United States
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Agency

Eastern Environmental
Radiation Facility
1890 Federal Drive
Montgomery, AL 36109

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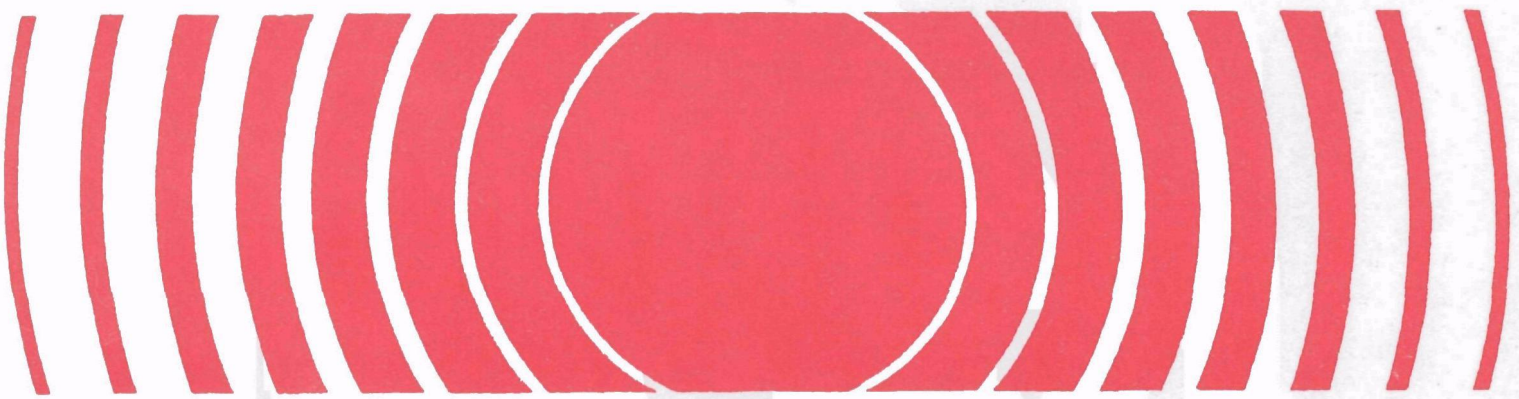
Report 42

April - June 1985



E N V I R O N M E N T A L

R A D I A T I O N

D A T A

REPORT 42

April - June 1985

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Office of Radiation Programs

Preface

Environmental Radiation Data (ERD) is compiled and distributed quarterly by the Office of Radiation Programs' Eastern Environmental Radiation Facility (EERF), 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 U. S. Environmental Protection Agency's Office of Radiation Programs (ORP). The ERAMS is comprised of nationwide 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 toward 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 enviromnent. 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, krypton, and tritium. This monitoring effort also provides ancillary information on natural background levels and on releases into the environment from stationary sources such as nuclear power reactors, fuel fabrication facilities, and reprocessing plants.

The radiochemical procedures used by the EERF in processing the ERAMS samples are contained in Eastern Environmental Radiation Facility Radiochemistry Procedures Manual.

E N V I R O N M E N T A L R A D I A T I O N

D A T A

CONTENTS

DATA - Reporting Rationale and Procedures

In 1973, the U.S. Environmental Protection Agency's Office of Radiation Programs, established the Environmental Radiation Monitoring System(ERAMS) to provide continuous, accurate, and usable environmental radiation data to the public. For completeness, ERAMS data for all specific radionuclide analyses are reported as the counting results indicate, whether the numbers are negative, zero, or positive.

Reporting Rationale

Frequently, concentrations of a radionuclide in environmental media are close to zero. When the actual concentration of a nuclide is zero, the net counting results should statistically show a distribution of negative and positive numbers about zero. This occurs when the background count is subtracted from a sample which has only background activity. Prior to July 1975, ERAMS data were not reported numerically when the results were less than a specified reporting level or minimum detectable level. The present reporting procedure allows all the data to be reported and evaluated statistically without an arbitrary cutoff of small or negative numbers. This approach will facilitate estimates of bias in the nuclide analyses and will allow better evaluation of distributions and trends in environmental data.

When reviewing the data in this report, caution should be exercised in the interpretation of individual negative values. Obviously, a negative activity value has no physical significance. Such numbers, however, are significant when taken together with other observations which indicate that the true value of a distribution is near zero. When an average of many measurements produces a result less than zero, this indicates a negative bias in the measurement procedure.

(1) Reported Values

Specific Analyses - All specific radionuclide analyses will be reported as the counting results indicate, whether the number is negative, zero, or positive. All reported values are corrected for decay to the collection date.

Potassium concentrations are determined by specific activity analyses.

Gross Analyses - The actual value of gross radioactivity measurements will be reported, unless the value is below the minimum detectable level (MDL) at the 2 sigma confidence level, then < minimum detectable level will be reported.

MDL is defined as the 3 sigma error of the background. A tabulation of MDL's is given in the following table.

(2) Reported Error Terms

Each reported value for specific analyses will be accompanied by a counting error term at the 2 sigma (95%) confidence interval. 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.

(3) Significant Figures

All reported values will be rounded to no more than three significant figures. The last significant figure will be increased by one if the figure following is five or greater, otherwise it is left unchanged.

(4) Reporting Levels

The reporting units, smallest increments for reporting, and minimum detectable levels for each isotope are shown in Table 1. Smallest increments are sometimes considerably smaller than minimum detectable amounts to avoid truncation errors in averaging.

(5) 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 Levels

for Radionuclide Analyses

Radionuclide	Media	Reporting Units	Reporting Increments	Minimum Detectable Levels
Gross alpha	Water	pCi/l	1 pCi/l	2 pCi/l
Gross beta	Air	pCi/m^3	.01 pCi/m^3	.01 pCi/m^3
	Water	pCi/l	1 pCi/l	1 pCi/l
	Precipitation	nCi/m^2	.01 nCi/m^2	.01 $nCi/m^{2(a)}$
Tritium	Water	nCi/l	.1 nCi/l	.2 nCi/l
	Milk	nCi/l	.1 nCi/l	.2 nCi/l
Carbon-14	Milk	pCi/l	1 pCi/l	15 pCi/l
Krypton-85	Ambient Air	pCi/m^3	.1 pCi/m^3	2 pCi/m^3
Plutonium-238, 239	Air	aCi/m^3	.1 aCi/m^3	.015 pCi[b] per sample
	Milk	pCi/l	.001 pCi/l	.015 pCi per sample
	Water	pCi/l	.001 pCi/l	.015 pCi per sample
Uranium-234, 235,238	Air	aCi/m^3	.1 aCi/m^3	.015 pCi[b] per sample
	Milk	pCi/l	.001 pCi/l	.015 pCi per sample
	Water	pCi/l	.001 pCi/l	.015 pCi per sample
Radium-226	Water	pCi/l	.1 pCi/l	.1 pCi/l

Radionuclide	Media	Reporting Units	Reporting Increments	Minimum Detectable Levels
Strontium-90	Milk	pCi/l	.1 pCi/l	1 pCi/l
	Water	pCi/l	.1 pCi/l	1 pCi/l
Strontium-89	Milk	pCi/l	1 pCi/l	5 pCi/l(c)
Iodine-131	Milk	pCi/l	1 pCi/l	10 pCi/l(c)
	Water	pCi/l	1 pCi/l	10 pCi/l(c)
	Water (specific radiochemical analysis)	pCi/l	.1 pCi/l	.4 pCi/l
Iodine-129	Milk	fCi/l	.1 fCi/l	.4 fCi/l
Cesium-137	Milk	pCi/l	1 pCi/l	10 pCi/l
	Water	pCi/l	1 pCi/l	10 pCi/l
Barium-140	Milk	pCi/l	1 pCi/l	10 pCi/l(c)
	Water	pCi/l	1 pCi/l	10 pCi/l(c)
Potassium	Milk	g/l	.1 g/l	.12 g/l
	Water	g/l	.1 g/l	.12 g/l
Potassium-40	Water	pCi/l	1 pCi/l	100 pCi/l

(a) The value in terms of nCi/m^2 would be dependent on precipitation (mm).
(b) This value in terms of pCi/m^3 would be dependent on the air volume.
(c) Activity as of the day of counting.

ENVIRONMENTAL RADIATION AMBIENT MONITORING SYSTEM (ERAMS)

SECTION I. Air Program

Airborne Particulates and Precipitation

Gross beta radioactivity measurements and certain specific analyses are performed on air particulates and precipitation samples as indicator measurements in assessing the general (national) impact of all contributing sources on environmental levels of radiation.

Airborne particulates are collected continuously at field stations representing wide geographic coverage, including present and potential sources of environmental radioactivity. Sampling sites are located throughout the United States.

Filters (10-cm diameter synthetic fiber) from air samplers are changed twice weekly and field measurements are made with a G-M survey meter at 5 hours 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 EERF for more sensitive analyses in a low background beta counter. Gamma scans are performed on all filters showing laboratory gross beta counts greater than 1 pCi/m^3. The laboratory obtained values are usually lower than the field estimates due to the decay of naturally occuring radionuclides between the times of the two measurements.

Precipitation samples are collected at these field stations collecting air filters. These samples are also sent to EERF where they are composited monthly for gamma scans, tritium, and gross beta activity measurements. Plutonium-238, -239, and uranium-234, -235, and -238 analyses are performed on samples which exceed 2 pCi/liter gross alpha.

Tables 2 - 4 present the monthly average gross beta concentrations in airborne particulates for April - June 1985

Tables 5 - 7 present the monthly average gross beta concentration in precipitation April - June 1985.

The tritium in precipitation samples for April - June 1985 at the selected stations are shown in Table 8.

A compilation of individual measurements is available from the EPA, EERF, Montgomery, AL 36109.

TABLE 2

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
APRIL - 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
AL:ASHFORD	4	0.0	0.0	0.0	0.01	0.01	0.01
AL:MONTGOMERY	8	0.8	0.2	0.4	0.01	0.01	0.01
AR:LITTLE ROCK	9	0.5	0.0	0.1	0.01	0.01	0.01
AZ:TEMPE	8	2.9	0.1	1.2	0.12	0.01	0.03
CA:BERKELEY	9	0.1	0.0	0.0	0.01	0.00	0.01
CA:LOS ANGELES	9	0.6	0.1	0.3	0.02	0.01	0.01
CO:DENVER	8	1.1	0.3	0.8	0.01	0.01	0.01
CT:HARTFORD	9	0.2	0.0	0.1	0.01	0.00	0.01
DE:WILMINGTON	7	0.5	0.0	0.2	0.01	0.00	0.01
FL:JACKSONVILLE	6	0.2	0.0	0.1	0.02	0.01	0.01
FL:MIAMI	9	0.0	0.0	0.0	0.02	0.01	0.01
HI:HONOLULU	8	0.3	0.0	0.1	0.02	0.00	0.01
IA:IOWA CITY	9	1.4	0.1	0.7	0.03	0.01	0.02
ID:BOISE	9	0.4	0.1	0.2	0.01	0.01	0.01
ID:IDAHO FALLS	9	0.0	0.0	0.0	0.03	0.01	0.01
IL:CHICAGO	10	0.8	0.1	0.4	0.02	0.01	0.01
IN:INDIANAPOLIS	7	0.5	0.1	0.3	0.01	0.00	0.01
KS:TOPEKA	9	0.6	0.2	0.3	0.01	0.00	0.00
ME:AUGUSTA	4	0.3	0.1	0.2	0.01	0.00	0.00
MI:LANSING	9	0.3	0.1	0.2	0.01	0.00	0.01
MN:MINNEAPOLIS	9	0.9	0.1	0.4	0.03	0.00	0.02
MO:JEFFERSON CITY	9	1.0	0.2	0.5	0.01	0.01	0.01
MS:JACKSON	9	0.3	0.1	0.2	0.02	0.01	0.01
NC:CHARLOTTE	8	0.1	0.0	0.0	0.03	0.01	0.01
NC:WILMINGTON	9	0.1	0.1	0.1	0.02	0.00	0.01
ND:BISMARCK	10	0.5	0.1	0.2	0.02	0.01	0.01
NH:CONCORD	10	0.2	0.0	0.1	0.02	0.00	0.01
NJ:TRENTON	9	0.5	0.1	0.2	0.01	0.00	0.01
NM:SANTA FE	9	0.4	0.1	0.3	0.01	0.00	0.01
NV:LAS VEGAS	9	0.2	0.1	0.2	0.01	0.01	0.01
NY:ALBANY	4	0.1	0.0	0.1	0.02	0.01	0.01
NY:NEW YORK CITY	9	0.3	0.1	0.1	0.02	0.01	0.01
NY:NIAGARA FALLS	9	0.7	0.1	0.3	0.02	0.01	0.02
NY:SYRACUSE	6	0.2	0.0	0.1	0.01	0.01	0.01
NY:YAPHANK	8	0.1	0.0	0.0	0.01	0.00	0.01
OH:COLUMBUS	9	0.6	0.1	0.3	0.02	0.01	0.01
OH:PAINESVILLE	9	0.3	0.0	0.2	0.02	0.00	0.01
OH:TOLEDO	9	1.4	0.0	0.4	0.03	0.01	0.01

