8	0.4	0.1	0.2	0.015	0.005	0.008
MO: Springfield	9	0.1	0.0	0.0	0.020	0.007	0.010
MO: St. Louis	5	0.2	-0.0	0.1	0.011	0.006	0.009
MS: Jackson/Deq	8	0.5	0.0	0.2	0.019	0.006	0.012
MT: Billings	3	0.0	0.0	0.0	0.037	0.014	0.022
NC: Charlotte	9	0.1	0.0	0.1	0.017	0.004	0.010
NC: Raleigh	6	0.1	0.0	0.0	0.010	0.002	0.006
NC: Wilmington	4				0.006	0.002	0.005
ND: Bismarck	8	1.0	0.1	0.2	0.015	0.003	0.009
NE: Kearney	8	0.6	0.2	0.4	0.015	0.005	0.008
NE: Lincoln	9	1.5	0.3	0.7	0.012	0.004	0.008
NE: Omaha	3	0.0	0.0	0.0	0.013	0.007	0.010
NH: Concord	7	0.1	0.0	0.0	0.022	0.003	0.008
NJ: Edison	7	0.0	-0.0	0.0	0.009	0.003	0.004
NJ: Trenton	7	0.4	0.0	0.2	0.010	0.003	0.006
NM: Albuquerque	2	0.0	0.0	0.0	0.011	0.008	0.009

Table 4 (continued)
Gross Beta in Airborne Particulates
September 2011

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)
NM: Carlsbad	4	0.5	0.0	0.3	0.024	0.015	0.019
NM: Navajo Lake St Park	3	0.2	0.1	0.2	0.018	0.006	0.013
NM: Santa Fe	2	0.4	0.0	0.2	0.009	0.007	0.008
NV: Reno	8	0.8	0.3	0.5	0.022	0.014	0.017
NY: Albany	7	0.3	0.0	0.1	0.015	0.003	0.009
NY: Lockport	9	0.0	0.0	0.0	0.013	0.003	0.007
NY: New York City	4				0.008	0.003	0.006
NY: Rochester	8	0.1	-0.0	0.0	0.009	0.002	0.005
NY: Syracuse	3				0.010	0.004	0.007
NY: Yaphank	4	0.0	-0.0	-0.0	0.007	0.002	0.004
OH: Cincinnati	9	0.3	0.0	0.1	0.020	0.003	0.011
OH: Cleveland	6	0.1	0.0	0.0	0.007	0.002	0.005
OH: Painesville	8	0.2	0.0	0.1	0.019	0.004	0.010
OH: Toledo	8	0.8	0.0	0.2	0.021	0.004	0.012
OK: Oklahoma City	8	0.4	0.1	0.2	0.016	0.006	0.009
OK: Tulsa	4	0.0	0.0	0.0	0.011	0.007	0.009
OR: Corvallis	5	0.3	0.0	0.1	0.006	0.003	0.004
OR: Portland	9	0.1	0.0	0.0	0.005	0.002	0.004
PA: Harrisburg	7	0.2	-0.0	0.1	0.010	0.001	0.005
PA: Philadelphia	4				0.008	0.003	0.005
PR: San Juan	9	0.0	-0.0	0.0	0.008	0.001	0.004
RI: Providence	4	0.1	-0.0	0.0	0.017	0.004	0.008
SC: Barnwell	2	0.0	0.0	0.0	0.011	0.006	0.008
SC: Columbia	4	0.2	0.0	0.1	0.018	0.003	0.011
SD: Pierre	7	1.1	0.3	0.6	0.016	0.004	0.009
SD: Rapid City	1	0.5	0.5	0.5	0.012	0.012	0.012
TN: Knoxville	4	0.5	0.0	0.2	0.015	0.003	0.009
TN: Memphis	5	0.0	0.0	0.0	0.018	0.010	0.014
TN: Nashville	9	0.1	-0.0	0.0	0.017	0.006	0.011
TN: Oak Ridge/Bethel	8	1.1	0.1	0.5	0.016	0.010	0.012
TN: Oak Ridge/K25	8	1.3	0.1	0.7	0.019	0.011	0.013
TN: Oak Ridge/Melton	8	1.4	0.1	0.8	0.020	0.011	0.014
TN: Oak Ridge/Y12 E	8	1.2	0.1	0.6	0.019	0.011	0.014
TN: Oak Ridge/Y12 W	8	0.7	0.1	0.3	0.023	0.009	0.013
TX: Amarillo	3	2.2	0.3	1.2	0.019	0.014	0.016
TX: Austin	5	0.7	0.0	0.3	0.018	0.012	0.015
TX: Dallas	9	1.0	0.0	0.5	0.013	0.007	0.010
TX: Ft. Worth	9	0.5	0.1	0.2	0.020	0.008	0.014

