

United States
Environmental Protection
Agency

Eastern Environmental
Radiation Facility
1890 Federal Drive
Montgomery, AL 36109

EPA520/5-87-018
August 1987

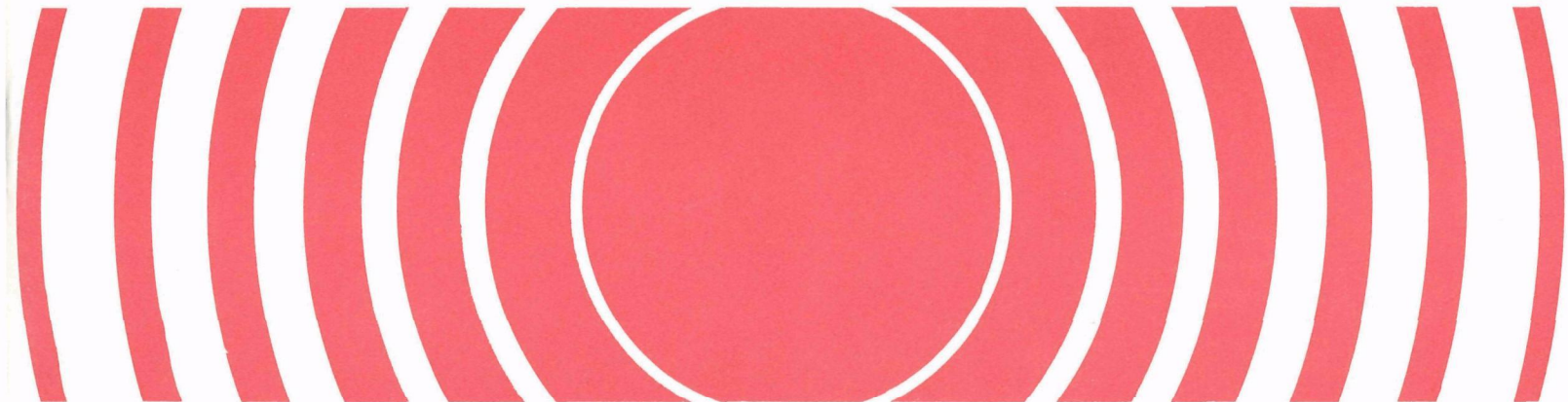
Radiation



Environmental Radiation Data

Report 49

January 1987 - March 1987



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 49

January - March 1987

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 environment. The radiation analyses performed on these samples include gross alpha and gross beta levels, gamma analyses for fission products, and specific analyses for uranium, plutonium, strontium, iodine, radium, 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 (EPA 520/5-84-006).

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D A T A

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DATA - Reporting Rationale and Procedures

In 1973, the U.S. Environmental Protection Agency's Office of Radiation Programs established the Environmental Radiation Ambient 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 calculated results indicate, whether the numbers are negative, zero, or positive.

Reporting Rationale

Frequently, concentrations of radionuclides 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 of the sample.

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 typical 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

No more than three significant figures will be reported. If a datum contains more than three figures, it will be rounded off to three figures.

(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

| <u>Radionuclide</u> | <u>Media</u> | <u>Reporting Units</u> | <u>Reporting Increments</u> | <u>Minimum Detectable Levels</u> |
|-------------------------------|---------------|------------------------|-----------------------------|--|
| 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, 240 | Air | aCi/m ³ | .1 aCi/m ³ | .015 pCi ^(b) per sample (c) |
| | 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 |

| <u>Radionuclide</u> | <u>Media</u> | <u>Reporting Units</u> | <u>Reporting Increments</u> | <u>Minimum Detectable Levels</u> |
|---------------------|--|------------------------|-----------------------------|----------------------------------|
| 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 ^(d) |
| Iodine-131 | Milk | pCi/l | 1 pCi/l | 10 pCi/l ^(d) |
| | Water | pCi/l | 1 pCi/l | 10 pCi/l ^(d) |
| | Water (specific radiochemical analysis) | pCi/l | .1 pCi/l | .4 pCi/l ^(d) |
| 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 ^(d) |
| | Water | pCi/l | 1 pCi/l | 10 pCi/l ^(d) |
| 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/m² would be dependent on precipitation (mm).
(b) This value in terms of pCi/m³ would be dependent on the air volume.
(c) Measurement by alpha spectroscopy which includes contributions of plutonium-239 and plutonium-240.
(d) 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 gross beta counts greater than 1 pCi/m³. The laboratory obtained values are usually lower than the field estimates due to the decay of naturally occurring radionuclides between the times of the two measurements.

Precipitation samples are collected at the 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, -240, and uranium-234, -235, and -238 analyses are performed on samples which exceed 2 pCi/liter gross alpha.

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

Tables 2 - 4 contain the data in airborne particulate samples for January - March 1987.

Tables 5 - 7 contain the data in precipitation samples for January - March 1987.

Data for the tritium in precipitation samples for January - March 1987 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
JANUARY 1987

| 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 | 0.00 | 0.01 |
| AL:MONTGOMERY | 8 | 1.0 | 0.1 | 0.3 | 0.02 | 0.01 | 0.01 |
| AR:LITTLE ROCK | 9 | 0.2 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| AZ:PHOENIX | 9 | 3.1 | 0.1 | 1.5 | 0.03 | 0.00 | 0.02 |
| CA:LOS ANGELES | 7 | 0.7 | 0.1 | 0.3 | 0.02 | 0.01 | 0.01 |
| CO:DENVER | 8 | 0.6 | 0.1 | 0.3 | 0.02 | 0.01 | 0.01 |
| CT:HARTFORD | 9 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| DE:WILMINGTON | 9 | 0.4 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| FL:JACKSONVILLE | 9 | 0.3 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| FL:MIAMI | 9 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| GA:ATLANTA | 4 | 0.0 | 0.0 | 0.0 | 0.03 | 0.01 | 0.02 |
| HI:HONOLULU | 9 | 0.6 | 0.1 | 0.2 | 0.01 | 0.00 | 0.01 |
| IA:IOWA CITY | 9 | 0.5 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| ID:BOISE | 8 | 0.3 | 0.1 | 0.2 | 0.03 | 0.01 | 0.02 |
| ID:IDAHO FALLS | 8 | 0.0 | 0.0 | 0.0 | 0.04 | 0.01 | 0.02 |
| IL:CHICAGO | 9 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| IN:INDIANAPOLIS | 7 | 0.5 | 0.1 | 0.2 | 0.02 | 0.01 | 0.02 |
| KS:TOPEKA | 7 | 1.6 | 0.1 | 0.5 | 0.02 | 0.01 | 0.01 |
| KY:FRANKFORT | 7 | 0.8 | 0.2 | 0.4 | 0.02 | 0.01 | 0.01 |
| LA:NEW ORLEANS | 3 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| MA:LAWRENCE | 9 | 0.2 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| ME:AUGUSTA | 6 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| MI:LANSING | 9 | 0.1 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| MN:MINNEAPOLIS | 9 | 0.8 | 0.1 | 0.3 | 0.03 | 0.01 | 0.01 |
| MO:JEFFERSON CITY | 9 | 1.0 | 0.1 | 0.4 | 0.02 | 0.01 | 0.01 |
| MS:JACKSON | 9 | 0.4 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| NC:CHARLOTTE | 9 | 0.3 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| NC:WILMINGTON | 7 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| ND:BISMARCK | 9 | 0.6 | 0.1 | 0.3 | 0.01 | 0.01 | 0.01 |
| NE:LINCOLN | 5 | 1.4 | 0.1 | 0.7 | 0.01 | 0.01 | 0.01 |
| NH:CONCORD | 9 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| NJ:TRENTON | 9 | 0.2 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| NM:SANTA FE | 8 | 0.4 | 0.0 | 0.2 | 0.04 | 0.01 | 0.01 |
| NV:LAS VEGAS | 8 | 0.6 | 0.0 | 0.2 | 0.03 | 0.01 | 0.02 |
| NY:ALBANY | 4 | 0.1 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| NY:NEW YORK CITY | 9 | 0.2 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| NY:NIAGARA FALLS | 9 | 0.5 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |

TABLE 2 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
JANUARY 1987

| LOCATION | # SAM | 5-HR FIELD ESTIMATE | | | EERF LAB MEASUREMENT | | |
|--|-------|-----------------------|-----|-----|-----------------------|--------------------|------|
| | | MAX | MIN | AVG | MAX | MIN | AVG |
| | | (pCi/m ³) | | | (pCi/m ³) | | |
| NY:SYRACUSE | 4 | 0.1 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| NY:YAPHANK | 8 | 0.1 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| OH:COLUMBUS | 8 | 0.2 | 0.1 | 0.1 | 0.02 | 0.01 | 0.01 |
| OH:PAINESVILLE | 8 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| OH:TOLEDO | 9 | 0.3 | 0.0 | 0.1 | 0.03 | 0.01 | 0.02 |
| OK:OKLAHOMA CITY | 8 | 0.5 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| OR:PORTLAND | 9 | 0.0 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| PA:GOLDSBORO | 7 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| PA:HARRISBURG | 9 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| PA:PHILADELPHIA | 9 | 0.2 | 0.0 | 0.1 | 0.02 | 0.00 | 0.01 |
| PA:PITTSBURGH | 9 | 0.1 | 0.1 | 0.1 | 0.02 | 0.01 | 0.01 |
| PA:THREE MILE ISL | 7 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| RI:PROVIDENCE | 9 | 0.2 | 0.1 | 0.1 | 0.01 | 0.00 | 0.01 |
| SC:BARNWELL | 2 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| SC:COLUMBIA | 9 | 0.6 | 0.1 | 0.2 | 0.04 | 0.01 | 0.01 |
| SD:PIERRE | 6 | 0.6 | 0.1 | 0.4 | 0.01 | 0.01 | 0.01 |
| TN:KNOXVILLE | 6 | 0.3 | 0.0 | 0.1 | 0.03 | 0.01 | 0.01 |
| TN:NASHVILLE | 7 | 0.5 | 0.1 | 0.3 | 0.02 | 0.01 | 0.02 |
| TX:AUSTIN | 8 | 0.3 | 0.1 | 0.2 | 0.04 | 0.01 | 0.01 |
| TX:EL PASO | 5 | 1.2 | 0.1 | 0.7 | 0.03 | 0.01 | 0.02 |
| VA:LYNCHBURG | 7 | 0.3 | 0.0 | 0.1 | 0.04 | 0.01 | 0.01 |
| WA:OLYMPIA | 9 | 0.1 | 0.0 | 0.1 | 0.01 | 0.00 | 0.00 |
| WA:SPOKANE | 9 | 0.2 | 0.1 | 0.1 | 0.03 | 0.01 | 0.02 |
| WI:MADISON | 8 | 0.2 | 0.1 | 0.1 | 0.02 | 0.01 | 0.01 |
| WV:CHARLESTON | 7 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| WY:CHEYENNE | 4 | 1.5 | 0.1 | 0.5 | 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 3