TABLE 2 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
APRIL - 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
OK:OKLAHOMA CITY	6	0.8	0.1	0.3	0.01	0.01	0.01
OR:PORTLAND	11	0.0	0.0	0.0	0.02	0.00	0.01
PA:GOLDSBORO	9	0.4	0.1	0.2	0.02	0.00	0.01
PA:HARRISBURG	10	1.0	0.1	0.3	0.02	0.01	0.01
PA:PITTSBURGH	9	0.1	0.1	0.1	0.02	0.01	0.01
RI:PROVIDENCE	8	0.3	0.0	0.1	0.01	0.01	0.01
SC:BARNWELL	2	0.0	0.0	0.0	0.01	0.00	0.00
SC:COLUMBIA	8	0.6	0.1	0.3	0.02	0.01	0.02
SD:PIERRE	9	0.7	0.0	0.4	0.04	0.01	0.01
TN:KNOXVILLE	8	1.3	0.1	0.5	0.02	0.01	0.01
TN:NASHVILLE	4	0.5	0.1	0.3	0.02	0.01	0.01
TX:AUSTIN	9	0.2	0.1	0.1	0.02	0.01	0.01
TX:EL PASO	9	1.0	0.3	0.5	0.02	0.01	0.01
VA:LYNCHBURG	10	0.8	0.0	0.4	0.02	0.01	0.01
VA:VIRGINIA BEACH	4	0.1	0.1	0.1	0.01	0.00	0.01
WA:SEATTLE	6	0.0	0.0	0.0	0.01	0.00	0.00
WA:SPOKANE	10	0.3	0.1	0.2	0.01	0.00	0.01
WI:MADISON	9	1.6	0.1	0.6	0.01	0.00	0.01
WV:CHARLESTON	9	0.5	0.1	0.3	0.03	0.01	0.01

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

TABLE 3

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
MAY 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
AL:ASHFORD	6	0.0	0.0	0.0	0.01	0.01	0.01
AL:MONTGOMERY	9	1.1	0.1	0.6	0.02	0.01	0.01
AR:LITTLE ROCK	9	0.3	0.0	0.1	0.01	0.00	0.01
AZ:TEMPE	8	1.5	0.3	0.8	0.03	0.01	0.02
CA:BERKELEY	12	0.0	0.0	0.0	0.01	0.00	0.00
CA:LOS ANGELES	11	0.3	0.1	0.2	0.02	0.01	0.01
CO:DENVER	9	1.4	0.2	0.8	0.01	0.00	0.01
CT:HARTFORD	10	0.2	0.1	0.2	0.02	0.00	0.01
DE:WILMINGTON	9	0.3	0.0	0.1	0.01	0.01	0.01
FL:JACKSONVILLE	8	0.2	0.0	0.1	0.01	0.00	0.01
FL:MIAMI	10	0.1	0.0	0.0	0.01	0.00	0.01
HI:HONOLULU	8	0.2	0.0	0.1	0.02	0.00	0.01
IA:IOWA CITY	11	1.8	0.3	0.7	0.02	0.00	0.01
ID:BOISE	8	0.9	0.1	0.4	0.02	0.00	0.01
ID:IDAHO FALLS	10	0.0	0.0	0.0	0.02	0.01	0.01
IL:CHICAGO	8	1.3	0.0	0.4	0.02	0.01	0.02
IN:INDIANAPOLIS	9	0.7	0.2	0.4	0.01	0.01	0.01
KS:TOPEKA	10	1.4	0.2	0.4	0.00	0.00	0.00
ME:AUGUSTA	10	0.4	0.1	0.2	0.01	0.01	0.01
MI:LANSING	10	0.6	0.1	0.2	0.01	0.01	0.01
MN:MINNEAPOLIS	10	0.8	0.0	0.3	0.02	0.00	0.01
MO:JEFFERSON CITY	11	1.8	0.1	0.7	0.02	0.01	0.01
MS:JACKSON	8	0.8	0.1	0.4	0.06	0.01	0.02
NC:CHARLOTTE	11	0.1	0.0	0.1	0.01	0.01	0.01
NC:WILMINGTON	7	0.1	0.0	0.1	0.01	0.00	0.01
ND:BISMARCK	7	0.4	0.1	0.2	0.02	0.01	0.01
NH:CONCORD	10	0.3	0.1	0.1	0.01	0.01	0.01
NJ:TRENTON	10	0.3	0.1	0.2	0.01	0.00	0.01
NM:SANTA FE	11	0.6	0.2	0.4	0.01	0.00	0.01
NV:LAS VEGAS	10	0.3	0.1	0.2	0.02	0.01	0.01
NY:ALBANY	5	0.1	0.0	0.1	0.01	0.01	0.01
NY:NEW YORK CITY	12	0.2	0.0	0.1	0.02	0.00	0.01
NY:NIAGARA FALLS	11	0.7	0.1	0.3	0.02	0.01	0.01
NY:SYRACUSE	7	0.2	0.1	0.1	0.02	0.00	0.01
NY:YAPHANK	8	0.1	0.0	0.0	0.01	0.00	0.01
OH:COLUMBUS	10	0.6	0.2	0.3	0.02	0.01	0.01
OH:PAINESVILLE	10	0.3	0.1	0.2	0.01	0.00	0.01
OH:TOLEDO	9	0.4	0.1	0.3	0.02	0.00	0.01

TABLE 3 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
MAY 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
OK:OKLAHOMA CITY	6	0.5	0.0	0.3	0.01	0.00	0.01
OR:PORTLAND	8	0.0	0.0	0.0	0.01	0.00	0.00
PA:GOLDSBORO	9	0.6	0.1	0.2	0.01	0.00	0.01
PA:HARRISBURG	10	0.4	0.1	0.2	0.01	0.01	0.01
PA:PITTSBURGH	10	0.1	0.0	0.1	0.02	0.00	0.01
RI:PROVIDENCE	5	0.2	0.0	0.1	0.01	0.01	0.01
SC:BARNWELL	2	0.1	0.0	0.1	0.01	0.01	0.01
SC:COLUMBIA	12	0.3	0.1	0.2	0.02	0.01	0.01
SD:PIERRE	9	0.5	0.2	0.4	0.05	0.00	0.02
TN:KNOXVILLE	3	0.6	0.3	0.4	0.02	0.01	0.01
TN:NASHVILLE	6	0.4	0.1	0.2	0.02	0.01	0.01
TX:AUSTIN	11	0.3	0.1	0.2	0.02	0.00	0.01
TX:EL PASO	9	1.2	0.3	0.6	0.02	0.01	0.01
VA:LYNCHBURG	9	0.6	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:SEATTLE	6	0.0	0.0	0.0	0.01	0.00	0.00
WA:SPOKANE	9	0.4	0.1	0.2	0.02	0.00	0.01
WI:MADISON	10	0.9	0.2	0.5	0.01	0.00	0.01
WV:CHARLESTON	4	0.5	0.1	0.3	0.01	0.01	0.01

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

TABLE 4

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
JUNE 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
AL:ASHFORD	5	0.0	0.0	0.0	0.01	0.01	0.01
AL:MONTGOMERY	8	4.2	0.2	1.2	0.01	0.01	0.01
AR:LITTLE ROCK	9	0.4	0.0	0.2	0.02	0.01	0.01
AZ:TEMPE	5	5.8	0.5	2.4	0.02	0.02	0.02
CA:BERKELEY	11	0.1	0.0	0.0	0.01	0.00	0.00
CA:LOS ANGELES	9	0.8	0.1	0.3	0.01	0.00	0.01
CO:DENVER	8	1.0	0.5	0.8	0.02	0.01	0.01
CT:HARTFORD	8	0.2	0.1	0.2	0.01	0.00	0.01
DE:WILMINGTON	8	0.5	0.0	0.2	0.01	0.00	0.01
FL:JACKSONVILLE	10	0.1	0.0	0.1	0.02	0.01	0.01
FL:MIAMI	9	0.0	0.0	0.0	0.01	0.01	0.01
HI:HONOLULU	10	0.3	0.1	0.1	0.02	0.01	0.01
IA:IOWA CITY	9	0.8	0.2	0.5	0.01	0.01	0.01
ID:BOISE	6	0.6	0.0	0.3	0.01	0.01	0.01
ID:IDAHO FALLS	8	0.0	0.0	0.0	0.01	0.01	0.01
IL:CHICAGO	8	0.6	0.1	0.2	0.01	0.01	0.01
IN:INDIANAPOLIS	10	0.9	0.2	0.5	0.02	0.01	0.01
KS:TOPEKA	9	0.4	0.1	0.2	0.01	0.00	0.00
ME:AUGUSTA	9	0.2	0.0	0.1	0.01	0.00	0.01
MI:LANSING	8	0.3	0.1	0.2	0.01	0.00	0.01
MN:MINNEAPOLIS	8	0.9	0.0	0.3	0.01	0.01	0.01
MO:JEFFERSON CITY	9	0.5	0.0	0.2	0.01	0.01	0.01
MS:JACKSON	9	0.6	0.1	0.4	0.02	0.01	0.01
NC:CHARLOTTE	7	0.2	0.0	0.1	0.01	0.01	0.01
NC:WILMINGTON	9	0.1	0.0	0.1	0.01	0.01	0.01
ND:BISMARCK	8	0.4	0.0	0.2	0.01	0.00	0.01
NH:CONCORD	9	0.2	0.1	0.1	0.01	0.00	0.01
NJ:TRENTON	9	0.4	0.1	0.2	0.01	0.00	0.01
NM:SANTA FE	7	0.4	0.2	0.3	0.02	0.01	0.01
NV:LAS VEGAS	8	0.2	0.1	0.2	0.03	0.01	0.02
NY:ALBANY	3	0.1	0.0	0.1	0.01	0.01	0.01
NY:NEW YORK CITY	8	0.2	0.1	0.1	0.01	0.00	0.01
NY:NIAGARA FALLS	8	0.2	0.1	0.2	0.01	0.00	0.01
NY:SYRACUSE	4	0.1	0.1	0.1	0.01	0.01	0.01
NY:YAPHANK	8	0.1	0.0	0.0	0.01	0.00	0.01
OH:COLUMBUS	9	0.7	0.1	0.4	0.02	0.01	0.01
OH:PAINESVILLE	8	0.2	0.0	0.1	0.01	0.01	0.01
OH:TOLEDO	9	0.4	0.1	0.2	0.02	0.01	0.01

TABLE 4 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
JUNE 1985

LOCATION	# SAM	5-HR FIELD ESTIMATE			EERF LAB MEASUREMENT		
		MAX	MIN	AVG	MAX	MIN	AVG
		(pCi/m^3)			(pCi/m^3)		
OK:OKLAHOMA CITY	4	0.4	0.0	0.2	0.02	0.00	0.01
OR:PORTLAND	8	0.0	0.0	0.0	0.01	0.00	0.00
PA:GOLDSBORO	9	0.4	0.1	0.2	0.02	0.01	0.01
PA:HARRISBURG	8	0.4	0.1	0.2	0.01	0.01	0.01
PA:MIDDLETOWN	1	0.2	0.2	0.2	0.01	0.01	0.01
PA:PITTSBURGH	10	0.2	0.1	0.2	0.01	0.01	0.01
RI:PROVIDENCE	6	0.2	0.0	0.1	0.01	0.01	0.01
SC:BARNWELL	1	0.1	0.1	0.1	0.01	0.01	0.01
SC:COLUMBIA	9	0.6	0.1	0.3	0.03	0.01	0.02
SD:PIERRE	11	0.5	0.2	0.3	0.01	0.01	0.01
TN:KNOXVILLE	6	0.9	0.2	0.6	0.01	0.01	0.01
TN:NASHVILLE	5	0.8	0.3	0.5	0.02	0.01	0.01
TX:AUSTIN	8	0.2	0.1	0.2	0.02	0.01	0.01
TX:EL PASO	9	0.7	0.2	0.4	0.02	0.01	0.01
VA:LYNCHBURG	5	0.5	0.0	0.2	0.01	0.01	0.01
VA:VIRGINIA BEACH	3	0.1	0.1	0.1	0.01	0.01	0.01
WA:SEATTLE	2	0.0	0.0	0.0	0.00	0.00	0.00
WA:SPOKANE	8	0.2	0.2	0.2	0.01	0.00	0.01
WI:MADISON	9	1.2	0.3	0.5	0.01	0.00	0.01
WV:CHARLESTON	9	0.7	0.0	0.3	0.01	0.01	0.01