Table 4 (continued)
Gross Beta in Airborne Particulates
September 2011

Location	Number of Samples	5-hour Field Estimate (pCi/m³) Max	Min	Avg	NAREL Lab Measurement (pCi/m³) Max	Min	Avg
TX: Harlingen	8	1.1	0.6	0.9	0.011	0.007	0.009
TX: Laredo	9	1.0	0.1	0.5	0.012	0.007	0.009
TX: San Angelo	7	0.0	0.0	0.0	0.017	0.007	0.012
TX: San Antonio	8	1.0	0.2	0.6	0.015	0.007	0.010
UT: Salt Lake City	9	0.5	0.1	0.3	0.020	0.012	0.015
VA: Harrisonburg	9	0.9	0.1	0.5	0.016	0.002	0.009
VA: Lynchburg	6	1.1	0.1	0.5	0.012	0.006	0.009
VA: Richmond	5	0.0	0.0	0.0	0.009	0.002	0.005
VA: Virginia Beach	9	0.1	0.0	0.0	0.012	0.002	0.006
VT: Burlington	8	0.0	0.0	0.0	0.013	0.002	0.006
WA: Olympia	8	0.1	0.0	0.0	0.005	0.003	0.004
WA: Richland	8	0.2	0.1	0.1	0.016	0.002	0.007
WA: Seattle	4	0.0	0.0	0.0	0.004	0.003	0.003
WA: Spokane	8	0.7	0.1	0.2	0.018	0.003	0.009
WI: Madison	8	0.7	0.1	0.3	0.019	0.002	0.008
WI: Milwaukee	6	0.0	0.0	0.0	0.012	0.004	0.006
WV: Charleston	6	0.0	-0.0	0.0	0.014	0.007	0.010

Table 5
Specific Gamma in Precipitation
July 2011

Location	Nuclide	pCi/L ± 2*u*	
AL: Montgomery/408	Be7	110	59
AZ: Phoenix		ND	
CA: Richmond	Pb212	3.3	2.8
CO: Denver		ND	
CT: Hartford		ND	
FL: Jacksonville	Bi212	13	12
GA: Atlanta	Be7	168	82
HI: Honolulu		ND	
ID: Idaho Falls		ND	
KS: Kansas City		ND	
MA: Boston	Be7	101	44
MI: Lansing		ND	
MN: St. Paul	Pb212	1.8	1.4
	Tl208	0.73	0.67
MN: Welch/510		ND	
NC: Charlotte		ND	
NC: Wilmington		ND	
NM: Santa Fe		ND	
NY: Albany		ND	
NY: Yaphank	Pb212	1.5	1.2
	Tl208	0.66	0.65
OH: Painesville	Be7	92	88
	Bi212	21	12
OR: Portland		ND	
PA: Harrisburg		ND	
TN: Knoxville		ND	
TN: Oak Ridge/K25	Be7	72	49
	K40	7.7	5.9
TN: Oak Ridge/Melton		ND	
TN: Oak Ridge/Y12 E		ND	
TX: El Paso		ND	
VA: Lynchburg		ND	
WA: Olympia	Be7	68	59