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
FEBRUARY 1987

| LOCATION | # SAM | 5-HR FIELD ESTIMATE | | | EERF LAB MEASUREMENT | | |
|-------------------|-------|-----------------------|-----|-----|-----------------------|------|------|
| | | MAX | MIN | AVG | MAX | MIN | AVG |
| | | (pCi/m ³) | | | (pCi/m ³) | | |
| AL:ASHFORD | 3 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| AL:MONTGOMERY | 8 | 0.3 | 0.1 | 0.2 | 0.01 | 0.01 | 0.01 |
| AR:LITTLE ROCK | 8 | 0.7 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| AZ:PHOENIX | 7 | 2.8 | 0.1 | 1.3 | 0.02 | 0.01 | 0.01 |
| CA:BERKELEY | 2 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| CA:LOS ANGELES | 6 | 0.4 | 0.1 | 0.2 | 0.01 | 0.01 | 0.01 |
| CO:DENVER | 7 | 1.0 | 0.1 | 0.5 | 0.02 | 0.01 | 0.01 |
| CT:HARTFORD | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| DE:WILMINGTON | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| FL:JACKSONVILLE | 5 | 0.2 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| FL:MIAMI | 8 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| GA:ATLANTA | 4 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| HI:HONOLULU | 8 | 0.5 | 0.1 | 0.3 | 0.01 | 0.00 | 0.00 |
| IA:IOWA CITY | 8 | 0.9 | 0.1 | 0.4 | 0.05 | 0.01 | 0.02 |
| ID:BOISE | 8 | 0.4 | 0.0 | 0.2 | 0.03 | 0.01 | 0.01 |
| ID:IDAHO FALLS | 8 | 0.0 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| IL:CHICAGO | 8 | 0.5 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| IN:INDIANAPOLIS | 8 | 0.6 | 0.1 | 0.3 | 0.02 | 0.01 | 0.02 |
| KS:TOPEKA | 7 | 0.9 | 0.4 | 0.6 | 0.01 | 0.00 | 0.01 |
| KY:FRANKFORT | 8 | 0.5 | 0.2 | 0.4 | 0.02 | 0.01 | 0.01 |
| LA:NEW ORLEANS | 3 | 0.1 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| MA:LAWRENCE | 8 | 0.3 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| ME:AUGUSTA | 8 | 0.1 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| MI:LANSING | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| MN:MINNEAPOLIS | 8 | 1.5 | 0.1 | 0.5 | 0.02 | 0.01 | 0.01 |
| MO:JEFFERSON CITY | 7 | 1.3 | 0.1 | 0.5 | 0.02 | 0.01 | 0.02 |
| MS:JACKSON | 8 | 0.3 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| NC:CHARLOTTE | 7 | 0.4 | 0.0 | 0.2 | 0.01 | 0.01 | 0.01 |
| NC:WILMINGTON | 7 | 0.1 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 |
| ND:BISMARCK | 8 | 0.7 | 0.1 | 0.3 | 0.02 | 0.01 | 0.01 |
| NE:LINCOLN | 8 | 3.6 | 0.9 | 1.7 | 0.05 | 0.01 | 0.02 |
| NH:CONCORD | 8 | 0.0 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| NJ:TRENTON | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| NM:SANTA FE | 7 | 0.3 | 0.1 | 0.2 | 0.01 | 0.00 | 0.01 |
| NV:LAS VEGAS | 8 | 0.4 | 0.1 | 0.2 | 0.04 | 0.00 | 0.02 |
| NY:ALBANY | 4 | 0.0 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| NY:NEW YORK CITY | 8 | 0.1 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |

TABLE 3 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
FEBRUARY 1987

| LOCATION | # SAM | 5-HR FIELD ESTIMATE | | | EERF LAB MEASUREMENT | | |
|-------------------|-------|-----------------------|-----|-----|-----------------------|------|------|
| | | MAX | MIN | AVG | MAX | MIN | AVG |
| | | (pCi/m ³) | | | (pCi/m ³) | | |
| NY:NIAGARA FALLS | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| NY:SYRACUSE | 4 | 0.2 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| NY:YAPHANK | 6 | 0.1 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| OH:COLUMBUS | 8 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| OH:PAINESVILLE | 8 | 0.1 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| OH:TOLEDO | 8 | 0.1 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| OK:OKLAHOMA CITY | 8 | 0.4 | 0.1 | 0.2 | 0.01 | 0.01 | 0.01 |
| OR:PORTLAND | 8 | 0.0 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| PA:GOLDSBORO | 7 | 0.2 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| PA:HARRISBURG | 8 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| PA:PHILADELPHIA | 8 | 0.4 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| PA:PITTSBURGH | 8 | 0.1 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 |
| PA:THREE MILE ISL | 7 | 0.1 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| RI:PROVIDENCE | 8 | 0.1 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 |
| SC:BARNWELL | 2 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| SC:COLUMBIA | 8 | 0.5 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| SD:PIERRE | 8 | 0.8 | 0.0 | 0.4 | 0.02 | 0.01 | 0.01 |
| TN:KNOXVILLE | 7 | 0.3 | 0.1 | 0.1 | 0.01 | 0.01 | 0.01 |
| TN:NASHVILLE | 8 | 0.4 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| TX:AUSTIN | 8 | 0.2 | 0.1 | 0.1 | 0.01 | 0.00 | 0.01 |
| VA:LYNCHBURG | 8 | 0.3 | 0.1 | 0.2 | 0.01 | 0.01 | 0.01 |
| WA:OLYMPIA | 8 | 0.1 | 0.0 | 0.1 | 0.01 | 0.00 | 0.00 |
| WA:SPOKANE | 9 | 0.3 | 0.1 | 0.2 | 0.03 | 0.00 | 0.01 |
| WI:MADISON | 8 | 0.3 | 0.1 | 0.2 | 0.01 | 0.01 | 0.01 |
| WV:CHARLESTON | 8 | 0.3 | 0.0 | 0.1 | 0.01 | 0.01 | 0.01 |
| WY:CHEYENNE | 4 | 0.4 | 0.2 | 0.3 | 0.01 | 0.01 | 0.01 |

MINIMUM DETECTABLE LIMIT FOR FIELD ESTIMATES - .1 pCi/m³
 MINIMUM DETECTABLE LIMIT FOR LAB MEASUREMENT - .01 pCi/m³

TABLE 4
 AIRBORNE PARTICULATES
 GROSS BETA CONCENTRATION
 MARCH 1987

| 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 | 0.00 | 0.01 |
| AL:MONTGOMERY | 10 | 0.6 | 0.2 | 0.3 | 0.02 | 0.01 | 0.01 |
| AR:LITTLE ROCK | 9 | 0.7 | 0.1 | 0.3 | 0.03 | 0.01 | 0.02 |
| AZ:PHOENIX | 9 | 3.0 | 0.6 | 1.5 | 0.03 | 0.01 | 0.02 |
| CA:BERKELEY | 9 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| CA:LOS ANGELES | 9 | 0.4 | 0.1 | 0.2 | 0.02 | 0.00 | 0.01 |
| CO:DENVER | 6 | 0.7 | 0.2 | 0.4 | 0.01 | 0.01 | 0.01 |
| CT:HARTFORD | 9 | 0.1 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| DE:WILMINGTON | 8 | 0.3 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| FL:JACKSONVILLE | 8 | 0.1 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| FL:MIAMI | 9 | 0.1 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| GA:ATLANTA | 5 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| HI:HONOLULU | 8 | 0.3 | 0.1 | 0.2 | 0.01 | 0.00 | 0.00 |
| IA:IOWA CITY | 9 | 1.0 | 0.2 | 0.5 | 0.02 | 0.01 | 0.01 |
| ID:BOISE | 9 | 0.2 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| ID:IDAHO FALLS | 9 | 0.0 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| IL:CHICAGO | 8 | 0.5 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| IN:INDIANAPOLIS | 8 | 0.5 | 0.2 | 0.3 | 0.02 | 0.01 | 0.02 |
| KS:TOPEKA | 9 | 1.6 | 0.2 | 0.7 | 0.03 | 0.01 | 0.01 |
| KY:FRANKFORT | 9 | 1.0 | 0.2 | 0.5 | 0.03 | 0.01 | 0.02 |
| LA:NEW ORLEANS | 3 | 0.1 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| MA:LAWRENCE | 9 | 0.3 | 0.0 | 0.1 | 0.02 | 0.00 | 0.01 |
| ME:AUGUSTA | 7 | 0.1 | 0.0 | 0.0 | 0.02 | 0.00 | 0.01 |
| MI:LANSING | 9 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| MN:MINNEAPOLIS | 9 | 0.6 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| MO:JEFFERSON CITY | 7 | 1.3 | 0.1 | 0.5 | 0.03 | 0.01 | 0.02 |
| MS:JACKSON | 9 | 0.3 | 0.0 | 0.1 | 0.03 | 0.01 | 0.01 |
| NC:CHARLOTTE | 8 | 0.2 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| NC:WILMINGTON | 7 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| ND:BISMARCK | 9 | 1.6 | 0.0 | 0.3 | 0.02 | 0.01 | 0.01 |
| NE:LINCOLN | 9 | 2.6 | 0.1 | 1.1 | 0.03 | 0.00 | 0.02 |
| NH:CONCORD | 9 | 0.2 | 0.0 | 0.0 | 0.01 | 0.00 | 0.01 |
| NJ:TRENTON | 9 | 0.3 | 0.0 | 0.2 | 0.01 | 0.00 | 0.01 |
| NM:SANTA FE | 7 | 0.5 | 0.1 | 0.3 | 0.01 | 0.01 | 0.01 |
| NV:LAS VEGAS | 9 | 0.5 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| NY:ALBANY | 5 | 0.0 | 0.0 | 0.0 | 0.02 | 0.01 | 0.01 |
| NY:NEW YORK CITY | 9 | 0.3 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |

TABLE 4 (CONTINUED)

