

ENVIRONMENTAL

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DATA

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## Preface

*Environmental Radiation Data* (ERD) is compiled and distributed quarterly by the Office of Radiation and Indoor Air's National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama, and contains data from the Environmental Radiation Ambient Monitoring System (ERAMS). Data from similar networks operated by contributing States, Canada, Mexico, and the Pan American Health Organization are reported in the ERD when available.

ERAMS was established in 1973 by the United States Environmental Protection Agency. It is comprised of a nationwide network of sampling stations that provide air, surface and drinking water, and milk samples from which environmental radiation levels are derived. The major emphasis for ERAMS is upon identifying trends in the accumulation of long-lived radionuclides in the environment.

Sampling locations are selected to provide optimal population coverage while functioning to monitor fallout from nuclear devices and other forms of radioactive contamination of the environment. The radiation analyses performed on these samples include gross alpha and gross beta levels, gamma analyses for fission products, and specific analyses for uranium, plutonium, strontium, iodine, radium, and tritium. This monitoring effort also provides ancillary information on natural background levels and on routine and accidental releases into the environment from stationary sources.

The radiochemical procedures used by NAREL to analyze the ERAMS samples are contained in the *Eastern Environmental Radiation Facility Radiochemistry Procedures Manual* (EPA 520/5-84-006). Station operation and sample collection are in accordance with procedures contained in the *ERAMS Manual* (EPA 520/5-84-007, 008, 009).

## Data Reporting Rationale

Frequently, there is little or no radioactivity in environmental media. Thus, the results of laboratory analyses should show a distribution of negative and positive numbers about zero. A negative value occurs when a previously determined background value is subtracted from a sample value that is less than that of the background. From July 1975 to March 1991, ERAMS data were reported as calculated, whether the results were negative, zero, or positive. Since April 1991, negative results have been denoted as “not detectable,” or “ND.” For gamma analyses only, results less than the  $2\sigma$  counting error are also denoted as “not detectable.”

All data are stored in the NAREL sample database as generated, and these values are available for statistical evaluation. However, caution should be exercised in the use of the data in this report for statistical analysis, since the removal of negative numbers produces a positive bias in the distribution of results.

### Reported Error Terms

Each reported value for specific analyses will be accompanied by a counting error term at the  $2\sigma$  (95%) confidence level. Error terms are therefore reported as counting errors. At the very low levels characteristic of most ERAMS measurements, counting error is the greatest contributor to overall error.

### Significant Figures

No more than three significant figures will be reported. A datum that contains more than three figures will be rounded off to three figures.

### Reporting Levels

The reporting units, smallest increments for reporting, and routine minimum detectable concentrations (MDCs) for each isotope are shown in Table 1. The MDC is defined as the minimum concentration that gives a 95% probability of detection when the detection criteria are chosen to give only a 5% probability of false detection in a blank sample. Reporting increments are sometimes considerably smaller than MDCs to avoid truncation errors in averaging.

### Averages

Averages will be calculated along with appropriate error terms in an annual summary and analysis of ERAMS data. In calculating these averages, all values of individual data, including negative numbers, will be utilized. Averages will not be included in ERD quarterly reports.