UM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m^3
MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m^3

TABLE 5

GROSS BETA CONCENTRATION IN PRECIPITATION

APRIL 1985

LOCATION	DEPTH (mm)	ACT. (nCi/m^2)	± 2s	SPECIFIC GAMMA ACT. (pCi/l)
AL:MONTGOMERY	67.5	0.11	0.04	ND
AR:LITTLE ROCK	163.5	0.16	0.08	ND
CO:DENVER	13.3	0.05	0.01	ND
CT:HARTFORD	12.0	0.08	0.01	ND
DE:WILMINGTON	5.0	0.07	0.01	ND
FL:JACKSONVILLE	54.3	0.03	0.03	ND
FL:MIAMI	66.3	0.10	0.04	ND
ID:BOISE	27.5	0.03	0.02	ND
ID:IDAHO FALLS	26.8	0.03	0.01	ND
IL:CHICAGO	26.9	0.01	0.01	ND
MI:LANSING	119.1	0.09	0.05	ND
MN:MINNEAPOLIS	47.0	0.04	0.02	ND
MS:JACKSON	22.5	0.01	0.01	ND
ND:BISMARCK	62.3	0.11	0.03	ND
NH:CONCORD	16.0	0.09	0.01	ND
NJ:TRENTON	26.7	0.06	0.02	ND
NY:NEW YORK CITY	39.0	0.02	0.02	ND
NY:NIAGARA FALLS	67.1	0.09	0.03	ND
NY:YAPHANK	22.5	0.03	0.01	ND
OH:COLUMBUS	52.3	0.04	0.02	ND
OH:PAINESVILLE	66.3	0.12	0.04	ND
OH:TOLEDO	70.6	0.02	0.03	ND
PA:HARRISBURG	72.5	0.08	0.04	ND
PA:MIDDLETOWN	47.5	0.05	0.03	ND
RI:PROVIDENCE	37.5	0.09	0.02	ND
SC:BARNWELL	22.5	0.02	0.01	ND
SC:COLUMBIA	57.5	0.22	0.04	ND
TN:KNOXVILLE	20.0	0.03	0.01	ND
TN:NASHVILLE	25.4	0.02	0.01	ND
TX:AUSTIN	35.0	0.01	0.01	ND
VA:LYNCHBURG	22.5	0.04	0.01	ND
VA:VIRGINIA BEACH	52.5	0.07	0.03	ND
WA:SEATTLE	25.0	0.01	0.01	ND
WI:MADISON	72.3	0.30	0.05	ND

ND NO GAMMA ACTIVITY DETECTABLE
s SIGMA COUNTING ERROR

TABLE 6

GROSS BETA CONCENTRATION IN PRECIPITATION

MAY 1985

LOCATION	DEPTH (mm)	ACT. ± 2s (nCi/m^2)		SPECIFIC GAMMA ACT. (pCi/l)
AL:MONTGOMERY	115.0	0.09	0.06	ND
AR:LITTLE ROCK	132.5	0.16	0.06	ND
CO:DENVER	53.8	0.04	0.02	ND
CT:HARTFORD	45.5	0.18	0.03	ND
DC:WASHINGTON	20.5	0.01	0.01	ND
DE:WILMINGTON	258.8	0.56	0.14	ND
FL:JACKSONVILLE	64.5	0.03	0.03	ND
FL:MIAMI	57.5	0.05	0.03	ND
ID:BOISE	65.0	0.11	0.03	ND
ID:IDAHO FALLS	23.8	0.02	0.01	ND
IL:CHICAGO	31.1	0.05	0.02	ND
IN:INDIANAPOLIS	52.7	0.03	0.02	ND
MI:LANSING	44.3	0.05	0.02	ND
MN:MINNEAPOLIS	98.1	0.10	0.05	ND
MS:JACKSON	30.3	0.04	0.01	ND
ND:BISMARCK	55.0	0.06	0.03	ND
NH:CONCORD	63.8	0.06	0.03	ND
NJ:TRENTON	75.2	0.26	0.05	ND
NY:NEW YORK CITY	40.0	0.04	0.02	ND
NY:NIAGARA FALLS	31.7	0.04	0.01	ND
NY:SYRACUSE	43.7	0.07	0.02	ND
NY:YAPHANK	62.5	0.13	0.04	ND
OH:COLUMBUS	153.8	0.20	0.08	ND
OH:PAINESVILLE	95.6	0.24	0.05	ND
OH:TOLEDO	28.0	0.11	0.02	ND
OR:PORTLAND	10.0	0.02	0.01	ND
PA:HARRISBURG	20.0	0.14	0.02	ND
PA:PITTSBURGH	90.5	0.15	0.04	ND
PA:THREE MILE ISLA	153.8	0.12	0.07	ND
RI:PROVIDENCE	100.0	0.28	0.06	ND
SC:BARNWELL	67.5	0.08	0.03	ND
SC:COLUMBIA	56.0	0.06	0.03	ND
SD:PIERRE	37.5	0.09	0.02	ND
TN:KNOXVILLE	20.0	0.01	0.01	ND
TN:NASHVILLE	68.4	0.04	0.03	ND
TX:AUSTIN	85.6	0.08	0.04	ND
VA:VIRGINIA BEACH	31.2	0.50	0.04	ND
WA:SEATTLE	27.5	0.02	0.01	ND
WI:MADISON	58.0	0.05	0.03	ND

ND NO GAMMA ACTIVITY DETECTABLE
s SIGMA COUNTING ERROR

TABLE 7

GROSS BETA CONCENTRATION IN PRECIPITATION

JUNE 1985

LOCATION	DEPTH (mm)	ACT. ± 2s (nCi/m^2)		SPECIFIC GAMMA ACT. (pCi/l)
AL:MONTGOMERY	130.0	0.17	0.06	ND
AR:LITTLE ROCK	65.0	0.03	0.03	ND
CO:DENVER	35.5	0.10	0.02	ND
CT:HARTFORD	67.6	0.08	0.03	ND
DE:WILMINGTON	131.3	0.45	0.09	ND
FL:JACKSONVILLE	97.1	0.06	0.04	ND
FL:MIAMI	42.5	0.05	0.02	ND
ID:BOISE	28.0	0.04	0.01	ND
IL:CHICAGO	19.5	0.02	0.01	ND
IN:INDIANAPOLIS	7.0	0.01	0.00	ND
MI:LANSING	148.9	0.13	0.06	ND
MN:MINNEAPOLIS	73.5	0.06	0.03	ND
MS:JACKSON	16.3	0.01	0.01	ND
ND:BISMARCK	28.3	0.04	0.01	ND
NH:CONCORD	126.3	0.22	0.07	ND
NJ:TRENTON	66.6	0.16	0.04	ND
NY:ALBANY	216.8	0.11	0.09	ND
NY:NEW YORK CITY	46.8	0.04	0.02	ND
NY:NIAGARA FALLS	109.3	0.05	0.05	ND
NY:SYRACUSE	58.8	0.06	0.02	ND
NY:YAPHANK	147.5	0.22	0.08	ND
OH:COLUMBUS	40.5	0.06	0.02	ND
OH:PAINESVILLE	102.5	0.21	0.05	ND
OH:TOLEDO	52.5	0.04	0.02	ND
OR:PORTLAND	58.8	0.10	0.03	ND
PA:HARRISBURG	91.5	0.03	0.04	ND
PA:MIDDLETOWN	108.8	0.47	0.07	ND
PA:PITTSBURGH	118.0	0.32	0.07	ND
RI:PROVIDENCE	75.0	0.05	0.03	ND
SC:BARNWELL	55.0	0.07	0.03	ND
SC:COLUMBIA	38.0	0.03	0.02	ND
SD:PIERRE	71.6	0.06	0.04	ND
TN:KNOXVILLE	40.0	0.03	0.02	ND
TN:NASHVILLE	10.6	0.01	0.00	ND
TX:AUSTIN	102.1	0.07	0.04	ND
VA:LYNCHBURG	112.8	0.26	0.06	ND
VA:VIRGINIA BEACH	120.0	0.07	0.05	ND
WI:MADISON	59.0	0.04	0.02	ND

ND NO GAMMA ACTIVITY DETECTABLE
s SIGMA COUNTING ERROR

TABLE 8

PRECIPITATION
TRITIUM CONCENTRATION

APRIL - JUNE 1985

	APRIL	MAY	JUNE
LOCATION	nCi/l ± 2s	nCi/l ± 2s	nCi/l ± 2s
AL:MONTGOMERY	0.1 0.2	0.1 0.2	0.2 0.2
AR:LITTLE ROCK	0.1 0.2	0.2 0.2	0.2 0.2
CO:DENVER	0.2 0.2	0.1 0.2	0.1 0.2
CT:HARTFORD	0.2 0.2	0.1 0.2	0.2 0.2
DC:WASHINGTON	NS	0.2 0.2	NS
DE:WILMINGTON	0.2 0.2	0.2 0.2	0.2 0.2
FL:JACKSONVILLE	0.2 0.2	0.2 0.2	0.1 0.2
FL:MIAMI	0.2 0.2	0.2 0.2	0.3 0.2
ID:BOISE	0.2 0.2	0.1 0.2	0.1 0.2
ID:IDAHO FALLS	0.1 0.2	0.1 0.2	NS
IL:CHICAGO	0.2 0.2	0.2 0.2	0.2 0.2
IN:INDIANAPOLIS	NS	0.2 0.2	0.2 0.2
MI:LANSING	0.2 0.2	0.2 0.2	0.2 0.2
MN:MINNEAPOLIS	0.1 0.2	0.2 0.2	0.2 0.2
MS:JACKSON	0.2 0.2	0.2 0.2	0.1 0.2
ND:BISMARCK	0.1 0.2	0.2 0.2	0.2 0.2
NH:CONCORD	0.2 0.2	0.2 0.2	0.2 0.2
NJ:TRENTON	0.1 0.2	0.2 0.2	0.3 0.2
NY:ALBANY	NS	NS	0.2 0.2
NY:NEW YORK CITY	0.2 0.2	0.3 0.2	0.2 0.2
NY:NIAGARA FALLS	0.2 0.2	0.2 0.2	0.2 0.2
NY:SYRACUSE	NS	0.2 0.2	0.2 0.2
NY:YAPHANK	0.2 0.2	0.2 0.2	0.2 0.2
OH:COLUMBUS	0.1 0.2	0.2 0.2	0.2 0.2
OH:PAINESVILLE	0.1 0.2	0.2 0.2	0.1 0.2
OH:TOLEDO	0.2 0.2	0.2 0.2	0.2 0.2
OR:PORTLAND	0.1 0.2	0.1 0.2	NS
PA:HARRISBURG	0.2 0.2	0.3 0.2	0.2 0.2
PA:MIDDLETOWN	0.1 0.2	NS	0.3 0.2
PA:PITTSBURGH	NS	0.2 0.2	0.2 0.2
PA:THREE MILE ISLAND	NS	0.1 0.2	NS
RI:PROVIDENCE	0.2 0.2	0.2 0.2	0.2 0.2
SC:BARNWELL	0.7 0.2	1.2 0.2	1.7 0.2
SC:COLUMBIA	0.8 0.2	0.5 0.2	1.7 0.2
SD:PIERRE	NS	0.2 0.2	0.2 0.2

TABLE 8 (CONTINUED)

PRECIPITATION
TRITIUM CONCENTRATION

APRIL - JUNE 1985

	APRIL	MAY	JUNE
LOCATION	nCi/l ± 2s	nCi/l ± 2s	nCi/l ± 2s
TN:KNOXVILLE	0.2 0.2	0.2 0.2	0.3 0.2
TN:NASHVILLE	0.1 0.2	0.2 0.2	0.1 0.2
TX:AUSTIN	0.1 0.2	0.1 0.2	0.1 0.2
VA:LYNCHBURG	0.3 0.2	NS	0.2 0.2
VA:VIRGINIA BEACH	0.2 0.2	0.2 0.2	0.2 0.2
WA:SEATTLE	0.1 0.2	0.1 0.2	NS
WI:MADISON	0.2 0.2	0.1 0.2	0.1 0.2

NS NO SAMPLE
s SIGMA COUNTING ERROR

Plutonium and Uranium in Airborne Particulates

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

Concentration of the specific isotopes of plutonium-238, -239, and uranium-234, -235, and -238 are determined by alpha spectroscopy following chemical separation. The volume of air represented by the quarterly composite ranges from 25,000 to 40,000 m^3

Plutonium and uranium in airborne particulates data for the periods April - June 1984 and July - September 1984 are shown in Tables 9 and 10 respectively.