AIRBORNE PARTICULATES
GROSS BETA CONCENTRATION
MARCH 1987

| LOCATION | # SAM | 5-HR FIELD ESTIMATE | | | EERF LAB MEASUREMENT | | |
|--|-------|-----------------------|-----|-----|-----------------------|--------------------|------|
| | | MAX | MIN | AVG | MAX | MIN | AVG |
| | | (pCi/m ³) | | | (pCi/m ³) | | |
| NY:NIAGARA FALLS | 9 | 0.4 | 0.0 | 0.1 | 0.02 | 0.00 | 0.01 |
| NY:SYRACUSE | 3 | 0.3 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| NY:YAPHANK | 9 | 0.3 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| OH:COLUMBUS | 8 | 0.4 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| OH:PAINESVILLE | 9 | 0.4 | 0.0 | 0.1 | 0.02 | 0.01 | 0.01 |
| OH:TOLEDO | 9 | 0.4 | 0.1 | 0.2 | 0.04 | 0.01 | 0.01 |
| OK:OKLAHOMA CITY | 7 | 0.7 | 0.1 | 0.4 | 0.02 | 0.01 | 0.01 |
| OR:PORTLAND | 9 | 0.0 | 0.0 | 0.0 | 0.01 | 0.00 | 0.00 |
| PA:GOLDSBORO | 9 | 0.5 | 0.1 | 0.3 | 0.02 | 0.00 | 0.01 |
| PA:HARRISBURG | 9 | 0.4 | 0.0 | 0.2 | 0.01 | 0.00 | 0.01 |
| PA:PHILADELPHIA | 9 | 0.1 | 0.0 | 0.1 | 0.02 | 0.00 | 0.01 |
| PA:PITTSBURGH | 9 | 0.1 | 0.1 | 0.1 | 0.02 | 0.00 | 0.01 |
| PA:THREE MILE ISL | 9 | 0.5 | 0.0 | 0.3 | 0.01 | 0.00 | 0.01 |
| RI:PROVIDENCE | 9 | 0.2 | 0.1 | 0.1 | 0.02 | 0.00 | 0.01 |
| SC:BARNWELL | 2 | 0.0 | 0.0 | 0.0 | 0.01 | 0.01 | 0.01 |
| SC:COLUMBIA | 9 | 0.3 | 0.1 | 0.2 | 0.03 | 0.01 | 0.02 |
| SD:PIERRE | 7 | 0.4 | 0.0 | 0.1 | 0.03 | 0.01 | 0.02 |
| TN:KNOXVILLE | 8 | 0.5 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| TN:NASHVILLE | 9 | 0.5 | 0.1 | 0.3 | 0.04 | 0.01 | 0.02 |
| TX:AUSTIN | 9 | 0.3 | 0.0 | 0.2 | 0.02 | 0.01 | 0.01 |
| VA:LYNCHBURG | 9 | 0.4 | 0.1 | 0.3 | 0.01 | 0.00 | 0.01 |
| WA:OLYMPIA | 9 | 0.2 | 0.0 | 0.1 | 0.01 | 0.00 | 0.00 |
| WA:SPOKANE | 9 | 0.3 | 0.1 | 0.2 | 0.01 | 0.00 | 0.01 |
| WI:MADISON | 9 | 0.4 | 0.1 | 0.2 | 0.01 | 0.00 | 0.01 |
| WV:CHARLESTON | 9 | 0.3 | 0.1 | 0.2 | 0.02 | 0.01 | 0.01 |
| WY:CHEYENNE | 3 | 0.1 | 0.0 | 0.1 | 0.01 | 0.00 | 0.01 |
| MINIMUM 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
JANUARY 1987

| LOCATION | DEPTH (mm) | ACT. | + 2s (nCi/m ²) |
|-------------------|---------------|------|-------------------------------|
| AL:MONTGOMERY | 138.0 | 0.41 | 0.08 |
| AR:LITTLE ROCK | 54.0 | 0.13 | 0.03 |
| CO:DENVER | 2.8 | 0.01 | 0.01 |
| CT:HARTFORD | 105.0 | 0.12 | 0.05 |
| FL:JACKSONVILLE | 143.0 | 0.09 | 0.06 |
| FL:MIAMI | 48.0 | 0.04 | 0.02 |
| ID:BOISE | 23.0 | 0.05 | 0.01 |
| ID:IDAHO FALLS | 3.4 | 0.01 | 0.01 |
| IL:CHICAGO | 23.0 | 0.18 | 0.02 |
| LA:NEW ORLEANS | 97.0 | 0.05 | 0.04 |
| MN:MINNEAPOLIS | 5.0 | 0.01 | 0.01 |
| MO:JEFFERSON CITY | 8.0 | 0.01 | 0.01 |
| MS:JACKSON | 102.7 | 0.08 | 0.05 |
| NC:CHARLOTTE | 119.0 | 0.07 | 0.05 |
| NC:WILMINGTON | 7.8 | 0.00 | 0.01 |
| NJ:TRENTON | 64.6 | 0.07 | 0.03 |
| NV:LAS VEGAS | 31.4 | 0.04 | 0.02 |
| NY:ALBANY | 47.3 | 0.08 | 0.03 |
| NY:NEW YORK CITY | 39.4 | 0.04 | 0.02 |
| NY:NIAGARA FALLS | 48.0 | 0.02 | 0.02 |
| NY:YAPHANK | 112.0 | 0.17 | 0.06 |
| OH:PAINESVILLE | 32.5 | 0.14 | 0.02 |
| OK:OKLAHOMA CITY | 54.0 | 0.12 | 0.03 |
| OR:PORTLAND | 102.4 | 0.15 | 0.05 |
| PA:HARRISBURG | 91.2 | 0.14 | 0.04 |
| PA:MIDDLETOWN | 66.0 | 0.03 | 0.03 |
| PA:PHILADELPHIA | 52.5 | 0.02 | 0.02 |
| SC:BARNWELL | 189.2 | 0.13 | 0.08 |
| SC:COLUMBIA | 243.4 | 0.03 | 0.10 |
| TN:KNOXVILLE | 79.0 | 0.12 | 0.04 |
| TN:NASHVILLE | 14.0 | 0.01 | 0.01 |
| TX:AUSTIN | 8.8 | 0.01 | 0.01 |
| VA:LYNCHBURG | 82.4 | 0.13 | 0.05 |
| WA:OLYMPIA | 158.0 | 0.16 | 0.08 |
| WI:MADISON | 13.2 | 0.01 | 0.01 |
| WV:CHARLESTON | 38.0 | 0.06 | 0.02 |

s = SIGMA COUNTING ERROR

TABLE 6

GROSS BETA CONCENTRATION IN PRECIPITATION

FEBRUARY 1987

| LOCATION | DEPTH (mm) | ACT. (nCi/m ²) | + 2s - 2s |
|-------------------|---------------|-------------------------------|--------------|
| AL:MONTGOMERY | 195.3 | 0.50 | 0.11 |
| AR:LITTLE ROCK | 97.0 | 0.26 | 0.06 |
| AZ:PHOENIX | 51.0 | 0.04 | 0.02 |
| CA:BERKELEY | 12.0 | 0.02 | 0.01 |
| CT:HARTFORD | 10.0 | 0.04 | 0.01 |
| FL:JACKSONVILLE | 69.8 | 0.13 | 0.04 |
| FL:MIAMI | 42.0 | 0.04 | 0.02 |
| ID:BOISE | 35.0 | 0.03 | 0.02 |
| ID:IDAHO FALLS | 40.0 | 0.05 | 0.02 |
| IL:CHICAGO | 10.2 | 0.03 | 0.01 |
| LA:NEW ORLEANS | 39.0 | 0.02 | 0.02 |
| MO:JEFFERSON CITY | 13.0 | 0.06 | 0.01 |
| MS:JACKSON | 254.1 | 0.17 | 0.11 |
| NC:CHARLOTTE | 11.0 | 0.01 | 0.01 |
| NC:WILMINGTON | 41.0 | 0.04 | 0.02 |
| ND:BISMARCK | 23.0 | 0.05 | 0.01 |
| NJ:TRENTON | 83.0 | 0.13 | 0.04 |
| NV:LAS VEGAS | 1.0 | 0.01 | 0.01 |
| NY:ALBANY | 12.6 | 0.05 | 0.01 |
| NY:NEW YORK CITY | 21.6 | 0.10 | 0.02 |
| NY:NIAGARA FALLS | 17.0 | 0.01 | 0.01 |
| OH:PAINESVILLE | 4.0 | 0.05 | 0.01 |
| OK:OKLAHOMA CITY | 39.0 | 0.04 | 0.02 |
| OR:PORTLAND | 156.2 | 0.18 | 0.07 |
| PA:HARRISBURG | 53.6 | 0.02 | 0.02 |
| PA:MIDDLETOWN | 30.0 | 0.04 | 0.01 |
| PA:PHILADELPHIA | 28.0 | 0.09 | 0.02 |
| SC:BARNWELL | 48.6 | 0.03 | 0.02 |
| SC:COLUMBIA | 71.6 | 0.11 | 0.04 |
| SD:PIERRE | 8.0 | 0.12 | 0.01 |
| TN:KNOXVILLE | 74.0 | 0.10 | 0.04 |
| TN:NASHVILLE | 73.4 | 0.12 | 0.04 |
| TX:AUSTIN | 30.0 | 0.02 | 0.01 |
| VA:LYNCHBURG | 36.0 | 0.02 | 0.02 |
| WA:OLYMPIA | 110.0 | 0.12 | 0.05 |
| WI:MADISON | 23.0 | 0.09 | 0.02 |
| WV:CHARLESTON | 14.0 | 0.05 | 0.01 |