Table 6
Specific Gamma in Precipitation
August 2011

Location	Nuclide	pCi/L	± 2*u*
AL: Montgomery/408	Tl208	1.6	1.2
AR: Little Rock		ND	
CT: Hartford		ND	
FL: Jacksonville		ND	
GA: Atlanta		ND	
HI: Honolulu		ND	
ID: Idaho Falls		ND	
KS: Kansas City		ND	
MA: Boston	Tl208	1.28	0.90
MI: Lansing		ND	
MN: St. Paul		ND	
MN: Welch/510		ND	
NC: Charlotte	Be7	57	48
NC: Wilmington		ND	
NY: Albany		ND	
NY: Yaphank		ND	
OH: Painesville		ND	
PA: Harrisburg	Be7	94	62
TN: Nashville		ND	
TN: Oak Ridge/K25		ND	
TN: Oak Ridge/Melton		ND	
TN: Oak Ridge/Y12 E	Ra228	4.5	4.3
UT: Salt Lake City		ND	
VA: Lynchburg		ND	
WA: Olympia		ND	

Table 7
Specific Gamma in Precipitation
September 2011

Location	Nuclide	pCi/L ± 2*u*	
AL: Montgomery/408		ND	
AR: Little Rock		ND	
CA: Richmond	Cs137	17.8	6.5
	K40	105	81
CO: Denver	Tl208	1.4	1.2
CT: Hartford	Tl208	1.1	1.0
FL: Jacksonville	Pb212	3.4	2.3
GA: Atlanta	Pb212	3.3	2.6
	Tl208	1.4	1.1
ID: Idaho Falls	Tl208	1.8	1.2
KS: Kansas City		ND	
MA: Boston		ND	
MI: Lansing		ND	
NC: Charlotte	Tl208	1.2	1.0
NC: Wilmington		ND	
NM: Santa Fe	Ra228	6.5	5.4
NY: Albany	Ra228	4.7	4.6
	Tl208	1.0	1.0
NY: Yaphank		ND	
OH: Painesville	Tl208	1.6	1.2
OR: Portland	K40	23	22
	Pa234m	290	250
PA: Harrisburg	Ra228	6.7	4.6
TN: Knoxville		ND	
TN: Nashville		ND	
TN: Oak Ridge/K25		ND	
TN: Oak Ridge/Melton	Pb212	2.4	2.1
TN: Oak Ridge/Y12 E	Bi212	17	11
	Tl208	1.56	0.94
TX: El Paso	Tl208	1.2	1.1
UT: Salt Lake City		ND	
VA: Lynchburg	Be7	89	86
WA: Olympia	Tl208	1.1	1.0

Table 8
Tritium in Precipitation
July - September 2011

Location	July 2011 pCi/L	± 2*u*	August 2011 pCi/L	± 2*u*	September 2011 pCi/L	± 2*u*
AL: Montgomery/408	6	87	-19	95	-57	87
AR: Little Rock	NS		-40	93	59	83
AZ: Phoenix	8	98	NS		NS	
CA: Richmond	-101	93	NS		2	80
CO: Denver	-8	96	NS		-32	79
CT: Hartford	28	88	-112	92	58	91
FL: Jacksonville	10	88	-103	93	88	93
GA: Atlanta	83	92	4	97	12	89
HI: Honolulu	-98	92	-70	92	NS	
ID: Idaho Falls	-26	96	-84	91	20	81
KS: Kansas City	28	98	13	96	-11	80
MA: Boston	60	90	-68	93	48	90
MI: Lansing	-8	85	-4	96	7	80
MN: St. Paul	-28	91	4	95	NS	
MN: Welch/510	54	90	-30	94	NS	
NC: Charlotte	-18	87	-64	94	15	89
NC: Wilmington	2	87	-70	94	52	91
NM: Santa Fe	-68	93	NS		45	82
NY: Albany	50	89	-103	92	33	88
NY: Yaphank	36	89	-100	92	23	89
OH: Painesville	-4	88	31	96	65	84
OR: Portland	-94	93	NS		-7	80
PA: Harrisburg	28	89	-87	92	19	88
TN: Knoxville	28	88	NS		-72	92
TN: Nashville	NS		-43	94	71	92
TN: Oak Ridge/K25	28	88	36	97	34	97
TN: Oak Ridge/Melton	61	91	47	99	190	100
TN: Oak Ridge/Y12 E	60	90	-23	95	-78	92
TX: El Paso	-95	93	NS		39	82
UT: Salt Lake City	NS		-4	95	22	82
VA: Lynchburg	8	87	-120	93	58	91
WA: Olympia	-107	93	-75	91	30	82