TABLE 9

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
APRIL - JUNE 1984 COMPOSITES

LOCATION	^{238}Pu aCi/m^3 ± 2s		^{239}Pu aCi/m^3 ± 2s		^{234}U aCi/m^3 ± 2s		^{235}U aCi/m^3 ± 2s		^{238}U aCi/m^3 ± 2s	
AL:MONTGOMERY	0.5	0.6	0.7	0.5	25.2	4.3	0.8	0.6	22.1	3.9
CA:BERKELEY	0.3	0.7	0.5	0.5	12.6	2.6	0.6	0.5	10.2	2.3
CA:LOS ANGELES	0.5	0.8	0.5	0.5	41.3	6.4	1.8	0.9	36.2	5.8
CO:DENVER	0.6	0.7	1.6	0.8	49.2	7.0	0.7	0.5	45.3	6.6
CT:HARTFORD	0.4	0.6	0.7	0.5	17.1	3.0	0.4	0.3	14.2	2.6
DE:WILMINGTON	0.7	0.6	0.9	0.5	18.1	3.4	0.7	0.5	13.6	2.8
FL:JACKSONVILLE	0.4	0.6	0.5	0.4	14.1	2.4	0.4	0.3	14.0	2.4
FL:MIAMI	0.3	0.5	0.3	0.6	16.8	2.8	0.3	0.3	16.8	2.8
HI:HONOLULU	0.8	0.7	1.3	0.7	14.8	2.9	0.1	0.3	9.3	2.1
IA:IOWA CITY	0.8	0.7	0.4	0.4	30.6	4.8	0.7	0.6	29.5	4.6
ID:BOISE	0.4	0.4	0.9	0.5	21.1	3.5	0.6	0.5	22.0	3.6
ID:IDAHO FALLS	-1.5	2.4	1.3	1.3	75.3	14.3	2.3	2.2	70.6	13.6
IL:CHICAGO	0.4	0.7	1.1	0.7	48.6	8.2	2.6	1.3	42.0	7.4
KS:TOPEKA	0.3	0.6	0.1	0.4	8.8	1.8	0.5	0.3	5.6	1.3
ME:AUGUSTA	0.2	0.4	-0.1	0.8	25.0	5.2	0.6	0.6	27.1	5.5
MI:LANSING	0.2	0.5	0.3	0.3	33.0	5.1	1.8	0.9	31.7	4.9
MN:MINNEAPOLIS	0.8	0.9	1.6	1.1	34.3	6.4	1.4	1.1	30.7	5.9
MO:JEFFERSON CITY	0.6	0.4	0.9	0.5	17.2	2.7	1.0	0.5	17.1	2.7
MS:JACKSON	-0.8	0.7	0.4	0.5	25.2	4.1	0.5	0.4	18.4	3.3
NC:CHARLOTTE	0.4	0.7	0.5	0.7	29.6	5.0	0.9	0.8	21.3	4.0
NC:WILMINGTON	-0.5	0.8	1.1	0.8	20.0	4.3	-0.1	0.7	16.2	3.8
ND:BISMARCK	0.8	1.0	1.0	0.9	51.0	8.5	0.7	0.9	49.2	8.3
NH:CONCORD	0.1	0.3	0.7	0.4	12.5	2.5	0.6	0.5	15.3	2.8
NJ:TRENTON	0.0	0.0	1.6	1.8	20.8	4.9	0.5	1.0	16.0	4.2
NM:SANTA FE	0.4	0.8	1.3	1.0	39.7	5.8	0.8	0.7	36.0	5.4
NV:LAS VEGAS	1.1	1.3	2.2	1.3	137.0	21.5	5.1	2.8	79.5	14.1
NY:ALBANY	0.8	1.0	0.9	1.3	46.1	8.2	1.8	1.1	45.0	8.1
NY:NEW YORK CITY	-0.1	0.5	0.7	0.5	23.9	4.1	0.7	0.6	21.9	3.8
NY:NIAGARA FALLS	0.6	0.8	-0.3	1.5	41.7	6.6	1.8	1.0	40.5	6.5
NY:SYRACUSE	0.4	0.6	0.5	0.3	26.9	4.2	1.4	0.7	22.3	3.7
NY:YAPHANK	0.3	0.5	1.4	0.7	13.8	2.9	0.5	0.4	11.9	2.6
OH:COLUMBUS	0.2	0.3	0.6	0.5	NA		NA		NA	
OH:PAINESVILLE	0.3	1.0	1.1	0.8	36.4	7.6	0.8	0.8	33.9	7.2
OH:TOLEDO	0.7	0.6	0.3	0.6	48.6	7.7	0.8	0.7	42.9	7.0
OR:PORTLAND	0.4	0.5	0.6	0.4	19.7	3.6	0.3	0.5	10.9	2.4
PA:HARRISBURG	0.3	0.4	0.6	0.4	17.9	3.1	0.2	0.4	18.5	3.1
PA:HARRISBURG	0.5	0.5	0.8	0.5	15.2	3.2	0.8	0.7	15.5	3.2
RI:PROVIDENCE	-0.3	0.6	0.4	0.4	23.6	4.6	0.5	0.5	18.2	3.9
SC:BARNWELL	0.5	0.6	0.6	0.4	14.1	2.6	0.8	0.5	13.6	2.5
SC:COLUMBIA	-0.1	0.1	0.8	0.6	42.1	5.9	1.2	0.6	32.3	4.8

TABLE 9 (CONTINUED)

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
APRIL - JUNE 1984 COMPOSITES

LOCATION	^{238}Pu aCi/m^3 ± 2s	^{239}Pu aCi/m^3 ± 2s	^{234}U aCi/m^3 ± 2s	^{235}U aCi/m^3 ± 2s	^{238}U aCi/m^3 ± 2s
SD:PIERRE	-0.5 0.6	0.6 0.5	20.3 3.1	1.1 0.6	17.0 2.7
TN:KNOXVILLE	0.1 0.4	0.9 0.5	33.2 4.7	1.2 0.6	17.7 2.9
TN:NASHVILLE	0.6 1.4	0.5 0.7	44.4 7.3	1.0 0.8	40.8 6.9
TX:AUSTIN	-0.5 0.8	0.4 0.5	39.3 5.9	1.5 0.8	33.2 5.2
TX:EL PASO	-0.1 0.6	2.5 1.5	132.7 18.7	3.6 1.8	105.0 15.5
VA:LYNCHBURG	-0.2 0.4	0.4 0.4	318.6 33.2	6.3 1.4	16.5 2.6
VA:VIRGINIA BEACH	0.3 0.3	1.3 0.7	32.9 4.7	1.5 0.7	26.8 4.1
WA:SEATTLE	0.5 0.5	0.5 0.4	7.8 2.0	0.1 0.3	7.8 1.9
WA:SPOKANE	0.1 0.7	0.4 1.1	35.8 9.4	1.0 1.2	31.8 8.6
WI:MADISON	0.2 0.4	0.5 0.4	20.0 3.1	0.2 0.3	12.1 2.2
WV:CHARLESTON	0.4 0.9	1.8 0.9	30.9 4.5	0.8 0.6	26.4 4.0

NA RESULTS NOT AVAILABLE AT THIS TIME.
s SIGMA COUNTING ERROR

TABLE 10

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
JULY - SEPTEMBER 1984 COMPOSITES

LOCATION	^{238}Pu aCi/m^3 ± 2s		^{239}Pu aCi/m^3 ± 2s		^{234}U aCi/m^3 ± 2s		^{235}U aCi/m^3 ± 2s		^{238}U aCi/m^3 ± 2s	
AL:MONTGOMERY	0.1	0.5	0.5	0.4	12.4	2.6	1.3	0.8	11.1	2.5
CA:BERKELEY	1.0	0.9	1.0	0.9	26.6	4.7	2.0	1.1	19.2	3.9
CA:LOS ANGELES	1.3	1.5	0.0	0.0	43.8	7.3	2.2	1.3	33.1	6.0
CO:DENVER	0.2	0.5	1.1	0.6	49.7	6.9	1.9	1.1	43.0	6.2
CT:HARTFORD	0.2	0.7	0.3	0.3	15.8	2.6	0.5	0.3	11.7	2.1
DE:WILMINGTON	0.6	0.6	0.2	0.4	14.0	2.8	0.7	0.5	11.3	2.4
FL:JACKSONVILLE	0.9	0.8	0.5	0.7	23.2	4.6	0.2	0.5	16.8	3.7
FL:MIAMI	0.4	0.3	-0.1	0.2	17.7	3.3	0.7	0.5	18.0	3.4
GA:ATLANTA	2.0	2.2	-0.2	0.8	22.3	5.3	0.6	0.8	17.8	4.5
HI:HONOLULU	0.3	0.5	0.4	0.4	11.7	2.3	0.2	0.3	6.2	1.6
IA:IOWA CITY	-0.4	0.8	1.0	0.7	23.5	4.3	2.2	1.1	20.3	3.9
ID:BOISE	0.3	0.5	0.9	0.5	35.7	5.2	4.3	1.4	27.3	4.3
ID:IDAHO FALLS	0.8	1.0	-0.9	1.5	51.8	8.1	2.0	1.3	46.1	7.4
IL:CHICAGO	0.4	0.8	0.2	0.4	36.9	7.0	0.2	0.6	30.1	6.0
IN:INDIANAPOLIS	0.5	0.8	0.3	0.4	25.2	4.9	0.7	0.8	25.6	4.9
KS:TOPEKA	0.3	0.3	0.2	0.2	3.9	0.9	0.2	0.2	2.7	0.8
ME:AUGUSTA	-1.3	1.1	0.0	0.4	17.5	3.1	0.6	0.4	11.5	2.3
MI:LANSING	0.3	0.6	0.1	0.2	10.9	3.1	0.9	0.7	10.4	3.0
MN:MINNEAPOLIS	-0.8	0.9	1.3	0.8	27.4	5.0	1.3	0.8	27.7	5.0
MO:JEFFERSON CITY	0.5	0.7	0.3	0.7	16.8	2.7	0.5	0.4	13.7	2.4
MS:JACKSON	0.1	0.1	0.0	0.0	23.4	4.0	1.1	0.7	26.5	4.4
NC:CHARLOTTE	0.4	0.5	0.5	0.4	21.8	3.6	0.6	0.5	19.7	3.4
NC:WILMINGTON	0.5	0.9	0.8	0.7	18.1	3.2	0.6	0.5	14.0	2.7
ND:BISMARCK	-0.6	1.6	1.1	1.6	49.1	8.6	0.4	0.6	32.7	6.6
NH:CONCORD	0.5	0.6	0.1	0.6	11.5	2.6	0.9	0.6	9.9	2.4
NJ:TRENTON	2.3	1.5	0.5	0.6	15.7	3.6	0.0	0.0	12.3	3.1
NM:SANTA FE	0.0	0.9	-0.3	0.8	22.1	4.0	0.6	0.7	18.3	3.5
NV:LAS VEGAS	1.1	1.3	1.0	0.8	82.2	10.5	0.9	0.8	49.1	7.3
NY:ALBANY	1.0	1.0	1.6	0.9	28.9	4.7	1.5	0.9	27.8	4.6
NY:NEW YORK CITY	0.3	0.3	0.3	0.3	24.2	3.8	1.2	0.7	17.9	3.1
NY:NIAGARA FALLS	1.1	0.8	0.3	0.5	37.9	5.3	1.8	0.8	40.1	5.5
NY:SYRACUSE	0.4	0.5	0.7	0.6	2.5	0.4	0.1	0.1	2.0	0.4
NY:YAPHANK	0.3	0.5	0.3	0.3	9.5	2.0	0.4	0.4	7.7	1.8
OH:COLUMBUS	0.9	0.6	0.1	0.3	45.1	6.2	2.0	0.8	40.2	5.6
OH:PAINESVILLE	0.5	0.8	0.4	0.4	27.8	5.0	0.3	0.4	24.0	4.5
OH:TOLEDO	0.4	0.5	0.2	0.3	23.9	3.3	1.3	0.6	21.3	3.0
OK:OKLAHOMA CITY	1.3	1.3	1.1	0.9	39.2	6.4	3.4	1.6	30.2	5.4
OR:PORTLAND	0.0	1.0	2.0	1.0	28.1	5.2	1.6	1.2	24.3	4.7
PA:COLDSBORO	-0.1	0.4	0.4	0.6	25.5	5.4	0.9	1.2	18.7	4.5
PA:HARRISBURG	0.4	0.4	0.4	0.4	15.5	2.8	0.7	0.6	17.3	3.0
PA:HARRISBURG	0.6	0.7	0.3	0.4	22.7	4.3	1.4	0.9	12.7	3.0