s = SIGMA COUNTING ERROR

TABLE 7

GROSS BETA CONCENTRATION IN PRECIPITATION

MARCH 1987

| LOCATION | DEPTH (mm) | ACT. (nCi/m ²) | $\pm 2s$ |
|-------------------|---------------|-------------------------------|----------|
| AL:MONTGOMERY | 98.0 | 0.16 | 0.05 |
| AR:LITTLE ROCK | 125.0 | 0.14 | 0.06 |
| CA:BERKELEY | 68.0 | 0.05 | 0.03 |
| CT:HARTFORD | 144.0 | 0.24 | 0.07 |
| FL:JACKSONVILLE | 96.7 | 0.17 | 0.05 |
| FL:MIAMI | 84.0 | 0.09 | 0.04 |
| ID:BOISE | 49.0 | 0.04 | 0.02 |
| ID:IDAHO FALLS | 38.6 | 0.06 | 0.02 |
| IL:CHICAGO | 21.3 | 0.05 | 0.01 |
| LA:NEW ORLEANS | 74.0 | 0.07 | 0.03 |
| MA:LAWRENCE | 34.0 | 0.04 | 0.02 |
| MI:LANSING | 13.6 | 0.03 | 0.01 |
| MN:MINNEAPOLIS | 6.0 | 0.01 | 0.01 |
| MO:JEFFERSON CITY | 24.0 | 0.03 | 0.01 |
| MS:JACKSON | 173.0 | 0.17 | 0.08 |
| NC:CHARLOTTE | 153.0 | 0.16 | 0.07 |
| NC:WILMINGTON | 44.0 | 0.03 | 0.02 |
| ND:BISMARCK | 33.2 | 0.14 | 0.02 |
| NJ:TRENTON | 12.7 | 0.02 | 0.01 |
| NV:LAS VEGAS | 47.7 | 0.17 | 0.04 |
| NY:ALBANY | 46.4 | 0.05 | 0.02 |
| NY:NEW YORK CITY | 24.6 | 0.02 | 0.01 |
| NY:NIAGARA FALLS | 72.0 | 0.09 | 0.03 |
| NY:YAPHANK | 53.0 | 0.07 | 0.03 |
| OH:COLUMBUS | 21.0 | 0.01 | 0.01 |
| OH:PAINESVILLE | 72.0 | 0.13 | 0.04 |
| OH:TOLEDO | 10.0 | 0.02 | 0.01 |
| OK:OKLAHOMA CITY | 75.0 | 0.10 | 0.04 |
| OR:PORTLAND | 92.0 | 0.08 | 0.04 |
| PA:HARRISBURG | 32.8 | 0.02 | 0.01 |
| PA:MIDDLETOWN | 28.0 | 0.02 | 0.01 |
| PA:PHILADELPHIA | 20.0 | 0.04 | 0.01 |
| SC:COLUMBIA | 224.8 | 0.29 | 0.11 |
| SD:PIERRE | 1.2 | 0.00 | 0.01 |
| TN:KNOXVILLE | 73.0 | 0.07 | 0.03 |
| TN:NASHVILLE | 22.4 | 0.04 | 0.01 |
| TX:AUSTIN | 36.0 | 0.04 | 0.02 |
| VA:LYNCHBURG | 76.0 | 0.05 | 0.03 |
| WA:OLYMPIA | 159.4 | 0.06 | 0.07 |
| WI:MADISON | 19.0 | 0.04 | 0.01 |
| WV:CHARLESTON | 40.0 | 0.06 | 0.02 |

s = SIGMA COUNTING ERROR

TABLE 8

PRECIPITATION
TRITIUM CONCENTRATION

JANUARY - MARCH 1987

| LOCATION | JANUARY | FEBRUARY | MARCH |
|-------------------|----------------|----------------|----------------|
| | nCi/l \pm 2s | nCi/l \pm 2s | nCi/l \pm 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 |
| AZ:PHOENIX | NS | 0.1 0.2 | NS |
| CA:BERKELEY | NS | 0.2 0.2 | 0.1 0.2 |
| CO:DENVER | 0.2 0.2 | NS | NS |
| CT:HARTFORD | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| FL:JACKSONVILLE | 0.2 0.2 | 0.3 0.2 | 0.2 0.2 |
| FL:MIAMI | 0.1 0.2 | 0.1 0.2 | 0.1 0.2 |
| ID:BOISE | 0.3 0.2 | 0.2 0.2 | 0.1 0.2 |
| ID:IDAHO FALLS | 0.3 0.2 | 0.2 0.2 | 0.2 0.2 |
| IL:CHICAGO | 0.3 0.2 | 0.1 0.2 | 0.3 0.2 |
| LA:NEW ORLEANS | 0.1 0.2 | 0.2 0.2 | 0.2 0.2 |
| MA:LAWRENCE | NS | NS | 0.2 0.2 |
| MI:LANSING | NS | NS | 0.1 0.2 |
| MN:MINNEAPOLIS | 0.2 0.2 | NS | 0.2 0.2 |
| MO:JEFFERSON CITY | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| MS:JACKSON | 0.1 0.2 | 0.1 0.2 | 0.1 0.2 |
| NC:CHARLOTTE | 0.3 0.2 | 0.2 0.2 | 0.1 0.2 |
| NC:WILMINGTON | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| ND:BISMARCK | NS | 0.2 0.2 | 0.2 0.2 |
| NJ:TRENTON | 0.2 0.2 | 0.1 0.2 | 0.2 0.2 |
| NV:LAS VEGAS | 0.2 0.2 | 0.3 0.2 | 0.1 0.2 |
| NY:ALBANY | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| NY:NEW YORK CITY | 0.4 0.2 | 0.3 0.2 | 0.1 0.2 |
| NY:NIAGARA FALLS | 0.3 0.2 | 0.5 0.2 | 0.2 0.2 |
| NY:YAPHANK | 0.3 0.2 | NS | 0.1 0.2 |
| OH:COLUMBUS | NS | NS | 0.2 0.2 |
| OH:PAINESVILLE | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| OH:TOLEDO | NS | NS | 0.3 0.2 |
| OK:OKLAHOMA CITY | 0.2 0.2 | 0.1 0.2 | 0.1 0.2 |
| OR:PORTLAND | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| PA:HARRISBURG | 0.3 0.2 | 0.1 0.2 | 0.2 0.2 |
| PA:MIDDLETOWN | 0.1 0.2 | 0.2 0.2 | 0.1 0.2 |
| PA:PHILADELPHIA | 0.2 0.2 | 0.2 0.2 | 0.1 0.2 |
| SC:BARNWELL | 1.4 0.2 | 0.5 0.2 | NS |
| SC:COLUMBIA | 0.2 0.2 | 0.2 0.2 | 0.2 0.2 |
| SD:PIERRE | NS | 0.3 0.2 | 0.1 0.2 |
| TN:KNOXVILLE | 0.1 0.2 | 0.1 0.2 | 0.1 0.2 |

TABLE 8 (CONTINUED)
 PRECIPITATION
 TRITIUM CONCENTRATION
 JANUARY - MARCH 1987

| LOCATION | JANUARY | FEBRUARY | MARCH |
|---------------|----------------|----------------|----------------|
| | nCi/l \pm 2s | nCi/l \pm 2s | nCi/l \pm 2s |
| TN:NASHVILLE | 0.1 0.2 | 0.1 0.2 | 0.2 0.2 |
| TX:AUSTIN | 0.1 0.2 | 0.1 0.2 | 0.1 0.2 |
| VA:LYNCHBURG | 0.2 0.2 | 0.1 0.2 | 0.1 0.2 |
| WA:OLYMPIA | 0.2 0.2 | 0.1 0.2 | 0.2 0.2 |
| WI:MADISON | 0.1 0.2 | 0.1 0.2 | 0.1 0.2 |
| WV:CHARLESTON | 0.2 0.2 | 0.3 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 analysis of semi-annually composited samples (air filters) collected from the continuously operating airborne particulate samplers.

Concentration of the specific isotopes of plutonium-238, -239, -240, and uranium-234, -235, and -238 are determined by alpha spectroscopy following chemical separation. The volume of air represented by the semi-annual composite ranges from 25,000 to 40,000 cubic meters.

Most recent results covering the period July to December 1986 for plutonium and uranium were published in ERD 48. Subsequent data will be published as it becomes available.

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 last Kr-85 results were for 1976, 1977, and 1979. They were published in Environmental Radiation Data: Report 30.

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 January - March are shown in Table 9.

TABLE 9

SURFACE WATER
TRITIUM CONCENTRATION

JANUARY - MARCH 1987

| LOCATION | SOURCE | DATE COLLECTED | nCi/l | + 2s |
|------------------|--------------------|-------------------|-------|------|
| AL:DECATUR | TENNESSEE RIVER | 1/ 1/87 | 0.6 | 0.2 |
| AL:DOTHAN | CHATTAHOOCHEE R. | 1/ 8/87 | 0.1 | 0.2 |
| AL:SCOTTSBORO | TENNESSEE RIVER | 1/ 1/87 | 0.3 | 0.2 |
| AR:LITTLE ROCK | ARKANSAS RIVER | 1/ 5/87 | 0.2 | 0.2 |
| CA:DIABLO CANYON | PACIFIC OCEAN | 1/16/87 | 0.1 | 0.2 |
| CA:EUREKA | HUMBOLDT BAY | 1/ 8/87 | 0.2 | 0.2 |
| CA:SAN ONOFRE | PACIFIC OCEAN | 3/20/87 | 0.1 | 0.2 |
| CO:PLATTEVILLE | SOUTH PLATTE RIVER | 1/12/87 | 0.2 | 0.2 |
| CT:EAST HADDAM | CONNECTICUT RIVER | 3/ 6/87 | 0.1 | 0.2 |
| CT:WATERFORD | LONG ISLAND SOUND | 3/ 6/87 | 0.2 | 0.2 |
| FL:CRYSTAL RIVER | GULF OF MEXICO | 1/ 6/87 | 0.2 | 0.2 |
| FL:FT. PIERCE | ATLANTIC OCEAN | 1/ 6/87 | 0.1 | 0.2 |
| GA:BAXLEY | ALTAMAHA RIVER | 1/ 8/87 | 0.2 | 0.2 |
| IA:CEDAR RAPIDS | CEDAR RIVER | 1/ 6/87 | 0.3 | 0.2 |
| ID:BUHL | SNAKE RIVER | 1/20/87 | 0.3 | 0.2 |
| IL:MORRIS | ILLINOIS RIVER | 1/16/87 | 0.2 | 0.2 |
| IL:ZION | LAKE MICHIGAN | 2/15/87 | 0.2 | 0.2 |
| KS:LE ROY | NEOSHO RIVER | 3/31/87 | 0.1 | 0.2 |
| LA:NEW ORLEANS | MISSISSIPPI RIVER | 1/ 5/87 | 0.1 | 0.2 |
| MA:PLYMOUTH | CAPE COD BAY | 1/15/87 | 0.1 | 0.2 |
| MA:ROWE | DEERFIELD RIVER | 1/21/87 | 0.1 | 0.2 |
| MD:CONOWINGO | SUSQUEHANNA RIVER | 1/13/87 | 0.3 | 0.2 |
| MD:LUSBY | CHESAPEAKE BAY | 1/13/87 | 0.2 | 0.2 |
| ME:WISCASSET | MONTSEWAY BAY | 1/13/87 | 0.2 | 0.2 |
| MI:BRIDGMAN | LAKE MICHIGAN | 1/10/87 | 0.2 | 0.2 |
| MI:CHARLEVOIX | LAKE MICHIGAN | 1/ 8/87 | 0.2 | 0.2 |
| MI:MONROE | LAKE ERIE | 1/11/87 | 0.2 | 0.2 |
| MI:SO. HAVEN | LAKE MICHIGAN | 1/12/87 | 0.3 | 0.2 |
| MN:MONTICELLO | MISSISSIPPI RIVER | 1/ 9/87 | 0.1 | 0.2 |
| MN:RED WING | MISSISSIPPI RIVER | 1/ 8/87 | 0.2 | 0.2 |
| MS:PORT GIBSON | MISSISSIPPI RIVER | 1/ 6/87 | 0.1 | 0.2 |
| NC:CHARLOTTE | CATAWBA RIVER | 1/ 7/87 | 0.8 | 0.2 |
| NC:SOUTHPORT | ATLANTIC OCEAN | 1/16/87 | 0.2 | 0.2 |
| NE:RULO | MISSOURI RIVER | 1/ 6/87 | 0.1 | 0.2 |
| NJ:BAYSIDE | DELAWARE RIVER | 1/13/87 | 0.2 | 0.2 |
| NJ:OYSTER CREEK | OYSTER CREEK | 1/29/87 | 0.2 | 0.2 |
| NV:BOULDER CITY | COLORADO RIVER | 3/ 4/87 | 0.1 | 0.2 |
| NY:CHELSEA | HUDSON RIVER | 1/ 9/87 | 0.1 | 0.2 |
| NY:OSSINING | HUDSON RIVER | 3/25/87 | 0.2 | 0.2 |