**Table 1**  
ERAMS Reporting Increments and Minimum Detectable  
Concentrations for Radionuclide Analyses

| Radionuclide             | Media                             | Reporting Units    | Reporting Increments    | Minimum Detectable Concentrations |
|--------------------------|-----------------------------------|--------------------|-------------------------|-----------------------------------|
| Gross Alpha              | Water                             | pCi/L              | 1 pCi/L                 | 2 pCi/L                           |
| † Gross Beta             | Air                               | pCi/m <sup>3</sup> | 0.01 pCi/m <sup>3</sup> | 0.0015 pCi/m <sup>3</sup>         |
|                          | Water                             | pCi/L              | 1 pCi/L                 | 2 pCi/L                           |
|                          | Precipitation                     | nCi/m <sup>2</sup> | 0.01 nCi/m <sup>2</sup> | 0.005 nCi/m <sup>2</sup>          |
|                          | (specific radiochemical analyses) |                    |                         |                                   |
| Tritium                  | Water                             | nCi/L              | 0.1 nCi/L               | 0.15 nCi/L                        |
|                          | Milk                              | nCi/L              | 0.1 nCi/L               | 0.15 nCi/L                        |
| †† Plutonium-238,239/240 | Air                               | aCi/m <sup>3</sup> | 0.1 aCi/m <sup>3</sup>  | 1.5 aCi/m <sup>3</sup>            |
|                          | Water                             | pCi/L              | 0.001 pCi/L             | 0.1 pCi/L                         |
| ‡ Uranium-234,235,238    | Air                               | aCi/m <sup>3</sup> | 0.1 aCi/m <sup>3</sup>  | 1.5 aCi/m <sup>3</sup>            |
|                          | Water                             | pCi/L              | 0.001 pCi/L             | 0.1 pCi/L                         |
| Radium-226               | Water                             | pCi/L              | 0.1 pCi/L               | 0.02 pCi/L                        |
| Strontium-90             | Milk                              | pCi/L              | 0.1 pCi/L               | 2 pCi/L                           |
|                          | Water                             | pCi/L              | 0.1 pCi/L               | 1 pCi/L                           |
| ‡‡ Iodine-131            | Milk (gamma)                      | pCi/L              | 1 pCi/L                 | 4 pCi/L                           |
|                          | Water (gamma)                     | pCi/L              | 1 pCi/L                 | 4 pCi/L                           |
|                          | Water                             | pCi/L              | 0.1 pCi/L               | 0.3 pCi/L                         |
| Cesium-137               | Milk                              | pCi/L              | 1 pCi/L                 | 5 pCi/L                           |
|                          | Water                             | pCi/L              | 1 pCi/L                 | 5 pCi/L                           |
| ‡‡ Barium-140            | Milk                              | pCi/L              | 1 pCi/L                 | 15 pCi/L                          |
|                          | Water                             | pCi/L              | 1 pCi/L                 | 15 pCi/L                          |
| Potassium                | Milk                              | g/L                | 0.1 g/L                 | 0.06 g/L                          |
|                          | Water                             | g/L                | 0.1 g/L                 | 0.06 g/L                          |
| Potassium-40             | Water                             | pCi/L              | 1 pCi/L                 | 50 pCi/L                          |

† The MDC for precipitation is based on the assumption of 1 cm of precipitation.

†† The MDC for air is based on an assumed total sample volume of 60,000 m<sup>3</sup>. Measurement by alpha spectroscopy includes contributions of plutonium-239 and plutonium-240.

‡ The MDC for air is based on an assumed total sample volume of 60,000 m<sup>3</sup>.

‡‡ Activity as of the day of counting.

# 1. Air Program

## Airborne Particulates and Precipitation

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

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

Filters (10-cm diameter synthetic fiber) from air samplers are changed twice weekly and field measurements are made with a G-M survey meter<sup>†</sup> at 5 hours and 29 hours after collection to allow for radon and thoron daughter product decay. Field estimates are reported to appropriate EPA officials by telephone or mail depending on the activity levels found.

The filters are sent to NAREL for more sensitive analyses in a low background beta counter. Gamma scans are performed on all filters showing gross beta counts greater than 1 pCi/m<sup>3</sup>. The laboratory obtained values are usually lower than the field estimates due to the decay of naturally occurring radionuclides between the times of the two measurements.

Precipitation samples are collected at those field stations collecting air filters. These samples are also sent to NAREL where they are composited monthly for gamma scans, tritium, and gross beta activity measurements. A composite of the March, April, and May precipitation samples is analyzed for plutonium-238, -239, -240, and uranium-234, -235, and -238.

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

Tables 2–4 contain the data from airborne particulate samples for January–March 1994. Tables 5–7 contain the data from precipitation samples for January–March 1994. Table 8 contains the data from tritium in precipitation samples for January–March 1994 at the selected sites.

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<sup>†</sup> The counts at five hours for the Montgomery, Alabama, station are performed on a low background beta counter.