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.

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, 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 on annual composites; (d) iodine-131 on one quarterly sample per year for each station; and (e) 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 on annual composites; and (f) strontium-90 on one-fourth of the annual composites on a four year rotating schedule.

Table 9
Tritium in Drinking Water
July - September 2011

Location	Date Collected	^{3}H pCi/L	± 2*u*
AK: Fairbanks	07/07/11	104	87
AL: Dothan	07/07/11	-36	74
AL: Montgomery	07/07/11	45	84
AR: Little Rock	07/05/11	35	84
CO: Denver	07/07/11	25	76
CT: Hartford	07/13/11	67	85
DE: Dover	07/08/11	2	75
FL: Tampa	07/08/11	7	75
GA: Baxley	08/09/11	-47	81
GA: Savannah	09/21/11	0	91
HI: Honolulu	09/30/11	-6	91
IA: Cedar Rapids	08/15/11	-24	82
ID: Boise	07/06/11	45	84
ID: Idaho Falls	07/26/11	17	92
IL: Morris	09/29/11	-4	90
KS: Topeka	08/18/11	-84	79
LA: New Orleans	09/30/11	21	92
MD: Baltimore	07/13/11	-34	74
MN: St. Paul	07/12/11	4	75
MN: Welch	07/12/11	9	75
MO: Jefferson City	07/05/11	53	84
MS: Jackson	07/05/11	65	85
MS: Port Gibson	07/05/11	43	84
MT: Helena	07/07/11	104	87
NC: Raleigh	09/02/11	-21	82
ND: Bismarck	08/22/11	13	84
NE: Lincoln	07/06/11	8	82
NJ: Trenton	09/08/11	25	92
NJ: Waretown	09/12/11	-29	90
NV: Las Vegas	08/26/11	-33	81
NY: Albany	07/25/11	-13	74
NY: Niagara Falls	07/27/11	73	95
NY: Syracuse	07/29/11	31	93
OH: Cincinnati	07/06/11	152	90
OH: Columbus	07/26/11	-28	81
OH: E. Liverpool	08/03/11	-32	81
OH: Painesville	09/15/11	27	92
OH: Toledo	07/11/11	112	80
OR: Portland	09/30/11	38	88
PA: Philadelphia/Baxter	08/31/11	-22	81

Table 9 (continued)
Tritium in Drinking Water
July - September 2011

Location	Date Collected	^{3}H pCi/L	± 2*u*
PA: Philadelphia/Belmont	08/31/11	-65	80
PA: Philadelphia/Queen	08/31/11	-43	81
PA: Pittsburgh	08/03/11	-50	89
RI: Providence	08/04/11	-58	80
SC: Barnwell	07/15/11	-16	74
SC: Columbia	07/19/11	66	78
SC: Jenkinsville	07/13/11	-32	73
SC: Seneca	07/11/11	2	75
TN: Knoxville	07/29/11	19	92
TN: Oak Ridge/#360	07/05/11	72	85
TN: Oak Ridge/#371	07/05/11	71	86
TN: Oak Ridge/#4442	07/05/11	83	86
TN: Oak Ridge/#768	07/05/11	33	84
TN: Oak Ridge/#772	07/05/11	49	85
VA: Lynchburg	08/23/11	-56	80
WA: Richland	08/10/11	-47	81
WI: Madison	07/07/11	94	86

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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.