TABLE 9 (CONTINUED)

SURFACE WATER
TRITIUM CONCENTRATION

JANUARY - MARCH 1987

| LOCATION | SOURCE | DATE COLLECTED | nCi/l | + 2s |
|-----------------|-------------------|-------------------|-------|------|
| NY:OSWEGO | LAKE ONTARIO | 3/27/87 | 0.3 | 0.2 |
| OH:TOLEDO | LAKE ERIE | 1/13/87 | 0.3 | 0.2 |
| OR:BRADWOOD | COLUMBIA RIVER | 1/12/87 | 0.2 | 0.2 |
| PA:DANVILLE | SUSQUEHANNA RIVER | 1/14/87 | 0.2 | 0.2 |
| SC:ALLENDALE | SAVANNAH RIVER | 1/29/87 | 3.1 | 0.2 |
| SC:BROAD RIVER | BROAD RIVER | 1/27/87 | 0.2 | 0.2 |
| SC:HARTSVILLE | LAKE ROBINSON | 1/26/87 | 1.6 | 0.2 |
| TN:DAISY | TENNESSEE RIVER | 2/24/87 | 0.2 | 0.2 |
| TN:KINGSTON | CLINCH RIVER | 1/ 5/87 | 2.0 | 0.2 |
| TN:OAK RIDGE | CLINCH RIVER | 2/15/87 | 1.0 | 0.2 |
| TX:EL PASO | RIO GRANDE | 2/ 9/87 | 0.1 | 0.2 |
| TX:MATAGORDA | COLORADO RIVER | 1/ 7/87 | 0.2 | 0.2 |
| VA:DOSWELL | NORTH ANNA RIVER | 1/ 8/87 | 5.8 | 0.3 |
| VA:NEWPORT NEWS | JAMES RIVER | 1/13/87 | 0.3 | 0.2 |
| WA:NORTHPORT | COLUMBIA RIVER | 1/21/87 | 0.1 | 0.2 |
| WA:RICHLAND | COLUMBIA RIVER | 1/13/87 | 0.1 | 0.2 |
| WI:TWO CREEKS | LAKE MICHIGAN | 1/20/87 | 0.3 | 0.2 |
| WI:VICTORY | MISSISSIPPI RIVER | 1/12/87 | 0.3 | 0.2 |
| WV:WHEELING | OHIO RIVER | 1/26/87 | 0.2 | 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, -239 and -240 and uranium-234, -235, and -238 for stations that demonstrate gross alpha levels greater than 2 pCi/l.

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

The results of tritium in drinking water analyses for January - March are shown in Table 10.

TABLE 10
 DRINKING WATER
 TRITIUM CONCENTRATION
 JANUARY - MARCH 1987

| LOCATION | DATE COLLECTED | nCi/l | <u>±</u> | 2s |
|-------------------|----------------|-------|----------|-----|
| AK: FAIRBANKS | 1/16/87 | 0.2 | | 0.2 |
| AL: DOTHAN | 1/ 8/87 | 0.1 | | 0.2 |
| AL: MONTGOMERY | 1/21/87 | 0.2 | | 0.2 |
| AL: MUSCLE SHOALS | 1/ 1/87 | 0.3 | | 0.2 |
| AL: SCOTTSBORO | 1/ 1/87 | 0.2 | | 0.2 |
| AR: LITTLE ROCK | 1/ 6/87 | 0.1 | | 0.2 |
| CA: BERKELEY | 1/ 5/87 | 0.1 | | 0.2 |
| CA: LOS ANGELES | 1/ 6/87 | 0.2 | | 0.2 |
| CO: DENVER | 1/ 6/87 | 0.1 | | 0.2 |
| CO: PLATTEVILLE | 1/12/87 | 0.4 | | 0.2 |
| CT: HARTFORD | 1/ 5/87 | 0.1 | | 0.2 |
| DC: WASHINGTON | 1/29/87 | 0.2 | | 0.2 |
| DE: DOVER | 1/ 6/87 | 0.1 | | 0.2 |
| FL: MIAMI | 1/ 6/87 | 0.3 | | 0.2 |
| FL: TAMPA | 1/ 6/87 | 0.1 | | 0.2 |
| GA: SAVANNAH | 1/13/87 | 1.2 | | 0.2 |
| HI: HONOLULU | 2/ 6/87 | 0.2 | | 0.2 |
| IA: CEDAR RAPIDS | 1/ 6/87 | 0.2 | | 0.2 |
| ID: BOISE | 12/31/86 | 0.1 | | 0.2 |
| ID: IDAHO FALLS | 2/ 5/87 | 0.1 | | 0.2 |
| IL: MORRIS | 1/15/87 | 0.2 | | 0.2 |
| IL: W. CHICAGO | 1/ 5/87 | 0.2 | | 0.2 |
| KS: TOPEKA | 1/ 5/87 | 0.2 | | 0.2 |
| LA: NEW ORLEANS | 1/ 7/87 | 0.2 | | 0.2 |
| MA: LAWRENCE | 1/ 8/87 | 0.2 | | 0.2 |
| MA: ROWE | 1/21/87 | 0.1 | | 0.2 |
| MD: BALTIMORE | 2/15/87 | 0.1 | | 0.2 |
| MD: CONOWINGO | 1/13/87 | 0.2 | | 0.2 |
| ME: AUGUSTA | 1/21/87 | 0.2 | | 0.2 |
| MI: DETROIT | 1/ 7/87 | 0.2 | | 0.2 |
| MI: GRAND RAPIDS | 1/ 9/87 | 0.2 | | 0.2 |
| MN: MINNEAPOLIS | 1/15/87 | 0.3 | | 0.2 |
| MN: RED WING | 1/ 8/87 | 0.2 | | 0.2 |
| MS: JACKSON | 1/ 6/87 | 0.2 | | 0.2 |
| MS: PORT GIBSON | 1/ 6/87 | 0.1 | | 0.2 |
| MT: HELENA | 1/ 5/87 | 0.2 | | 0.2 |
| NC: CHARLOTTE | 1/ 7/87 | 0.6 | | 0.2 |

TABLE 10 (CONTINUED)
 DRINKING WATER
 TRITIUM CONCENTRATION
 JANUARY - MARCH 1987

| LOCATION | DATE COLLECTED | nCi/l | <u>±</u> | 2s |
|-------------------|----------------|-------|----------|-----|
| NC:WILMINGTON | 1/16/87 | 0.2 | | 0.2 |
| ND:BISMARCK | 1/ 5/87 | 0.2 | | 0.2 |
| NE:LINCOLN | 1/12/87 | 0.2 | | 0.2 |
| NH:CONCORD | 1/ 6/87 | 0.1 | | 0.2 |
| NJ:TRENTON | 1/13/87 | 0.1 | | 0.2 |
| NJ:WARETOWN | 1/29/87 | 0.1 | | 0.2 |
| NM:SANTA FE | 1/ 8/87 | 0.1 | | 0.2 |
| NV:LAS VEGAS | 1/ 7/87 | 0.2 | | 0.2 |
| NY:ALBANY | 1/ 6/87 | 0.1 | | 0.2 |
| NY:NEW YORK CITY | 1/ 7/87 | 0.3 | | 0.2 |
| NY:NIAGARA FALLS | 1/ 7/87 | 0.1 | | 0.2 |
| OH:EAST LIVERPOOL | 1/14/87 | 0.2 | | 0.2 |
| OH:PAINESVILLE | 1/ 6/87 | 0.2 | | 0.2 |
| OH:TOLEDO | 1/13/87 | 0.3 | | 0.2 |
| OK:OKLAHOMA CITY | 1/ 7/87 | 0.2 | | 0.2 |
| OR:PORTLAND | 1/ 9/87 | 0.1 | | 0.2 |
| PA:COLUMBIA | 1/21/87 | 0.2 | | 0.2 |
| PA:HARRISBURG | 1/14/87 | 0.2 | | 0.2 |
| PA:PITTSBURGH | 1/14/87 | 0.2 | | 0.2 |
| PC:ANCON | 1/15/87 | 0.1 | | 0.2 |
| RI:PROVIDENCE | 1/ 6/87 | 0.2 | | 0.2 |
| SC:COLUMBIA | 1/ 7/87 | 0.2 | | 0.2 |
| SC:HARTSVILLE | 1/26/87 | 0.1 | | 0.2 |
| SC:JENKINSVILLE | 1/28/87 | 0.2 | | 0.2 |
| SC:SENECA | 1/27/87 | 0.1 | | 0.2 |
| TN:CHATTANOOGA | 1/ 5/87 | 0.3 | | 0.2 |
| TN:KNOXVILLE | 12/30/86 | 0.1 | | 0.2 |
| TX:AUSTIN | 1/ 9/87 | 0.2 | | 0.2 |
| VA:DOSWELL | 2/ 5/87 | 0.2 | | 0.2 |
| VA:LYNCHBURG | 1/ 8/87 | 0.1 | | 0.2 |
| VA:VIRGINIA BEACH | 2/ 3/87 | 0.1 | | 0.2 |
| VI:ST. THOMAS | 1/15/87 | 0.1 | | 0.2 |
| WA:RICHLAND | 1/13/87 | 0.3 | | 0.2 |
| WA:SEATTLE | 1/12/87 | 0.1 | | 0.2 |
| WI:GENOA CITY | 1/12/87 | 0.1 | | 0.2 |
| WI:MADISON | 1/ 9/87 | 0.2 | | 0.2 |

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 wide geographic coverage throughout the country.* Although exposure measurements at these few sites are not totally representative of nationwide exposures, they do indicate national trends.

The monitoring program utilizes $\text{CaF}_2:\text{Mn}$ 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 January - March are shown in Table 11. Standard deviations reported for each site represents the counting error associated with digitizing the glow curve produced in readout of the exposed dosimeters.