**Table 2**  
**Gross Beta in Airborne Particulates**  
 January 1994

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| AK:Juneau         | 7                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.01 |
| AL:Montgomery     | 9                       | 0.6                      | 0.1 | 0.2 | 0.11                     | 0.01 | 0.02 |
| AR:Little Rock    | 9                       | 0.2                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.02 |
| AZ:Phoenix        | 3                       | 1.3                      | 0.5 | 0.8 | 0.03                     | 0.02 | 0.02 |
| CA:Berkeley       | 8                       | 4.9                      | 0.0 | 0.7 | 0.04                     | 0.00 | 0.02 |
| CA:Los Angeles    | 8                       | 0.3                      | 0.0 | 0.2 | 0.02                     | 0.01 | 0.02 |
| CO:Denver         | 9                       | 1.3                      | 0.2 | 0.6 | 0.02                     | 0.01 | 0.01 |
| CT:Hartford       | 9                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| DE:Wilmington     | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| FL:Jacksonville   | 5                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| FL:Miami          | 9                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| HI:Honolulu       | 5                       | 0.2                      | 0.1 | 0.1 | 0.00                     | 0.00 | 0.00 |
| IA:Iowa City      | 9                       | 0.1                      | 0.0 | 0.1 | 0.04                     | 0.02 | 0.02 |
| ID:Boise          | 8                       | 0.3                      | 0.1 | 0.2 | 0.03                     | 0.00 | 0.01 |
| ID:Idaho Falls    | 9                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| IL:Chicago        | 6                       | 0.4                      | 0.0 | 0.1 | 0.02                     | 0.02 | 0.02 |
| IN:Indianapolis   | 8                       | 0.2                      | 0.0 | 0.1 | 0.03                     | 0.01 | 0.02 |
| KS:Topeka         | 9                       | 2.0                      | 0.2 | 0.9 | 0.03                     | 0.01 | 0.02 |
| KY:Frankfort      | 4                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| LA:New Orleans    | 6                       | 0.2                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.01 |
| MA:Lawrence       | 2                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| ME:Augusta        | 6                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| MI:Lansing        | 9                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.01 |
| MN:Minneapolis    | 4                       | 0.1                      | 0.0 | 0.1 | 0.04                     | 0.02 | 0.03 |
| MO:Jefferson City | 8                       | 0.5                      | 0.1 | 0.3 | 0.03                     | 0.01 | 0.02 |
| MS:Jackson        | 8                       | 0.1                      | 0.0 | 0.1 | 0.03                     | 0.01 | 0.01 |
| NC:Charlotte      | 6                       | 0.1                      | 0.0 | 0.0 | 0.03                     | 0.01 | 0.01 |
| NC:Wilmington     | 5                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| ND:Bismarck       | 5                       | 0.0                      | 0.0 | 0.0 | 0.03                     | 0.02 | 0.02 |
| NE:Lincoln        | 3                       | 1.0                      | 0.0 | 0.5 | 0.03                     | 0.01 | 0.02 |
| NH:Concord        | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| NJ:Trenton        | 6                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| NM:Santa Fe       | 7                       | 0.7                      | 0.2 | 0.4 | 0.02                     | 0.00 | 0.01 |
| NV:Las Vegas      | 9                       | 0.4                      | 0.1 | 0.2 | 0.03                     | 0.01 | 0.02 |
| NY:Albany         | 4                       | 0.0                      | 0.0 | 0.0 | 0.03                     | 0.01 | 0.02 |
| NY:Niagara Falls  | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| NY:Syracuse       | 2                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |

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

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| NY:Yaphank        | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.02 |
| OH:Columbus       | 5                       | 0.2                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.01 |
| OH:Painesville    | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| OH:Ross           | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| OH:Toledo         | 9                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.02 |
| OR:Portland       | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.01 |
| PA:Harrisburg     | 7                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| PA:Pittsburgh     | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| SC:Barnwell       | 2                       | 0.1                      | 0.0 | 0.1 | 0.04                     | 0.01 | 0.03 |
| SC:Columbia       | 8                       | 0.3                      | 0.0 | 0.1 | 0.04                     | 0.01 | 0.02 |
| SD:Pierre         | 8                       | 0.7                      | 0.0 | 0.2 | 0.04                     | 0.02 | 0.03 |
| TN:Knoxville      | 1                       | 0.2                      | 0.2 | 0.2 | 0.02                     | 0.02 | 0.02 |
| TN:Nashville      | 8                       | 0.1                      | 0.0 | 0.1 | 0.03                     | 0.01 | 0.02 |
| TX:Austin         | 8                       | 0.3                      | 0.0 | 0.2 | 0.02                     | 0.01 | 0.01 |
| TX:El Paso        | 9                       | 1.9                      | 0.5 | 1.1 | 0.03                     | 0.01 | 0.02 |
| UT:Salt Lake City | 9                       | 0.5                      | 0.0 | 0.2 | 0.03                     | 0.01 | 0.01 |
| VA:Lynchburg      | 9                       | 0.3                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.01 |
| VA:Virginia Beach | 3                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| WA:Olympia        | 1                       | 0.2                      | 0.2 | 0.2 | 0.01                     | 0.01 | 0.01 |
| WA:Spokane        | 9                       | 0.3                      | 0.1 | 0.2 | 0.04                     | 0.00 | 0.02 |
| WI:Madison        | 9                       | 0.1                      | 0.0 | 0.1 | 0.03                     | 0.01 | 0.02 |