TABLE 10 (CONTINUED)

PLUTONIUM AND URANIUM IN AIRBORNE PARTICULATES
JULY - SEPTEMBER 1984 COMPOSITES

LOCATION	^{238}Pu aCi/m^3 ± 2s	^{239}Pu aCi/m^3 ± 2s	^{234}U aCi/m^3 ± 2s	^{235}U aCi/m^3 ± 2s	^{238}U aCi/m^3 ± 2s
RI:PROVIDENCE	0.9 0.8	0.1 0.2	20.7 3.5	0.7 0.5	20.3 3.4
SC:BARNWELL *	NA	NA	NA	NA	NA
SC:COLUMBIA	0.2 0.4	-1.3 0.7	26.0 4.0	0.6 0.4	27.2 4.1
SD:PIERRE	1.7 1.9	1.0 1.2	47.4 7.5	1.1 0.8	19.9 4.1
TN:KNOXVILLE	0.2 0.5	0.5 0.4	17.4 3.4	0.8 0.6	9.6 2.3
TN:NASHVILLE	0.6 0.9	0.0 0.6	29.7 6.3	2.8 1.7	38.4 7.4
TX:AUSTIN	-0.8 1.3	0.4 0.6	30.5 5.0	0.6 0.6	27.9 4.7
TX:EL PASO	1.4 1.1	2.3 1.3	52.4 7.6	2.0 1.2	48.5 7.2
VA:LYNCHBURG	0.5 0.6	1.0 0.5	229.5 22.2	2.5 1.0	19.4 3.2
VA:VIRGINIA BEACH	0.4 0.7	0.1 0.5	22.3 3.1	1.1 0.6	18.5 2.7
WA:SEATTLE	0.4 0.4	0.4 0.3	10.0 1.8	0.4 0.5	10.2 1.9
WA:SPOKANE	1.3 1.5	1.4 1.0	73.9 12.1	3.8 2.6	52.3 9.6
WI:MADISON	-0.1 0.1	0.3 0.3	16.0 2.5	1.5 0.6	14.0 2.3
WV:CHARLESTON	0.1 0.6	0.4 0.3	26.3 3.4	0.9 0.5	23.1 3.1

NA RESULTS NOT AVAILABLE AT THIS TIME
s SIGMA COUNTING ERROR

Krypton-85

Krypton-85 is a long-lived noble gas with a half life of 10.8 years. It is released into the atmosphere by nuclear reactor operations, fuel reprocessing, weapons tests, and research and defense related activities. Krypton-85 also occurs naturally in minor quantities primarily from the neutron capture of stable krypton-84 as well as spontaneous fission and neutron-induced fission of uranium. Monitoring of krypton-85 in the atmosphere has been conducted to identify and establish baseline levels and long-term trends.

Krypton-85 analysis began in January 1973 with sample collections and analyses being performed for 12 sampling locations. These locations were selected to provide atmospheric coverage of the United States with considerations being given to the proximity to fuel reprocessing plants, nuclear reactors, and wide geographic coverage.

Dry compressed air samples, collected at each location, are purchased from commercial air suppliers annually and shipped to the EERF where the krypton-85 is cryogenically separated and counted in a liquid scintillation system.

The Kr-85 results will be published when they are available.

ERAMS

SECTION II. 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.

Tritium concentrations for surface water samples for April - June 1985 are given in Table 11.

TABLE 11

SURFACE WATER
TRITIUM CONCENTRATION

APRIL - JUNE 1985

LOCATION	SOURCE	DATE COLLECTED	nCi/l	± 2s
AL:GORDAN	CHATTAHOOCHIE R.	4/11/85	0.3	0.2
AL:DECATUR	TENNESSEE RIVER	4/ 4/85	0.4	0.2
AL:SCOTTSBORO	TENNESSEE RIVER	4/ 5/85	0.3	0.2
AR:LITTLE ROCK	ARKANSAS RIVER	4/15/85	0.1	0.2
CA:DIABLO CANYON	PACIFIC OCEAN	4/23/85	0.2	0.2
CA:EUREKA	HUMBOLDT BAY	4/ 4/85	0.1	0.2
CA:SAN ONOFRE	PACIFIC OCEAN	6/20/85	0.2	0.2
CO:GREELEY	SOUTH PLATTE RIVER	4/11/85	0.2	0.2
CT:EAST HADDAM	CONNECTICUT RIVER	5/10/85	0.1	0.2
CT:WATERFORD	LONG ISLAND SOUND	5/ 9/85	0.1	0.2
FL:CRYSTAL RIVER	GULF OF MEXICO	4/22/85	0.2	0.2
FL:FT. PIERCE	ATLANTIC OCEAN	4/16/85	0.1	0.2
FL:HOMESTEAD	BISCAYNE BAY	5/21/85	0.1	0.2
IA:CEDAR RAPIDS	CEDAR RIVER	4/ 8/85	0.2	0.2
ID:BUHL	SNAKE RIVER	5/30/85	0.1	0.2
IL:MORRIS	ILLINOIS RIVER	6/11/85	0.2	0.2
IL:OREGON	ROCK RIVER	6/30/85	0.2	0.2
IL:ZION	LAKE MICHIGAN	5/15/85	0.3	0.2
LA:NEW ORLEANS	MISSISSIPPI RIVER	4/ 9/85	0.2	0.2
MA:PLYMOUTH	CAPE CODE BAY	4/ 2/85	0.3	0.2
MA:ROWE	DEERFIELD RIVER	5/ 3/85	0.9	0.2
MD:CONOWINGO	SUSQUEHANNA RIVER	4/ 2/85	0.3	0.2
MD:LUSBY	CHESAPEAKE BAY	4/ 9/85	0.2	0.2
ME:WISCASSET	MONTSEWAY BAY	4/ 9/85	0.2	0.2
MI:BRIDGMAN	LAKE MICHIGAN	4/15/85	0.4	0.2
MI:CHARLEVOIX	LAKE MICHIGAN	4/ 6/85	0.3	0.2
MI:MONROE	LAKE ERIE	4/ 8/85	0.2	0.2
MI:SO. HAVEN	LAKE MICHIGAN	4/15/85	0.1	0.2
MN:MONTICELLO	MISSISSIPPI RIVER	4/ 4/85	0.2	0.2
MN:RED WING	MISSISSIPPI RIVER	4/ 8/85	0.2	0.2
MS:PORT GIBSON	MISSISSIPPI RIVER	4/18/85	0.2	0.2
NC:CHARLOTTE	CATAWBA RIVER	4/15/85	0.7	0.2
NC:SOUTHPORT	ATLANTIC OCEAN	4/11/85	0.1	0.2
NE:RULO	MISSOURI RIVER	4/ 1/85	0.3	0.2
NJ:BAYSIDE	DELAWARE RIVER	4/10/85	0.2	0.2
NJ:OYSTER CREEK	OYSTER CREEK	4/17/85	0.2	0.2
NV:BOULDER CITY	COLORADO RIVER	4/11/85	0.2	0.2
NY:CHELSEA	HUDSON RIVER	4/ 2/85	0.2	0.2
NY:OSSINING	HUDSON RIVER	4/ 4/85	0.2	0.2

TABLE 11 (CONTINUED)

SURFACE WATER
TRITIUM CONCENTRATION

APRIL - JUNE 1985

LOCATION	SOURCE	DATE COLLECTED	nCi/l	± 2s
NY:OSSINING	HUDSON RIVER	5/15/85	0.3	0.2
OH:TOLEDO	LAKE ERIE	4/ 1/85	0.2	0.2
PA:DANVILLE	SUSQUEHANNA RIVER	4/10/85	0.2	0.2
SC:ALLENDALE	SAVANNAH RIVER	4/15/85	2.9	0.2
SC:BROAD RIVER	BROAD RIVER	4/18/85	0.2	0.2
SC:HARTSVILLE	LAKE ROBINSON	4/ 8/85	0.9	0.2
TN:DAISY	TENNESSEE RIVER	5/21/85	0.3	0.2
TN:KINGSTON	CLINCH RIVER	4/ 9/85	1.0	0.2
TX:EL PASO	RIO GRANDE	4/30/85	0.2	0.2
TX:MATAGORDA	COLORADO RIVER	6/ 6/85	0.1	0.2
VA:DOSWELL	NORTH ANNA RIVER	4/12/85	3.2	0.2
VA:NEWPORT NEWS	JAMES RIVER	4/30/85	0.2	0.2
WA:NORTHPORT	COLUMBIA RIVER	5/22/85	0.1	0.2
WA:RICHLAND	COLUMBIA RIVER	4/10/85	0.3	0.2
WI:TWO CREEKS	LAKE MICHIGAN	4/15/85	0.4	0.2
WI:VICTORY	MISSISSIPPI RIVER	4/ 8/85	0.2	0.2
WV:WHEELING	OHIO RIVER	4/19/85	0.1	0.2

s 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 and -239 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.

The results of tritium in drinking water analyses for April - June 1985 are shown in Table 12.

The annual alpha, beta, gamma, radium, and strontium analyses for 1984 annual drinking water samples are shown in Table 13.