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

TABLE 11

ENVIRONMENTAL GAMMA AMBIENT MONITORING PROGRAM

| LOCATION | DATE RANGE | INTEGRATED | EXPOSURE RATE | |
|------------------|-------------------|------------|---------------|----------------------|
| | | EXPOSURE | MR | MICRO R/HR \pm 2 s |
| AL:MONTGOMERY | 1/08/87- 4/02/87 | 18.3 | 9.1 | 4.1 |
| CA:BERKELEY | 12/31/86- 3/30/87 | 13.7 | 6.4 | 12.9 |
| CO:DENVER | 1/06/87- 4/01/87 | 31.8 | 15.6 | 9.7 |
| FL:ORLANDO | 1/02/87- 4/01/87 | 13.8 | 6.5 | 8.8 |
| ID:BOISE | 1/22/87- 4/16/87 | 28.6 | 14.2 | 3.8 |
| IL:CHICAGO | 2/06/87- 4/02/87 | 13.0 | 9.8 | 7.8 |
| ND:BISMARCK | 1/02/87- 4/01/87 | 19.4 | 9.1 | 4.3 |
| NJ:TRENTON | 12/30/86- 4/02/87 | 27.5 | 12.3 | 4.1 |
| NM:SANTA FE | 1/02/87- 4/03/87 | 34.9 | 16.0 | 6.9 |
| NV:LAS VEGAS | 1/05/87- 4/01/87 | 17.6 | 8.5 | 7.3 |
| NY:NEW YORK | 1/07/87- 5/22/87 | 30.1 | 9.3 | 5.5 |
| OH:COLUMBUS | 1/08/87- 4/20/87 | 21.4 | 8.7 | 7.9 |
| OK:OKLAHOMA CITY | 12/30/86- 4/03/87 | 19.8 | 8.8 | 6.9 |
| OR:PORTLAND | 1/12/87- 4/20/87 | 22.4 | 9.5 | 3.6 |
| PA:HARRISBURG | 1/14/87- 4/03/87 | 13.9 | 7.3 | 6.2 |
| PA:PITTSBURGH | 1/02/87- 4/03/87 | 28.4 | 13.0 | 7.1 |
| RI:PROVIDENCE | 1/02/87- 4/02/87 | 21.9 | 10.1 | 3.1 |
| SC:BARNWELL | 1/07/87- 4/27/87 | 22.6 | 8.5 | 8.3 |
| SC:COLUMBIA | 1/06/87- 3/31/87 | 24.9 | 12.4 | 6.5 |
| TN:KNOXVILLE | 12/31/86- 3/30/87 | 25.6 | 12.0 | 32.9 |
| VA:RICHMOND | 1/05/87- 4/08/87 | 19.0 | 8.5 | 5.4 |

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 can contain several of the biologically important radionuclides which result from environmental releases from nuclear activities. A primary function of this program is to obtain reliable monitoring data relative to current radionuclide concentrations and determine any long-term trends.

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

The samples are analyzed for iodine-131, barium-140, cesium-137, and potassium. All samples collected in July are analyzed 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 for the pasteurized milk samples for January - March are shown in Tables 12 - 14.

Strontium values for these locations are shown in Table 15.

TABLE 12

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JANUARY 1987

| LOCATION | DATE COLLECTED | K | | ¹³⁷ Cs | | ¹⁴⁰ Ba | | ¹³¹ I | |
|------------------|-------------------|------|------|-------------------|-----|-------------------|-----|------------------|-----|
| | | g/l | +2s | pCi/l | +2s | pCi/l | +2s | pCi/l | +2s |
| AK:ANCHORAGE | 1/13/87 | 1.46 | 0.13 | 9 | 9 | 1 | 9 | 5 | 7 |
| AL:MONTGOMERY | 1/ 9/87 | 1.53 | 0.13 | 10 | 8 | 5 | 9 | 31 | 8 |
| AR:LITTLE ROCK | 1/ 6/87 | 1.34 | 0.12 | 9 | 9 | -1 | 9 | 0 | 7 |
| AZ:PHOENIX | 1/ 8/87 | 1.69 | 0.12 | 3 | 7 | 0 | 8 | -2 | 7 |
| CA:LOS ANGELES | 1/ 9/87 | 1.48 | 0.13 | 12 | 9 | 7 | 9 | 1 | 7 |
| CA:SACRAMENTO | 1/ 6/87 | 1.46 | 0.13 | 7 | 9 | 9 | 10 | 1 | 7 |
| CA:SAN FRANCISCO | 1/ 6/87 | 1.42 | 0.12 | 9 | 9 | 6 | 9 | -2 | 7 |
| CO:DENVER | 1/30/87 | 1.72 | 0.13 | 5 | 7 | 10 | 8 | 2 | 7 |
| CT:HARTFORD | 1/ 5/87 | 1.60 | 0.08 | 9 | 5 | 2 | 6 | 5 | 5 |
| DE:WILMINGTON | 1/ 6/87 | 1.60 | 0.13 | 6 | 7 | 7 | 9 | 9 | 7 |
| FL:TAMPA | 1/ 6/87 | 1.54 | 0.13 | 15 | 7 | 8 | 9 | -1 | 7 |
| GA:ATLANTA | 1/13/87 | 1.32 | 0.12 | 18 | 9 | 4 | 9 | -2 | 7 |
| HI:HONOLULU | 1/ 8/87 | 1.54 | 0.09 | 13 | 6 | 7 | 6 | 4 | 5 |
| IA:DES MOINES | 1/ 5/87 | 1.42 | 0.12 | 13 | 9 | 4 | 9 | 6 | 7 |
| ID:IDAHO FALLS | 1/15/87 | 1.39 | 0.12 | 23 | 10 | 4 | 9 | 1 | 7 |
| IL:CHICAGO | 1/ 5/87 | 1.59 | 0.13 | 5 | 7 | 2 | 9 | 5 | 7 |
| KS:WICHITA | 1/12/87 | 1.46 | 0.13 | 4 | 9 | 4 | 9 | 3 | 7 |
| KY:LOUISVILLE | 1/ 6/87 | 1.59 | 0.08 | 7 | 5 | 5 | 6 | 6 | 5 |
| LA:NEW ORLEANS | 1/19/87 | 1.48 | 0.13 | 7 | 9 | 3 | 9 | -1 | 7 |
| MA:BOSTON | 1/ 6/87 | 1.63 | 0.13 | 8 | 7 | 4 | 9 | 5 | 7 |
| MD:BALTIMORE | 1/ 2/87 | 1.64 | 0.12 | 5 | 7 | 3 | 8 | 5 | 7 |
| ME:PORTLAND | 1/ 6/87 | 1.67 | 0.24 | 3 | 18 | 4 | 19 | 4 | 14 |
| MI:DETROIT | 1/12/87 | 1.42 | 0.12 | 14 | 9 | 3 | 9 | 5 | 7 |
| MI:GRAND RAPIDS | 1/ 5/87 | 1.60 | 0.08 | 8 | 5 | 0 | 6 | 8 | 5 |
| MN:MINNEAPOLIS | 1/ 5/87 | 1.66 | 0.12 | 12 | 7 | 6 | 8 | 7 | 7 |
| MN:ST. PAUL | 1/ 5/87 | 1.86 | 0.25 | 7 | 18 | 10 | 19 | 2 | 14 |
| MO:KANSAS CITY | 1/ 9/87 | 1.69 | 0.09 | 4 | 5 | 1 | 6 | 5 | 5 |
| MO:ST. LOUIS | 1/ 7/87 | 1.64 | 0.13 | 6 | 7 | -1 | 9 | -3 | 7 |
| MS:JACKSON | 1/ 5/87 | 1.65 | 0.13 | 9 | 7 | 8 | 9 | 8 | 7 |
| MT:HELENA | 1/22/87 | 1.47 | 0.12 | 7 | 7 | 3 | 8 | 6 | 7 |
| NC:CHARLOTTE | 1/12/87 | 1.58 | 0.24 | 3 | 18 | -5 | 18 | 2 | 14 |
| ND:MINOT | 1/30/87 | 1.50 | 0.13 | 6 | 7 | 5 | 9 | 7 | 7 |
| NE:OMAHA | 1/ 9/87 | 1.47 | 0.13 | 17 | 9 | 6 | 9 | -2 | 7 |
| NH:MANCHESTER | 1/12/87 | 1.89 | 0.25 | 10 | 18 | 4 | 19 | 7 | 14 |
| NJ:TRENTON | 1/ 8/87 | 1.53 | 0.13 | 6 | 7 | 8 | 9 | 8 | 7 |
| NM:ALBUQUERQUE | 1/ 5/87 | 1.57 | 0.13 | 8 | 7 | -1 | 9 | 4 | 7 |
| NV:LAS VEGAS | 1/12/87 | 1.31 | 0.12 | 2 | 9 | -1 | 9 | 1 | 7 |
| NY:BUFFALO | 1/12/87 | 1.48 | 0.13 | 6 | 9 | -2 | 9 | 0 | 7 |
| NY:NEW YORK CITY | 1/ 5/87 | 1.53 | 0.13 | 8 | 7 | -4 | 9 | 1 | 7 |
| NY:SYRACUSE | 1/ 5/87 | 1.63 | 0.08 | 5 | 5 | -2 | 6 | 3 | 5 |
| OH:CINCINNATI | 1/22/87 | 1.65 | 0.12 | 9 | 7 | 6 | 8 | 10 | 7 |
| OK:OKLAHOMA CITY | 1/ 5/87 | 1.55 | 0.09 | 2 | 5 | 1 | 6 | 4 | 5 |