Table 10

Radionuclides in Pasteurized Milk

July - September 2011

Location	Date Collected	K g/L ± 2*u*	^{137}Cs pCi/L ± 2*u*	^{140}Ba pCi/L ± 2*u*	^{131}I pCi/L ± 2*u*
AR: Fort Smith	09/28/11	1.57 0.18	ND	ND	ND
AR: Little Rock	07/11/11	1.49 0.19	ND	ND	ND
AZ: Phoenix	09/02/11	1.73 0.20	ND	ND	NR
CA: Los Angeles	08/18/11	1.64 0.19	ND	ND	NR
CA: San Francisco	07/20/11	1.87 0.23	ND	ND	ND
CT: Hartford	07/28/11	1.55 0.19	ND	ND	ND
DE: Wilmington	08/01/11	1.58 0.19	ND	ND	ND
FL: Plant City	07/25/11	1.42 0.18	ND	ND	ND
HI: Hilo	07/28/11	1.53 0.19	3.7 2.6	ND	ND
IA: Des Moines	07/18/11	1.53 0.19	ND	ND	ND
KS: Wichita	08/01/11	1.66 0.20	ND	ND	ND
KY: Louisville	07/11/11	1.60 0.20	ND	ND	ND
MD: Baltimore	07/13/11	1.60 0.21	ND	ND	ND
MO: Jefferson City	07/19/11	1.50 0.20	ND	ND	ND
NJ: Trenton	07/25/11	1.60 0.20	ND	ND	ND
NM: Albuquerque	07/22/11	1.55 0.20	ND	ND	ND
NY: Buffalo	09/13/11	1.69 0.19	ND	ND	ND
NY: Syracuse	07/18/11	1.62 0.20	ND	ND	ND
OH: Cincinnati	08/23/11	1.62 0.19	ND	ND	NR
OH: Cleveland	07/11/11	1.61 0.20	ND	ND	ND
OR: Portland	08/09/11	1.64 0.19	ND	NR	NR
PA: Pittsburgh	07/20/11	1.56 0.19	ND	ND	ND
TN: Chattanooga	08/10/11	1.67 0.19	ND	NR	NR
TN: Knoxville	08/02/11	1.67 0.19	ND	NR	NR
TN: Memphis	07/25/11	1.48 0.19	ND	ND	ND
TX: San Antonio	07/25/11	1.63 0.20	ND	ND	ND
WA: Spokane	07/26/11	1.47 0.19	ND	ND	ND
WA: Tacoma	09/30/11	1.68 0.19	ND	ND	ND
WV: Charleston	07/13/11	1.50 0.19	ND	ND	ND

Note: ND = Not detected
NR = No result (not analyzed within 5 half-lives of collection)

Table 11
Strontium-90 in Pasteurized Milk
July - September 2011

Location	Date Collected	^{90}Sr pCi/L	± 2*u*
AR: Little Rock	07/11/11	0.02	0.94
AZ: Phoenix	09/02/11	-0.89	0.84
CT: Hartford	07/28/11	0.24	0.42
DE: Wilmington	08/01/11	0.19	0.43
KS: Wichita	08/01/11	0.68	0.42
NY: Buffalo	09/13/11	0.63	0.37
OH: Cincinnati	08/23/11	0.51	0.36
OR: Portland	08/09/11	0.30	0.29
TN: Knoxville	08/02/11	-0.12	0.77

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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:

Requests for information concerning the operation of RadNet, the data that are generated, or publication and distribution of ERD should be directed to:

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