TABLE 12

DRINKING WATER
TRITIUM CONCENTRATION

APRIL - JUNE 1985

LOCATION	DATE COLLECTED	nCi/l	± 2s
AK:FAIRBANKS	4/15/85	0.2	0.2
AL:DOTHAN	4/11/85	0.2	0.2
AL:MONTGOMERY	4/ 9/85	0.1	0.2
AL:MUSCLE SHOALS	4/ 4/85	0.4	0.2
AL:SCOTTSBORO	4/ 5/85	0.4	0.2
AR:LITTLE ROCK	4/15/85	0.2	0.2
CA:BERKELEY	4/ 9/85	0.1	0.2
CA:LOS ANGELES	4/ 3/85	0.1	0.2
CO:DENVER	6/17/85	0.3	0.2
CO:PLATTEVILLE	6/17/85	0.1	0.2
CT:HARTFORD	4/ 3/85	0.2	0.2
DC:WASHINGTON	4/15/85	0.2	0.2
DE:DOVER	4/ 8/85	0.2	0.2
FL:MIAMI	4/ 2/85	0.2	0.2
GA:SAVANNAH	4/ 2/85	3.3	0.2
HI:HONOLULU	4/24/85	0.1	0.2
IA:CEDAR RAPIDS	4/10/85	0.2	0.2
ID:BOISE	4/ 5/85	0.2	0.2
IL:MORRIS	4/ 1/85	0.1	0.2
IL:W. CHICAGO	4/ 1/85	0.2	0.2
KS:TOPEKA	4/ 1/85	0.2	0.2
LA:NEW ORLEANS	4/22/85	0.2	0.2
MA:LAWRENCE	5/21/85	0.1	0.2
MA:ROWE	6/ 5/85	0.1	0.2
MD:BALTIMORE	4/ 2/85	0.2	0.2
MD:CONOWINGO	4/ 2/85	0.1	0.2
ME:AUGUSTA	4/ 3/85	0.1	0.2
MI:DETROIT	4/ 3/85	0.3	0.2
MI:GRAND RAPIDS	4/ 4/85	0.2	0.2
MN:MINNEAPOLIS	4/ 3/85	0.2	0.2
MN:RED WING	4/ 8/85	0.1	0.2
MS:JACKSON	4/ 1/85	0.1	0.2
MS:PORT GIBSON	4/ 2/85	0.1	0.2
NC:CHARLOTTE	4/15/85	0.6	0.2
NC:WILMINGTON	4/12/85	0.2	0.2
ND:BISMARCK	4/ 3/85	0.2	0.2
NE:LINCOLN	4/ 1/85	0.2	0.2
NH:CONCORD	4/ 3/85	0.1	0.2

TABLE 12 (CONTINUED)

DRINKING WATER
TRITIUM CONCENTRATION

APRIL - JUNE 1985

LOCATION	DATE COLLECTED	nCi/l	± 2s
NJ:TRENTON	4/ 2/85	0.2	0.2
NJ:WARETOWN	4/17/85	0.2	0.2
NM:SANTA FE	4/15/85	0.1	0.2
NV:LAS VEGAS	4/ 8/85	0.2	0.2
NY:ALBANY	4/ 4/85	0.2	0.2
NY:NEW YORK CITY	4/ 3/85	0.1	0.2
NY:NIAGARA FALLS	4/ 3/85	0.2	0.2
OH:CINCINNATI	5/15/85	0.3	0.2
OH:COLUMBUS	4/ 8/85	0.1	0.2
OH:EAST LIVERPOOL	5/ 1/85	0.2	0.2
OH:PAINESVILLE	4/ 9/85	0.2	0.2
OH:TOLEDO	4/ 1/85	0.3	0.2
OK:OKLAHOMA CITY	4/ 3/85	0.1	0.2
OR:PORTLAND	4/ 2/85	0.1	0.2
PA:COLUMBIA	4/ 3/85	0.2	0.2
PA:HARRISBURG	4/10/85	0.2	0.2
PA:PITTSBURGH	5/ 1/85	0.2	0.2
PC:ANCON	4/26/85	0.1	0.2
RI:PROVIDENCE	4/ 2/85	0.2	0.2
SC:BARNWELL	4/26/85	0.2	0.2
SC:COLUMBIA	4/ 2/85	0.4	0.2
SC:HARTSVILLE	4/ 8/85	0.2	0.2
SC:JENKINSVILLE	4/12/85	0.2	0.2
SC:SENECA	4/10/85	0.3	0.2
TN:CHATTANOOGA	4/ 3/85	0.3	0.2
TN:KNOXVILLE	4/ 2/85	0.2	0.2
TX:AUSTIN	4/ 9/85	0.2	0.2
VA:DOSWELL	4/15/85	0.1	0.2
VA:LYNCHBURG	4/ 2/85	0.3	0.2
VA:VIRGINIA BEACH	4/15/85	0.2	0.2
VI:ST. THOMAS	4/19/85	0.2	0.1
WA:RICHLAND	4/10/85	0.3	0.2
WI:GENOA CITY	4/ 8/85	0.1	0.2
WI:MADISON	4/ 2/85	0.1	0.2

s SIGMA COUNTING ERROR

TABLE 13

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
AK:FAIRBANKS	176.7	3.0 1.5	0.1 0.8 3/19/85	-0.4 0.4 3/19/85	NA	ND
AL:DOTHAN	151.0	0.4 0.9	0.6 0.8 3/19/85	-0.3 0.4 3/19/85	NA	ND
AL:MONTGOMERY	60.2	1.0 0.8	0.1 0.3 3/19/85	0.0 0.1 3/19/85	NA	ND
AL:MUSCLE SHOALS	105.2	2.5 1.0	0.1 0.4 3/19/85	0.1 0.2 3/19/85	NA	ND
AL:SCOTTSBORO	103.0	1.4 0.9	0.5 0.5 3/19/85	0.2 0.5 3/19/85	NA	ND
AR:LITTLE ROCK	34.6	0.1 0.2	0.6 0.4 3/19/85	-0.5 0.4 3/19/85	NA	ND
CA:BERKELEY	63.6	0.5 0.6	0.4 0.4 3/19/85	0.1 0.2 3/19/85	NA	ND
CA:LOS ANGELES	393.5	4.5 2.1	4.1 2.0 3/19/85	-0.1 0.2 3/19/85	0.1 0.0	ND
CO:DENVER	172.7	1.4 0.9	2.7 1.1 3/19/85	0.0 0.1 3/19/85	0.1 0.0	ND
CO:PLATTEVILLE	962.9	9.5 4.6	18.2 6.7 3/19/85	0.2 0.2 3/19/85	0.5 0.0	ND
CT:HARTFORD	46.2	1.2 0.8	0.1 0.3 3/20/85	0.2 0.2 3/20/85	NA	ND
DC:WASHINGTON	227.0	3.4 1.5	1.6 1.2 3/19/85	-0.2 0.1 3/19/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
DE:DOVER	378.0	4.0 2.2	1.1 1.6 3/19/85	0.0 0.3 3/19/85	NA	ND
FL:MIAMI	187.3	1.7 1.4	0.2 0.7 3/19/85	0.2 0.1 3/19/85	NA	ND
FL:TAMPA	231.3	3.7 1.6	0.0 0.0 3/20/85	0.2 0.2 3/20/85	NA	ND
GA:SAVANNAH	85.8	2.1 1.0	0.0 0.3 3/20/85	0.3 0.2 3/20/85	NA	ND
HI:HONOLULU	193.0	1.3 1.6	0.2 0.7 3/19/85	0.0 0.1 3/19/85	NA	ND
IA:CEDAR RAPIDS	191.3	3.3 1.7	0.8 0.9 3/20/85	0.1 0.5 3/19/85	NA	ND
ID:BOISE	98.0	1.6 0.9	0.0 0.0 3/20/85	0.0 0.2 3/20/85	NA	ND
ID:IDAHO FALLS	271.5	2.5 1.8	1.5 1.5 3/19/85	-0.2 0.1 3/19/85	NA	ND
IL:MORRIS	328.5	20.2 3.0	23.2 3.8 3/19/85	-0.1 0.2 3/19/85	6.1 0.1	ND
IL:W. CHICAGO	264.5	18.9 2.7	27.0 3.7 3/19/85	0.0 0.1 3/19/85	* 4.0 0.1	ND
KS:TOPEKA	331.0	7.0 2.6	0.6 1.2 3/19/85	0.2 0.1 3/19/85	NA	ND
LA:NEW ORLEANS	207.7	4.4 1.7	0.2 0.9 3/20/85	0.2 0.1 3/20/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
MA:LAWRENCE	96.2	1.2 0.8	0.1 0.4 3/20/85	0.1 0.2 3/20/85	NA	ND
MA:ROWE	49.8	0.6 0.7	0.0 0.3 3/20/85	-0.2 0.4 3/20/85	NA	ND
MD:BALTIMORE	98.8	3.9 1.1	0.0 0.4 3/20/85	0.1 0.1 3/20/85	NA	ND
MD:CONOWINGO	226.3	2.8 1.6	0.0 0.0 3/20/85	-0.2 0.3 3/20/85	NA	ND
ME:AUGUSTA	89.4	0.9 0.7	0.6 0.5 3/20/85	0.4 0.3 3/20/85	NA	ND
MI:DETROIT	124.5	2.1 1.1	0.3 0.6 3/27/85	0.9 0.3 3/27/85	NA	ND
MI:GRAND RAPIDS	166.7	1.9 1.3	0.4 0.8 3/27/85	0.9 0.4 3/27/85	NA	ND
MN:MINNEAPOLIS	120.8	2.4 1.0	0.2 0.5 3/27/85	0.4 0.3 3/27/85	NA	ND
MN:RED WING	245.5	9.3 2.3	7.0 2.0 3/27/85	0.0 0.2 3/27/85	2.1 0.0	ND
MS:JACKSON	71.4	2.0 1.0	0.3 0.3 3/27/85	0.3 0.2 3/27/85	NA	ND
MS:PORT GIBSON	389.5	3.2 2.0	1.0 1.6 3/27/85	-0.1 0.3 3/27/85	NA	ND
MT:HELENA	125.2	2.9 1.0	0.8 0.7 4/ 5/85	0.2 0.2 4/ 5/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/1	GROSS BETA DATE CTD. pCi/1 ± 2s	GROSS ALPHA DATE CTD. pCi/1 ± 2s	^{90}Sr pCi/1 ± 2s	^{226}Ra pCi/1 ± 2s	SPECIFIC GAMMA ACTIVITY
NC:CHARLOTTE	52.6	0.9 0.8	0.1 0.3 4/ 5/85	0.0 0.0 4/ 5/85	NA	ND
NC:WILMINGTON	84.8	1.9 0.9	-0.1 0.3 4/ 5/85	0.0 0.3 4/ 5/85	NA	ND
ND:BISMARCK	304.5	2.7 2.2	-0.1 0.7 4/ 5/85	0.2 0.1 4/ 5/85	NA	ND
NE:LINCOLN	344.5	9.3 2.5	3.3 1.7 4/ 5/85	0.3 0.2 4/ 5/85	0.3 0.0	ND
NH:CONCORD	56.6	1.3 0.8	-0.1 0.3 4/ 5/85	-0.2 0.2 4/ 5/85	NA	ND
NJ:TRENTON	150.8	0.6 1.0	0.0 0.0 4/ 5/85	0.3 0.2 4/ 5/85	NA	ND
NJ:WARETOWN	58.4	2.1 0.7	1.6 0.5 4/ 5/85	0.1 0.1 4/ 5/85	NA	ND
NM:SANTA FE	183.3	0.9 0.9	1.8 0.9 4/ 5/85	0.1 0.1 4/ 5/85	NA	ND
NV:LAS VEGAS	614.0	4.5 3.7	6.4 3.3 4/ 5/85	0.8 0.1 4/ 5/85	0.1 0.0	ND
NY:ALBANY	78.4	0.9 0.8	-0.1 0.3 4/ 8/85	0.1 0.1 4/ 8/85	NA	ND
NY:NEW YORK CITY	38.0	0.5 0.8	-0.1 0.2 4/ 8/85	0.3 0.2 4/ 8/85	NA	ND
NY:NIAGARA FALLS	148.0	1.6 1.2	0.7 0.6 4/ 8/85	0.6 0.3 4/ 8/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
NY:SYRACUSE	141.5	3.1 1.3	0.1 0.4 4/ 8/85	0.4 0.3 4/ 8/85	NA	ND
OH:CINCINNATI	184.0	1.4 1.3	0.0 0.0 4/ 8/85	-0.3 0.1 4/ 8/85	NA	ND
OH:COLUMBUS	271.5	1.5 1.8	0.6 0.9 4/ 8/85	0.4 0.1 4/ 8/85	NA	ND
OH:EAST LIVERPOOL	204.5	2.3 2.0	0.4 0.7 4/ 8/85	0.4 0.3 4/ 8/85	NA	ND
OH:PAINESVILLE	171.7	1.5 1.4	0.0 0.0 4/ 8/85	0.5 0.4 4/ 8/85	NA	ND
OH:TOLEDO	115.2	1.9 0.9	-0.1 0.5 4/11/85	0.1 0.1 4/11/85	NA	ND
OK:OKLAHOMA CITY	128.3	2.5 1.2	0.2 0.6 4/11/85	0.5 0.1 4/11/85	NA	ND
OR:PORTLAND	24.6	0.2 0.6	0.2 0.2 4/11/85	0.0 0.2 4/11/85	NA	ND
PA:COLUMBIA	216.0	1.7 1.3	-0.1 0.7 4/11/85	0.1 0.2 4/11/85	NA	ND
PA:HARRISBURG	39.2	1.0 0.9	0.3 0.3 4/11/85	0.2 0.2 4/11/85	NA	ND
PA:PITTSBURGH	163.7	1.6 1.2	0.2 0.7 4/11/85	0.3 0.1 4/11/85	NA	ND
PC:ANCON	75.0	1.3 1.0	0.0 0.3 4/11/85	0.0 0.0 4/11/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
RI:PROVIDENCE	57.4	1.3 0.8	0.1 0.3 4/11/85	0.3 0.1 4/11/85	NA	ND
SC:BARNWELL	27.0	0.8 0.7	0.1 0.2 4/12/85	0.2 0.2 4/12/85	NA	ND
SC:COLUMBIA	64.2	2.1 0.9	0.0 0.0 4/12/85	-0.2 0.1 4/12/85	NA	ND
SC:HARTSVILLE	38.4	0.2 0.3	0.9 0.4 4/12/85	0.1 0.1 4/12/85	NA	ND
SC:JENKINSVILLE	121.2	1.5 0.3	14.6 1.8 4/22/85	0.0 0.1 4/22/85	0.8 0.0	ND
SC:SENECA	86.0	1.7 0.5	7.0 1.1 4/ 5/85	-0.2 0.1 4/ 5/85	0.4 0.0	ND
TN:CHATTANOOGA	78.2	1.0 0.6	0.7 0.4 4/ 5/85	0.3 0.6 4/ 5/85	NA	ND
TN:KNOXVILLE	118.0	1.4 1.2	-0.1 0.5 4/15/85	0.3 0.5 4/15/85	NA	ND
TX:AUSTIN	277.5	3.8 2.0	0.6 1.2 4/15/85	-0.2 0.4 4/15/85	NA	ND
VA:DOSWELL	124.0	3.4 1.2	0.1 0.5 4/15/85	-0.1 0.2 4/15/85	NA	ND
VA:LYNCHBURG	51.6	0.6 0.9	0.0 0.2 4/15/85	-0.1 0.4 4/15/85	NA	ND
VA:VIRGINIA BEACH	112.2	2.2 0.9	0.2 0.4 4/15/85	0.3 0.4 4/15/85	NA	ND