TABLE 12 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

JANUARY 1987

| LOCATION | DATE COLLECTED | K | | ^{137}Cs | | ^{140}Ba | | ^{131}I | |
|-------------------|-------------------|------|------|-------------------|-----|-------------------|-----|------------------|-----|
| | | g/l | +2s | pCi/l | +2s | pCi/l | +2s | pCi/l | +2s |
| OR:PORTLAND | 1/ 5/87 | 1.59 | 0.09 | 17 | 5 | 4 | 6 | 6 | 5 |
| PA:PHILADELPHIA | 1/ 5/87 | 1.58 | 0.08 | 7 | 5 | 1 | 6 | 6 | 5 |
| PA:PITTSBURGH | 1/ 6/87 | 1.63 | 0.13 | 8 | 7 | 2 | 9 | 5 | 7 |
| PC:CRISTOBAL | 1/29/87 | 1.55 | 0.13 | 19 | 7 | -4 | 9 | -1 | 7 |
| PR:SAN JUAN | 1/16/87 | 1.41 | 0.12 | 2 | 9 | 2 | 9 | 2 | 7 |
| SC:CHARLESTON | 1/27/87 | 1.57 | 0.12 | 10 | 7 | -4 | 8 | 5 | 7 |
| SD:RAPID CITY | 1/ 5/87 | 1.50 | 0.09 | 3 | 5 | -4 | 6 | 1 | 5 |
| TN:CHATTANOOGA | 1/ 5/87 | 1.51 | 0.13 | 12 | 7 | 0 | 9 | 6 | 7 |
| TN:KNOXVILLE | 1/ 5/87 | NA | | 3 | 2 | NA | | NA | |
| TN:MEMPHIS | 1/20/87 | 1.40 | 0.12 | 17 | 9 | 4 | 9 | 8 | 8 |
| UT:SALT LAKE CITY | 1/ 5/87 | 1.67 | 0.12 | 6 | 7 | 3 | 8 | 6 | 7 |
| VA:NORFOLK | 1/ 2/87 | NA | | 2 | 3 | NA | | NA | |
| VT:BURLINGTON | 1/ 1/87 | 1.56 | 0.13 | 6 | 7 | 5 | 9 | 5 | 7 |
| WA:SEATTLE | 1/ 5/87 | NA | | 10 | 3 | NA | | NA | |
| WI:MILWAUKEE | 1/ 2/87 | 1.57 | 0.13 | 3 | 7 | 1 | 9 | 5 | 7 |
| WV:CHARLESTON | 1/20/87 | 1.82 | 0.25 | 27 | 19 | 16 | 19 | 8 | 14 |
| WY:LARAMIE | 1/ 7/87 | 1.91 | 0.25 | 8 | 18 | 17 | 19 | 3 | 14 |

s = SIGMA COUNTING ERROR

TABLE 13

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

FEBRUARY 1987

| LOCATION | DATE COLLECTED | K g/l+2s | | 137Cs | | 140Ba | | 131I | |
|------------------|-------------------|-------------|------|----------|----|----------|----|----------|----|
| | | | | pCi/l+2s | | pCi/l+2s | | pCi/l+2s | |
| AL:MONTGOMERY | 2/ 5/87 | 1.59 | 0.12 | 8 | 7 | 2 | 8 | 3 | 7 |
| AR:LITTLE ROCK | 2/ 3/87 | 1.65 | 0.12 | 6 | 7 | 1 | 8 | 4 | 7 |
| AZ:PHOENIX | 2/ 5/87 | 1.57 | 0.12 | 3 | 7 | 7 | 8 | 0 | 7 |
| CA:LOS ANGELES | 2/ 5/87 | 1.60 | 0.12 | 6 | 7 | 8 | 8 | 2 | 7 |
| CA:SACRAMENTO | 2/ 3/87 | 1.76 | 0.18 | 4 | 13 | -2 | 13 | 7 | 10 |
| CA:SAN FRANCISCO | 2/13/87 | 1.55 | 0.12 | 9 | 7 | 5 | 8 | 5 | 7 |
| CO:DENVER | 2/26/87 | 1.55 | 0.12 | 6 | 7 | 2 | 8 | 1 | 7 |
| CT:HARTFORD | 2/ 2/87 | 1.60 | 0.13 | 5 | 7 | 1 | 9 | -1 | 7 |
| DE:WILMINGTON | 2/ 4/87 | 1.63 | 0.12 | 5 | 7 | 3 | 8 | -2 | 7 |
| FL:TAMPA | 2/ 3/87 | 1.52 | 0.13 | 16 | 7 | 5 | 9 | 0 | 7 |
| GA:ATLANTA | 2/ 2/87 | 1.42 | 0.12 | 0 | 7 | 1 | 9 | 0 | 7 |
| HI:HONOLULU | 2/ 2/87 | 1.51 | 0.12 | 1 | 7 | 1 | 8 | 4 | 7 |
| IA:DES MOINES | 2/ 2/87 | 1.60 | 0.08 | 8 | 5 | 3 | 6 | 6 | 5 |
| ID:IDAHO FALLS | 2/ 6/87 | 1.51 | 0.09 | 6 | 5 | 4 | 6 | 8 | 5 |
| IL:CHICAGO | 2/ 2/87 | 1.59 | 0.12 | 10 | 7 | 4 | 8 | 3 | 7 |
| IN:INDIANAPOLIS | 2/ 3/87 | 1.60 | 0.13 | 0 | 7 | 5 | 9 | 4 | 7 |
| KS:WICHITA | 2/ 2/87 | 1.47 | 0.12 | 3 | 7 | 3 | 9 | 1 | 7 |
| KY:LOUISVILLE | 2/ 3/87 | 1.59 | 0.12 | 7 | 7 | -2 | 8 | 7 | 7 |
| MA:BOSTON | 2/ 3/87 | 1.75 | 0.13 | 7 | 7 | 2 | 9 | 3 | 7 |
| MD:BALTIMORE | 2/ 6/87 | 1.74 | 0.13 | 5 | 7 | -8 | 8 | 4 | 7 |
| ME:PORTLAND | 2/ 3/87 | 1.73 | 0.18 | 5 | 13 | 6 | 13 | 6 | 10 |
| MI:DETROIT | 2/ 5/87 | 1.53 | 0.12 | 10 | 7 | 2 | 8 | 6 | 7 |
| MI:GRAND RAPIDS | 2/ 2/87 | 1.61 | 0.13 | 5 | 7 | -3 | 9 | -3 | 7 |
| MN:MINNEAPOLIS | 2/17/87 | 1.62 | 0.12 | 6 | 7 | 2 | 8 | 2 | 7 |
| MN:ST. PAUL | 2/ 2/87 | 1.64 | 0.24 | 4 | 18 | 11 | 19 | 9 | 14 |
| MO:KANSAS CITY | 2/ 5/87 | 1.56 | 0.24 | 0 | 18 | 0 | 19 | 3 | 14 |
| MO:ST. LOUIS | 2/ 3/87 | 1.59 | 0.12 | 6 | 7 | 3 | 8 | 3 | 7 |
| MS:JACKSON | 2/ 3/87 | 1.58 | 0.12 | 8 | 7 | 6 | 8 | 1 | 7 |
| MT:HELENA | 2/26/87 | 1.69 | 0.24 | 11 | 18 | -5 | 19 | 7 | 14 |
| NC:CHARLOTTE | 2/ 9/87 | 1.67 | 0.24 | 11 | 18 | -3 | 19 | 3 | 14 |
| ND:MINOT | 2/25/87 | 1.56 | 0.13 | 5 | 7 | 0 | 9 | 7 | 7 |
| NE:OMAHA | 2/12/87 | 1.57 | 0.12 | 10 | 7 | 5 | 8 | 4 | 7 |
| NH:MANCHESTER | 2/ 2/87 | 1.64 | 0.13 | 7 | 7 | -1 | 9 | -2 | 7 |
| NJ:TRENTON | 2/ 4/87 | 1.53 | 0.12 | 5 | 7 | -2 | 8 | 4 | 7 |
| NM:ALBUQUERQUE | 2/ 2/87 | 1.61 | 0.08 | 6 | 5 | 1 | 6 | 4 | 5 |
| NY:BUFFALO | 2/ 9/87 | 1.62 | 0.12 | 4 | 7 | -3 | 8 | 5 | 7 |
| NY:NEW YORK CITY | 2/ 2/87 | 1.56 | 0.09 | 5 | 5 | 5 | 6 | 3 | 5 |
| NY:SYRACUSE | 2/ 2/87 | 1.63 | 0.12 | 2 | 7 | 0 | 8 | 6 | 7 |
| OH:CINCINNATI | 2/24/87 | 1.55 | 0.13 | 2 | 7 | -2 | 9 | 6 | 7 |
| OK:OKLAHOMA CITY | 2/ 3/87 | 1.56 | 0.12 | 6 | 7 | 6 | 8 | 3 | 7 |
| OR:PORTLAND | 2/ 3/87 | 1.65 | 0.12 | 9 | 7 | 5 | 8 | 2 | 7 |
| PA:PHILADELPHIA | 2/ 2/87 | 1.54 | 0.09 | 3 | 5 | 1 | 6 | 5 | 5 |

TABLE 13 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

FEBRUARY 1987

| LOCATION | DATE COLLECTED | K | | ^{137}Cs | | ^{140}Ba | | ^{131}I | |
|--------------------|-------------------|------|------|-------------------|-----|-------------------|-----|------------------|-----|
| | | g/l | +2s | pCi/l | +2s | pCi/l | +2s | pCi/l | +2s |
| PA: PITTSBURGH | 2/ 3/87 | 1.58 | 0.12 | 9 | 7 | -6 | 8 | 5 | 7 |
| PC: CRISTOBAL | 2/26/87 | 1.51 | 0.13 | 10 | 7 | 4 | 9 | 0 | 7 |
| PR: SAN JUAN | 2/17/87 | 1.64 | 0.13 | 8 | 7 | 2 | 9 | 2 | 7 |
| SD: RAPID CITY | 2/ 3/87 | 1.74 | 0.25 | 3 | 18 | 10 | 19 | -1 | 14 |
| TN: CHATTANOOGA | 2/ 2/87 | 1.58 | 0.12 | 6 | 7 | 1 | 8 | 3 | 7 |
| TN: KNOXVILLE | 2/ 2/87 | 1.72 | 0.17 | 7 | 13 | 3 | 13 | 4 | 10 |
| TN: MEMPHIS | 2/24/87 | 1.48 | 0.12 | 5 | 7 | -2 | 8 | 1 | 7 |
| UT: SALT LAKE CITY | 2/ 2/87 | 1.61 | 0.08 | 8 | 5 | -2 | 6 | 7 | 5 |
| VA: NORFOLK | 2/ 2/87 | 1.61 | 0.08 | 2 | 5 | -3 | 6 | 2 | 5 |
| VT: BURLINGTON | 2/ 2/87 | 1.60 | 0.12 | 3 | 7 | 0 | 8 | 6 | 7 |
| WA: SEATTLE | 2/ 2/87 | 1.60 | 0.12 | 20 | 7 | 8 | 8 | 4 | 7 |
| WI: MILWAUKEE | 2/ 2/87 | 1.60 | 0.09 | 3 | 5 | 5 | 6 | 4 | 5 |
| WV: CHARLESTON | 2/17/87 | 1.73 | 0.25 | 5 | 18 | 3 | 19 | 8 | 14 |
| WY: LARAMIE | 2/ 4/87 | 1.74 | 0.25 | 1 | 18 | 1 | 19 | 1 | 14 |