TABLE 13 (continued)

DRINKING WATER
ALPHA, BETA AND GAMMA CONCENTRATION

1984

ANNUAL ANALYSES

LOCATION	TOTAL SOLIDS mg/l	GROSS BETA DATE CTD. pCi/l ± 2s	GROSS ALPHA DATE CTD. pCi/l ± 2s	^{90}Sr pCi/l ± 2s	^{226}Ra pCi/l ± 2s	SPECIFIC GAMMA ACTIVITY
VI:ST. THOMAS	59.0	0.7 0.9	0.1 0.2 4/15/85	-0.2 0.1 4/15/85	NA	ND
WA:RICHLAND	82.0	1.3 0.8	0.1 0.4 4/15/85	0.1 0.2 4/15/85	NA	ND
WA:SEATTLE	32.8	0.3 0.5	0.3 0.3 4/15/85	0.0 0.1 4/15/85	NA	ND
WI:GENOA CITY	188.3	0.9 1.1	1.0 0.8 4/15/85	-0.2 0.1 4/15/85	NA	ND
WI:MADISON	180.5	0.2 0.5	1.2 0.9 4/15/85	-0.2 0.2 4/15/85	NA	ND

* RA-228 RESULTS 3.4 ± 1.1 pCi/l

ND NO ACTIVITY DETECTABLE
NA NO ANALYSIS
s SIGMA COUNTING ERROR

SECTION III. External Gamma Ambient Monitoring Program

The external gamma monitoring program, which began in October 1978, provides a continuous measurement of ambient gamma exposure rates, including cosmic, at selected sites throughout the continental United States. Data from this program are used to evaluate fluctuations in natural background due to variations in environmental conditions and to provide a means of monitoring any significant increases in ambient gamma levels. The program consists of approximately 22 sites representing a wide geographic coverage throughout the country.* Although exposure measurements at these few sites are not totally representative of nationwide exposures, they will be indicative of national trends.

The monitoring program utilizes CaF_2:Mn thermoluminescent dosimeters(TLD's). These dosimeters are commercially available glass-bulb type dosimeters with energy compensating shields. A group of three TLD's is located at each station or site. Dosimeters are annealed by the station operator prior to positioning in the field. The dosimeters are returned to EERF for readout approximately every three months. Several dosimeters are annealed by the station operator as controls and returned with the exposed field dosimeters to correct for any exposures accumulated during shipment.

Results from the period April - June 1985 are shown in Table 14.

* Some of these sites may not return dosimeters each period and consequently the number of sites listed may vary slightly.

TABLE 14

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

LOCATION	DATE RANGE	INTEGRATED EXPOSURE	EXPOSURE RATE	
		MR	MICRO R/HR ± 2 s *	
AL:MONTGOMERY	40485- 70385	17.6	8.2	4.8
CA:BERKELEY	40485- 70185	14.8	7.0	5.0
CO:DENVER	40285- 70385	33.9	15.4	6.9
FL:ORLANDO	40285- 70185	14.8	6.8	9.4
ID:BOISE	41585- 70185	24.5	13.3	5.3
IL:CHICAGO	40285- 70385	20.0	9.0	6.3
ND:BISMARCK	40385- 62885	21.9	10.6	8.2
NJ:TRENTON	40385- 62885	25.4	12.3	2.9
NM:SANTA FE	40285- 70585	33.7	15.0	6.9
NV:LAS VEGAS	40885- 70185	15.6	7.7	7.2
NY:NEW YORK	50185- 72485	24.3	12.1	7.3
OH:COLUMBUS	40185- 70985	17.2	7.2	5.8
OR:PORTLAND	40385- 70285	18.3	8.7	3.5
PA:HARRISBURG	40185- 70885	15.1	6.4	6.2
PA:PITTSBURGH	40185- 70185	26.6	12.2	5.9
RI:PROVIDENCE	40985- 62885	23.2	12.1	2.5
SC:BARNWELL	41185- 71185	18.4	8.4	7.3
SC:COLUMBIA	40285- 62885	19.4	9.3	4.6
TN:KNOXVILLE	40185- 70285	24.3	11.0	4.1
VA:RICHMOND	40185- 70985	21.2	8.9	3.7
VT:MONTPELIER	40585- 70285	18.1	8.6	10.1

* s = SIGMA ERROR (IN PERCENT)

SECTION IV. Milk Program

Pasteurized Milk

This is a cooperative program with the Dairy and Lipid Products Branch, Milk Sanitation Section, Food and Drug Administration. 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 contains several of the biologically important contaminants resulting 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 one or more located in each state and Puerto Rico. 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 iodine-131, barium-140, cesium-137, and potassium. All 65 samples are analyzed annually in July for strontium-89, and 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-89 and strontium-90.

Iodine-131, barium-140, cesium-137 and potassium are determined by gamma spectral analysis. Strontium-89 and strontium-90 are determined by beta counting a total strontium precipitate which has been chemically separated by ion-exchange.

The values from the pasteurized milk samples for April - June 1985 are shown in Tables 15 - 17.

Strontium values from regional composite samples collected January - April - June are shown in Table 18.

TABLE 15

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

APRIL 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s		^{140}Ba pCi/l±2s		^{131}I pCi/l±2s	
AL:MONTGOMERY	4/ 5/85	1.43 0.12	4	7	5	9	4	7
AR:LITTLE ROCK	4/ 9/85	1.53 0.13	4	7	-4	9	6	7
AZ:PHOENIX	4/10/85	1.56 0.13	1	7	4	9	4	7
CA:LOS ANGELES	4/15/85	1.50 0.12	-4	7	0	9	3	7
CA:SACRAMENTO	4/ 1/85	1.54 0.13	3	7	0	9	6	7
CA:SAN FRANCISCO	4/26/85	1.63 0.13	2	7	-1	9	3	7
CT:HARTFORD	4/15/85	1.57 0.13	5	7	-2	9	-3	7
FL:TAMPA	4/ 2/85	1.60 0.13	6	7	-5	9	3	7
GA:ATLANTA	4/ 7/85	1.41 0.12	-1	7	5	9	2	7
HI:HONOLULU	4/ 2/85	1.66 0.13	3	7	-7	9	3	7
IA:DES MOINES	4/ 8/85	1.64 0.13	5	7	-1	9	1	7
IL:CHICAGO	4/ 1/85	1.57 0.09	1	5	4	6	4	5
IN:INDIANAPOLIS	4/ 8/85	1.53 0.13	8	7	-9	9	2	7
KS:WICHITA	4/ 8/85	1.47 0.12	1	7	-3	9	5	7
KY:LOUISVILLE	4/ 1/85	1.53 0.13	-4	7	4	9	5	7
LA:NEW ORLEANS	4/ 2/85	1.56 0.09	4	5	3	6	1	5
MA:BOSTON	4/ 1/85	1.59 0.13	3	7	5	9	1	7
MD:BALTIMORE	4/ 4/85	1.64 0.13	2	7	5	9	-2	7
ME:PORTLAND	4/ 3/85	1.57 0.09	6	5	4	6	6	5
MI:DETROIT	4/10/85	1.55 0.13	-4	7	-4	9	0	7
MI:GRAND RAPIDS	4/ 8/85	1.57 0.13	0	7	1	9	2	7
MN:MINNEAPOLIS	4/ 8/85	1.51 0.13	-3	7	1	9	3	7
MN:ST. PAUL	4/ 3/85	1.57 0.13	2	7	7	9	1	7
MO:KANSAS CITY	4/11/85	1.58 0.09	2	5	9	6	4	5
MO:ST. LOUIS	4/ 2/85	1.61 0.13	4	7	1	9	6	7
MS:JACKSON	4/ 8/85	1.52 0.13	9	7	1	9	3	7
MT:HELENA	4/10/85	1.52 0.09	0	5	-2	6	3	5
NC:CHARLOTTE	4/ 3/85	1.77 0.25	14	18	-1	19	11	14
ND:MINOT	4/19/85	1.56 0.13	-2	7	7	9	1	7
NE:OMAHA	4/ 5/85	1.19 0.12	2	7	3	9	2	7
NH:MANCHESTER	4/ 1/85	1.49 0.12	1	7	4	9	1	7
NJ:TRENTON	4/10/85	1.64 0.13	0	7	2	9	3	7
NM:ALBUQUERQUE	4/15/85	1.58 0.13	1	7	2	9	4	7
NV:LAS VEGAS	4/ 9/85	1.52 0.09	3	5	-2	6	4	5
NY:BUFFALO	4/16/85	1.57 0.09	4	5	-5	6	1	5
NY:NEW YORK CITY	4/ 1/85	1.59 0.13	6	7	-1	9	2	7
NY:SYRACUSE	4/ 1/85	1.60 0.13	-3	7	-1	9	9	7
OH:CINCINNATI	4/ 2/85	1.56 0.13	6	7	-1	9	5	7

TABLE 15 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

APRIL 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s	^{140}Ba pCi/l±2s	^{131}I pCi/l±2s
OH:CLEVELAND	4/ 8/85	1.53 0.13	1 7	0 9	4 7
OK:OKLAHOMA CITY	4/22/85	1.66 0.24	-2 18	6 19	1 14
OR:PORTLAND	4/ 8/85	1.54 0.08	2 4	0 5	3 4
PA:PITTSBURGH	4/ 9/85	1.55 0.13	7 7	-4 9	1 7
SD:RAPID CITY	4/ 1/85	1.47 0.12	-2 7	0 9	5 7
TN:CHATTANOOGA	4/ 8/85	1.60 0.09	3 5	-2 6	3 5
TN:KNOXVILLE	4/ 8/85	1.47 0.12	5 7	1 9	1 7
TN:MEMPHIS	4/25/85	1.67 0.13	2 7	-3 9	1 7
UT:SALT LAKE CITY	4/ 8/85	1.52 0.13	2 7	-6 9	5 7
VA:NORFOLK	4/18/85	1.43 0.08	5 5	1 6	2 5
VT:BURLINGTON	4/ 8/85	1.47 0.12	0 7	-1 9	5 7
WA:SEATTLE	4/29/85	1.50 0.09	1 5	-1 6	2 5
WA:SPOKANE	4/ 2/85	1.62 0.13	5 7	-2 9	4 7
WI:MILWAUKEE	4/ 5/85	1.57 0.13	-1 7	3 9	1 7
WV:CHARLESTON	4/23/85	1.78 0.25	21 18	-9 18	3 14
WY:LARAMIE	4/ 2/85	1.60 0.13	-2 7	8 9	2 7

s SIGMA COUNTING ERROR

TABLE 16

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

MAY 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s		^{140}Ba pCi/l±2s		^{131}I pCi/l±2s	
AL:MONTGOMERY	5/ 8/85	1.51 0.13	6	7	4	9	2	7
AR:LITTLE ROCK	5/ 6/85	1.60 0.09	6	5	0	6	2	5
AZ:PHOENIX	5/ 7/85	1.56 0.09	8	5	1	6	4	5
CA:LOS ANGELES	5/23/85	1.61 0.13	4	7	-3	9	6	7
CA:SACRAMENTO	5/ 1/85	1.65 0.13	-1	7	-2	9	0	7
CA:SAN FRANCISCO	5/10/85	1.54 0.13	4	7	0	9	1	7
CO:DENVER	5/ 1/85	1.42 0.08	1	5	0	6	2	5
CO:DENVER	5/31/85	1.55 0.13	-3	7	4	9	4	7
CT:HARTFORD	5/ 6/85	1.51 0.13	3	7	6	9	1	7
FL:TAMPA	5/ 6/85	1.52 0.13	6	7	3	9	-1	7
GA:ATLANTA	5/ 8/85	1.49 0.12	0	7	1	9	2	7
HI:HONOLULU	5/ 7/85	1.62 0.13	1	7	-2	9	4	7
IA:DES MOINES	5/ 6/85	1.53 0.13	3	7	-3	9	0	7
ID:IDAHO FALLS	5/ 6/85	1.54 0.13	5	7	-3	9	3	7
IL:CHICAGO	5/ 6/85	1.65 0.13	2	7	-2	9	2	7
IN:INDIANAPOLIS	5/ 6/85	1.60 0.09	0	5	0	6	0	5
KS:WICHITA	5/ 6/85	1.53 0.13	2	7	2	9	1	7
KY:LOUISVILLE	5/ 7/85	1.62 0.13	-1	7	1	9	2	7
LA:NEW ORLEANS	5/13/85	1.54 0.13	6	7	0	9	5	7
MA:BOSTON	5/ 7/85	1.51 0.13	1	7	3	9	3	7
MD:BALTIMORE	5/ 3/85	1.64 0.13	-6	7	1	9	5	7
ME:PORTLAND	5/ 8/85	1.64 0.13	7	7	1	9	5	7
MI:DETROIT	5/ 9/85	1.59 0.13	-3	7	0	9	6	7
MI:GRAND RAPIDS	5/ 6/85	1.67 0.13	-5	7	-4	9	9	7
MN:MINNEAPOLIS	5/ 6/85	1.65 0.13	2	7	-2	9	6	7
MN:ST. PAUL	5/ 6/85	1.78 0.25	9	18	12	19	-3	14
MO:KANSAS CITY	5/10/85	1.58 0.13	1	7	4	9	-3	7
MO:ST. LOUIS	5/ 8/85	1.49 0.09	4	5	4	6	2	5
MS:JACKSON	5/ 7/85	1.50 0.12	7	7	6	9	1	7
MT:HELENA	5/10/85	1.57 0.13	5	7	1	9	2	7
NC:CHARLOTTE	5/ 3/85	1.98 0.25	-4	18	-1	19	0	14
NE:OMAHA	5/10/85	1.42 0.12	-1	7	-3	9	4	7
NH:MANCHESTER	5/ 6/85	1.53 0.13	3	7	4	9	-1	7
NJ:TRENTON	5/ 8/85	1.57 0.09	-1	5	4	6	3	5
NM:ALBUQUERQUE	5/ 7/85	1.50 0.12	4	7	-2	9	3	7
NV:LAS VEGAS	5/13/85	1.48 0.12	1	7	5	9	0	7
NY:BUFFALO	5/13/85	1.65 0.13	0	7	6	9	0	7
NY:NEW YORK CITY	5/ 6/85	1.65 0.13	5	7	-1	9	-2	7

TABLE 16 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

MAY 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s	^{140}Ba pCi/l±2s	^{131}I pCi/l±2s
NY:SYRACUSE	5/ 6/85	1.51 0.13	5 7	-1 9	-3 7
OH:CINCINNATI	5/ 7/85	1.41 0.12	0 7	2 9	2 7
OH:CLEVELAND	5/ 7/85	1.51 0.13	0 7	9 9	0 7
OK:OKLAHOMA CITY	5/ 6/85	1.46 0.12	0 7	-1 9	1 7
OR:PORTLAND	5/ 6/85	1.62 0.13	-2 7	1 9	-1 7
PA:PHILADELPHIA	5/ 6/85	1.48 0.12	2 7	-1 9	7 7
PA:PITTSBURGH	5/ 9/85	1.60 0.17	5 13	0 13	10 10
PC:CRISTOBAL	5/30/85	1.48 0.08	6 5	-6 6	5 5
PR:SAN JUAN	5/ 1/85	1.61 0.13	4 7	1 9	3 7
PR:SAN JUAN	5/30/85	1.58 0.13	0 7	-3 9	2 7
SC:CHARLESTON	5/16/85	1.56 0.13	6 7	-1 9	2 7
SD:RAPID CITY	5/ 6/85	1.50 0.12	-1 7	-2 9	7 7
TN:CHATTANOOGA	5/ 6/85	1.52 0.13	5 7	-2 9	-2 7
TN:KNOXVILLE	5/ 6/85	1.47 0.12	-1 7	-2 9	-6 7
TN:MEMPHIS	5/22/85	1.59 0.13	-1 7	3 9	3 7
UT:SALT LAKE CITY	5/ 6/85	1.50 0.12	0 7	3 9	0 7
VA:NORFOLK	5/ 9/85	1.62 0.13	-3 7	-4 9	5 7
VT:BURLINGTON	5/ 1/85	1.50 0.09	0 5	3 6	2 5
WA:SPOKANE	5/ 6/85	1.59 0.13	5 7	-5 9	1 7
WI:MILWAUKEE	5/ 6/85	1.75 0.13	-4 7	3 9	0 7
WY:LARAMIE	5/ 7/85	1.74 0.24	11 18	9 19	1 14

s SIGMA COUNTING ERROR

TABLE 17

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JUNE 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s	^{140}Ba pCi/l±2s	^{131}I pCi/l±2s
AK:ANCHORAGE	6/ 3/85	1.65 0.09	6 5	4 6	5 5
AL:MONTGOMERY	6/ 6/85	1.57 0.13	3 7	-2 9	6 7
AR:LITTLE ROCK	6/10/85	1.67 0.13	3 7	3 9	4 7
AZ:PHOENIX	6/ 6/85	1.58 0.13	-3 7	3 9	-5 7
CA:SACRAMENTO	6/ 3/85	1.58 0.08	3 4	-1 5	3 4
CA:SAN FRANCISCO	6/10/85	1.67 0.13	-2 7	0 9	3 7
CT:HARTFORD	6/ 3/85	1.48 0.12	4 7	4 9	0 7
GA:ATLANTA	6/ 5/85	1.55 0.13	6 7	-2 9	7 7
HI:HONOLULU	6/ 6/85	1.72 0.13	1 7	-3 9	4 7
IA:DES MOINES	6/ 4/85	1.54 0.09	1 5	2 6	-2 5
IL:CHICAGO	6/ 3/85	1.60 0.13	4 7	2 9	3 7
IN:INDIANAPOLIS	6/ 3/85	1.45 0.12	5 7	-5 9	3 7
KS:WICHITA	6/10/85	1.48 0.12	3 7	-1 9	4 7
KY:LOUISVILLE	6/ 4/85	1.56 0.13	0 7	-2 9	2 7
MA:BOSTON	6/ 4/85	1.58 0.13	5 7	5 9	1 7
MD:BALTIMORE	6/ 7/85	1.66 0.13	3 7	-1 9	7 7
ME:PORTLAND	6/ 5/85	1.55 0.13	9 7	0 9	-3 7
MI:DETROIT	6/ 7/85	1.58 0.13	4 7	4 9	1 7
MI:GRAND RAPIDS	6/ 3/85	1.62 0.13	3 7	3 9	3 7
MN:MINNEAPOLIS	6/ 3/85	1.67 0.13	5 7	-3 9	1 7
MN:ST. PAUL	6/ 5/85	1.76 0.25	10 18	14 19	2 14
MO:KANSAS CITY	6/20/85	1.60 0.13	6 7	-2 9	7 7
MO:ST. LOUIS	6/ 5/85	1 55 0.13	3 7	0 9	1. 7
MS:JACKSON	6/11/85	1.55 0.13	2 7	1 9	4 7
MT:HELENA	6/13/85	1.49 0.12	-1 7	4 9	3 7
NC:CHARLOTTE	6/10/85	1.82 0.25	24 18	12 19	9 14
NE:OMAHA	6/ 7/85	1.24 0.12	-2 7	6 9	8 7
NH:MANCHESTER	6/ 3/85	1.65 0.09	2 5	4 6	0 5
NJ:TRENTON	6/ 5/85	1.52 0.09	-1 5	1 6	7 5
NM:ALBUQUERQUE	6/ 4/85	1.52 0.09	0 5	-2 6	4 5
NY:BUFFALO	6/17/85	1.66 0.13	3 7	-2 9	6 7
NY:NEW YORK CITY	6/ 3/85	1.75 0.13	6 7	-1 9	0 7
NY:SYRACUSE	6/ 3/85	1.52 0.09	6 5	2 6	4 5
OH:CLEVELAND	6/10/85	1.53 0.13	2 7	-2 9	1 7
OK:OKLAHOMA CITY	6/ 3/85	1.41 0.12	0 7	5 9	1 7
OR:PORTLAND	6/ 3/85	1.56 0.13	1 7	-6 9	7 7
PA:PHILADELPHIA	6/ 3/85	1.60 0.09	1 5	-1 6	4 5
PA:PITTSBURGH	6/ 6/85	1.55 0.13	4 7	-3 9	6 7

TABLE 17 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JUNE 1985

LOCATION	DATE COLLECTED	K g/l±2s	^{137}Cs pCi/l±2s	^{140}Ba pCi/l±2s	^{131}I pCi/l±2s
SC:CHARLESTON	6/13/85	1.50 0.09	2 5	0 6	6 5
SD:RAPID CITY	6/ 3/85	1.54 0.09	3 5	3 6	5 5
TN:CHATTANOOGA	6/ 3/85	1.47 0.12	4 7	3 9	4 7
TN:KNOXVILLE	6/ 3/85	1.49 0.12	2 7	5 9	3 7
UT:SALT LAKE CITY	6/ 3/85	1.57 0.13	1 7	2 9	2 7
VA:NORFOLK	6/ 7/85	1.54 0.13	3 7	1 9	4 7
VT:BURLINGTON	6/ 6/85	1.56 0.13	4 7	7 9	2 7
WA:SEATTLE	6/11/85	1.51 0.12	6 7	-6 9	3 7
WI:MILWAUKEE	6/ 3/85	1.70 0.09	6 5	-2 6	2 5
WV:CHARLESTON	6/11/85	1.60 0.24	10 18	8 19	6 14
WY:LARAMIE	6/ 5/85	1.55 0.13	-2 7	7 9	2 7

s SIGMA COUNTING ERROR

TABLE 18

STRONTIUM-90 AND STRONTIUM-89 IN PASTEURIZED MILK

EPA REGIONAL COMPOSITES

APRIL - JUNE 1985

EPA REGION	^{90}Sr pCi/l ± 2s		^{89}Sr pCi/l ± 2s*	
I	2.8	1.1	-2	2
II	2.8	0.5	-1	1
III	2.5	1.0	0	2
IV	2.8	0.9	-1	2
V	2.1	1.1	0	2
VI	2.5	0.9	0	2
VII	2.8	1.0	-1	2
VIII	1.7	0.8	0	2
IX	0.9	0.5	0	1
X	1.3	0.8	0	2

s SIGMA COUNTING ERROR
s* ANALYTICAL ERROR TERM WHICH CLOSELY APPROXIMATES THE COUNTING ERROR

Carbon-14 in Milk

Nine stations, chosen for wide geographical distribution, contribute milk samples for annual analysis for carbon-14. These samples have monitored the carbon-14 levels in the food chain resulting from nuclear testing.

Analysis consists of combusting the samples and measuring released carbon dioxide through liquid scintillation.

Data will be published as it becomes available.

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