s = SIGMA COUNTING ERROR

TABLE 14

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

MARCH 1987

| LOCATION | DATE COLLECTED | K | | ^{137}Cs | | ^{140}Ba | | ^{131}I | |
|------------------|----------------|------|------|-------------------|----|-------------------|----|------------------|----|
| | | g/l | 2s | pCi/l | 2s | pCi/l | 2s | pCi/l | 2s |
| AK:ANCHORAGE | 3/ 4/87 | 1.48 | 0.09 | 3 | 5 | 8 | 6 | 4 | 5 |
| AL:MONTGOMERY | 3/ 6/87 | 1.65 | 0.13 | 7 | 7 | -3 | 9 | 6 | 7 |
| AR:LITTLE ROCK | 3/ 3/87 | 1.44 | 0.12 | 8 | 7 | 3 | 9 | 7 | 7 |
| AZ:PHOENIX | 3/ 5/87 | 1.49 | 0.12 | 2 | 7 | -1 | 8 | 6 | 7 |
| CA:LOS ANGELES | 3/ 6/87 | 1.75 | 0.13 | 6 | 7 | 10 | 8 | 5 | 7 |
| CA:SACRAMENTO | 3/ 4/87 | 1.57 | 0.13 | -1 | 7 | 4 | 9 | 3 | 7 |
| CA:SAN FRANCISCO | 3/ 2/87 | 1.59 | 0.09 | 5 | 5 | -4 | 6 | 4 | 5 |
| CO:DENVER | 3/31/87 | 1.46 | 0.12 | 7 | 7 | 1 | 9 | -3 | 7 |
| CT:HARTFORD | 3/ 2/87 | 1.72 | 0.13 | 7 | 7 | 9 | 8 | 2 | 7 |
| DE:WILMINGTON | 3/10/87 | 1.64 | 0.12 | 8 | 7 | 1 | 8 | 5 | 7 |
| FL:TAMPA | 3/ 3/87 | 1.59 | 0.12 | 18 | 7 | 3 | 8 | 7 | 7 |
| GA:ATLANTA | 3/ 9/87 | 1.48 | 0.12 | 3 | 7 | 2 | 8 | 3 | 7 |
| HI:HONOLULU | 3/ 5/87 | 1.58 | 0.13 | 1 | 7 | 3 | 9 | 0 | 7 |
| IA:DES MOINES | 3/ 2/87 | 1.60 | 0.12 | 9 | 7 | -3 | 8 | 7 | 7 |
| IL:CHICAGO | 3/ 3/87 | 1.58 | 0.13 | 5 | 7 | -1 | 9 | 6 | 7 |
| IN:INDIANAPOLIS | 3/ 2/87 | 1.67 | 0.12 | 5 | 7 | 1 | 8 | 0 | 7 |
| KS:WICHITA | 3/ 9/87 | 1.59 | 0.08 | 5 | 5 | -2 | 6 | 2 | 5 |
| KY:LOUISVILLE | 3/ 2/87 | 1.65 | 0.13 | 4 | 7 | -2 | 9 | 6 | 7 |
| LA:NEW ORLEANS | 3/16/87 | 1.58 | 0.08 | 4 | 5 | 6 | 6 | -1 | 5 |
| MD:BALTIMORE | 3/ 6/87 | 1.71 | 0.13 | 5 | 7 | 8 | 8 | 2 | 7 |
| ME:PORTLAND | 3/ 3/87 | 1.85 | 0.25 | 21 | 19 | 13 | 19 | 4 | 14 |
| MI:DETROIT | 3/ 6/87 | 1.47 | 0.12 | 2 | 7 | 0 | 9 | 1 | 7 |
| MI:GRAND RAPIDS | 3/ 2/87 | 1.61 | 0.12 | 3 | 7 | 0 | 8 | 5 | 7 |
| MN:MINNEAPOLIS | 3/ 2/87 | 1.54 | 0.24 | 17 | 18 | -1 | 19 | -4 | 14 |
| MN:ST. PAUL | 3/ 3/87 | 1.84 | 0.25 | 10 | 18 | 2 | 19 | 7 | 14 |
| MO:KANSAS CITY | 3/ 6/87 | 1.55 | 0.12 | 8 | 7 | 4 | 8 | 6 | 7 |
| MO:ST. LOUIS | 3/ 4/87 | 1.57 | 0.12 | 5 | 7 | 1 | 8 | 5 | 7 |
| MS:JACKSON | 3/ 3/87 | 1.61 | 0.12 | 5 | 7 | -4 | 8 | 2 | 7 |
| MT:HELENA | 3/ 5/87 | 1.59 | 0.12 | 8 | 7 | 1 | 8 | 7 | 7 |
| NC:CHARLOTTE | 3/ 9/87 | 1.68 | 0.25 | 12 | 18 | 8 | 19 | 7 | 14 |
| ND:MINOT | 3/27/87 | 1.69 | 0.13 | 2 | 7 | -1 | 9 | 1 | 7 |
| NE:OMAHA | 3/ 6/87 | 1.60 | 0.12 | 11 | 7 | 6 | 8 | 5 | 7 |
| NH:MANCHESTER | 3/16/87 | 1.56 | 0.12 | 6 | 7 | 2 | 8 | 3 | 7 |
| NJ:TRENTON | 3/ 3/87 | 1.58 | 0.13 | 6 | 7 | 4 | 9 | 3 | 7 |
| NM:ALBUQUERQUE | 3/ 2/87 | 1.79 | 0.25 | 11 | 18 | 2 | 19 | 4 | 14 |
| NV:LAS VEGAS | 3/ 2/87 | 1.77 | 0.25 | 2 | 18 | 4 | 19 | -2 | 14 |
| NY:BUFFALO | 3/ 2/87 | 1.62 | 0.08 | 5 | 5 | 6 | 6 | -1 | 5 |
| NY:NEW YORK CITY | 3/ 2/87 | 1.64 | 0.12 | 8 | 7 | -1 | 8 | 8 | 7 |
| NY:SYRACUSE | 3/ 2/87 | 1.74 | 0.25 | 13 | 18 | -4 | 19 | -2 | 14 |
| OH:CINCINNATI | 3/25/87 | 1.58 | 0.12 | 5 | 7 | 2 | 8 | 7 | 7 |
| OK:OKLAHOMA CITY | 3/ 2/87 | 1.62 | 0.24 | 11 | 18 | 1 | 19 | 1 | 14 |
| OR:PORTLAND | 3/ 2/87 | 1.57 | 0.13 | 5 | 7 | -2 | 9 | 1 | 7 |

TABLE 14 (CONTINUED)

CONCENTRATIONS OF RADIONUCLIDES IN PASTEURIZED MILK

MARCH 1987

| LOCATION | DATE COLLECTED | K | | ^{137}Cs | | ^{140}Ba | | ^{131}I | |
|-------------------|-------------------|------|------|-------------------|-----|-------------------|-----|------------------|-----|
| | | g/l | +2s | pCi/l | +2s | pCi/l | +2s | pCi/l | +2s |
| PA:PHILADELPHIA | 3/ 2/87 | 1.63 | 0.12 | 2 | 7 | -3 | 8 | 2 | 7 |
| PA:PITTSBURGH | 3/ 3/87 | 1.55 | 0.24 | 4 | 18 | 7 | 19 | -4 | 14 |
| PC:CRISTOBAL | 3/26/87 | 1.53 | 0.13 | 15 | 7 | -1 | 9 | 5 | 7 |
| PR:SAN JUAN | 3/12/87 | 1.74 | 0.13 | 6 | 7 | 2 | 8 | -1 | 7 |
| SC:CHARLESTON | 3/16/87 | 1.59 | 0.12 | 9 | 7 | 3 | 8 | 7 | 7 |
| SD:RAPID CITY | 3/ 2/87 | 1.52 | 0.12 | 6 | 7 | -2 | 8 | 5 | 7 |
| TN:CHATTANOOGA | 3/ 2/87 | 1.78 | 0.17 | 12 | 13 | -5 | 13 | 9 | 10 |
| TN:KNOXVILLE | 3/ 2/87 | 1.80 | 0.25 | -4 | 18 | -3 | 19 | 3 | 14 |
| TN:MEMPHIS | 3/31/87 | 1.52 | 0.12 | 7 | 7 | -3 | 8 | 3 | 7 |
| TX:AUSTIN | 3/ 4/87 | 1.63 | 0.12 | 0 | 7 | 4 | 8 | 5 | 7 |
| UT:SALT LAKE CITY | 3/ 2/87 | 1.54 | 0.12 | 6 | 7 | 1 | 8 | 3 | 7 |
| VA:NORFOLK | 3/ 3/87 | 1.59 | 0.13 | 7 | 7 | 8 | 9 | -4 | 7 |
| VT:BURLINGTON | 3/ 2/87 | 1.54 | 0.12 | 12 | 7 | 0 | 8 | 5 | 7 |
| WA:SEATTLE | 3/ 6/87 | 1.58 | 0.12 | 13 | 7 | 5 | 8 | 5 | 7 |
| WA:SPOKANE | 3/ 9/87 | 1.70 | 0.25 | 9 | 18 | -17 | 18 | 1 | 14 |
| WI:MILWAUKEE | 3/ 2/87 | 1.63 | 0.12 | 5 | 7 | -3 | 8 | 7 | 7 |
| WV:CHARLESTON | 3/18/87 | 1.88 | 0.18 | 8 | 13 | 17 | 13 | 4 | 10 |
| WY:LARAMIE | 3/ 3/87 | 1.59 | 0.08 | 1 | 5 | -1 | 6 | 2 | 5 |

s = SIGMA COUNTING ERROR

TABLE 15

STRONTIUM-90 AND STRONTIUM-89 IN PASTEURIZED MILK

EPA REGIONAL COMPOSITES

JANUARY - MARCH 1987

| REGION | ^{90}Sr | | ^{89}Sr | |
|--------|------------------|-----|------------------|---|
| | pCi/l \pm 2s | | pCi/l \pm 2s* | |
| I | 0.8 | 0.9 | 2 | 1 |
| II | 2.1 | 0.5 | -1 | 1 |
| III | 1.4 | 1.2 | 1 | 2 |
| IV | 2.6 | 0.9 | -1 | 2 |
| V | 1.9 | 0.6 | 1 | 1 |
| VI | 1.5 | 0.8 | 2 | 1 |
| VII | 2.3 | 1.0 | -1 | 1 |
| VIII | 1.4 | 0.4 | 1 | 1 |
| IX | 0.0 | 0.6 | 2 | 1 |
| X | 0.4 | 0.4 | 2 | 1 |

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 of carbon-14. These samples are monitored for 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.

The last carbon-14 results were for samples collected during May 1975 and May 1979. They were published in Environmental Radiation Data: Report 29.

ENVIRONMENTAL RADIATION DATA (ERD) is published quarterly (January, April, July, October) by the U. S. Environmental Protection Agency's Office of Radiation Programs.

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U. S. Environmental Protection Agency
Waterside Mall East
401 M Street, SW
Washington, DC 20460