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

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

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| AK:Juneau         | 9                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.01 |
| AL:Montgomery     | 8                       | 0.6                      | 0.1 | 0.3 | 0.02                     | 0.01 | 0.01 |
| AR:Little Rock    | 8                       | 0.6                      | 0.1 | 0.2 | 0.03                     | 0.01 | 0.02 |
| AZ:Phoenix        | 4                       | 0.7                      | 0.4 | 0.5 | 0.02                     | 0.01 | 0.01 |
| CA:Berkeley       | 8                       | 0.3                      | 0.0 | 0.1 | 0.03                     | 0.00 | 0.01 |
| CA:Los Angeles    | 8                       | 0.3                      | 0.0 | 0.1 | 0.02                     | 0.00 | 0.01 |
| CO:Denver         | 8                       | 0.8                      | 0.2 | 0.4 | 0.02                     | 0.01 | 0.01 |
| CT:Hartford       | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| DE:Wilmington     | 7                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| FL:Jacksonville   | 8                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.00 | 0.01 |
| FL:Miami          | 8                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| HI:Honolulu       | 5                       | 0.2                      | 0.1 | 0.1 | 0.00                     | 0.00 | 0.00 |
| IA:Iowa City      | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| ID:Boise          | 8                       | 0.4                      | 0.0 | 0.2 | 0.03                     | 0.00 | 0.01 |
| ID:Idaho Falls    | 8                       | 0.0                      | 0.0 | 0.0 | 0.03                     | 0.00 | 0.01 |
| IL:Chicago        | 5                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| IN:Indianapolis   | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.02 |
| KS:Topeka         | 8                       | 1.0                      | 0.3 | 0.6 | 0.03                     | 0.01 | 0.02 |
| KY:Frankfort      | 3                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| LA:New Orleans    | 4                       | 0.2                      | 0.1 | 0.2 | 0.01                     | 0.01 | 0.01 |
| MA:Lawrence       | 3                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| ME:Augusta        | 7                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| MI:Lansing        | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| MN:Minneapolis    | 4                       | 0.1                      | 0.0 | 0.1 | 0.03                     | 0.02 | 0.02 |
| MO:Jefferson City | 8                       | 0.3                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| MS:Jackson        | 8                       | 0.3                      | 0.0 | 0.1 | 0.02                     | 0.00 | 0.01 |
| NC:Charlotte      | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| NC:Wilmington     | 4                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| ND:Bismarck       | 7                       | 0.0                      | 0.0 | 0.0 | 0.03                     | 0.01 | 0.02 |
| NH:Concord        | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| NJ:Trenton        | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| NM:Santa Fe       | 6                       | 0.3                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| NV:Las Vegas      | 8                       | 0.4                      | 0.1 | 0.2 | 0.03                     | 0.00 | 0.01 |
| NY:Albany         | 4                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| NY:Niagara Falls  | 8                       | 0.2                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| NY:Syracuse       | 2                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| NY:Yaphank        | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |

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

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| OH:Columbus       | 3                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| OH:Painesville    | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| OH:Ross           | 9                       | 0.0                      | 0.0 | 0.0 | 0.03                     | 0.01 | 0.02 |
| OH:Toledo         | 8                       | 0.1                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.01 |
| OR:Portland       | 8                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.01 |
| PA:Harrisburg     | 6                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| PA:Pittsburgh     | 8                       | 0.1                      | 0.1 | 0.1 | 0.02                     | 0.01 | 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 | 0.01 |
| SD:Pierre         | 8                       | 0.2                      | 0.1 | 0.1 | 0.03                     | 0.01 | 0.02 |
| TN:Knoxville      | 1                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| TN:Nashville      | 8                       | 0.4                      | 0.0 | 0.2 | 0.03                     | 0.01 | 0.02 |
| TX:El Paso        | 7                       | 2.1                      | 0.4 | 1.1 | 0.03                     | 0.01 | 0.02 |
| UT:Salt Lake City | 8                       | 0.2                      | 0.0 | 0.1 | 0.03                     | 0.00 | 0.01 |
| VA:Lynchburg      | 8                       | 0.5                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| VA:Virginia Beach | 2                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.01 | 0.01 |
| WA:Olympia        | 8                       | 0.2                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.00 |
| WA:Spokane        | 8                       | 0.2                      | 0.0 | 0.1 | 0.04                     | 0.00 | 0.02 |
| WI:Madison        | 8                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |

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

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

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| AK:Juneau         | 9                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.00 | 0.00 |
| AL:Montgomery     | 9                       | 0.3                      | 0.0 | 0.2 | 0.01                     | 0.01 | 0.01 |
| AR:Little Rock    | 7                       | 0.4                      | 0.1 | 0.2 | 0.01                     | 0.01 | 0.01 |
| AZ:Phoenix        | 5                       | 0.7                      | 0.3 | 0.6 | 0.02                     | 0.01 | 0.01 |
| CA:Berkeley       | 9                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.00 | 0.01 |
| CA:Los Angeles    | 9                       | 0.2                      | 0.0 | 0.1 | 0.01                     | 0.01 | 0.01 |
| CO:Denver         | 9                       | 0.7                      | 0.2 | 0.4 | 0.01                     | 0.01 | 0.01 |
| CT:Hartford       | 9                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| DE:Wilmington     | 10                      | 0.2                      | 0.0 | 0.1 | 0.01                     | 0.01 | 0.01 |
| FL:Jacksonville   | 9                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.01 | 0.01 |
| FL:Miami          | 7                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| HI:Honolulu       | 9                       | 0.2                      | 0.1 | 0.1 | 0.01                     | 0.00 | 0.00 |
| IA:Iowa City      | 9                       | 0.2                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| ID:Boise          | 9                       | 0.6                      | 0.2 | 0.4 | 0.01                     | 0.01 | 0.01 |
| ID:Idaho Falls    | 9                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| IL:Chicago        | 9                       | 0.6                      | 0.0 | 0.2 | 0.02                     | 0.01 | 0.02 |
| IN:Indianapolis   | 9                       | 0.2                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.02 |
| KS:Topeka         | 9                       | 1.5                      | 0.4 | 1.0 | 0.02                     | 0.01 | 0.01 |
| KY:Frankfort      | 4                       | 0.1                      | 0.1 | 0.1 | 0.01                     | 0.01 | 0.01 |
| LA:New Orleans    | 6                       | 0.3                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| MA:Lawrence       | 2                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 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                     | 0.00 | 0.01 |
| MN:Minneapolis    | 5                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| MO:Jefferson City | 9                       | 0.6                      | 0.1 | 0.3 | 0.02                     | 0.01 | 0.01 |
| MS:Jackson        | 9                       | 0.3                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| NC:Charlotte      | 5                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.00 | 0.01 |
| NC:Wilmington     | 3                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| ND:Bismarck       | 9                       | 0.3                      | 0.0 | 0.2 | 0.02                     | 0.00 | 0.01 |
| NH:Concord        | 9                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| NJ:Trenton        | 9                       | 0.3                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| NM:Santa Fe       | 8                       | 0.3                      | 0.0 | 0.2 | 0.01                     | 0.01 | 0.01 |
| NV:Las Vegas      | 9                       | 0.3                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| NY:Albany         | 5                       | 0.2                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| NY:Niagara Falls  | 9                       | 0.1                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| NY:Syracuse       | 5                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| NY:Yaphank        | 9                       | 0.2                      | 0.0 | 0.1 | 0.01                     | 0.01 | 0.01 |

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

| Location          | Number<br>of<br>Samples | 5-Hour Field<br>Estimate |     |     | NAREL Lab<br>Measurement |      |      |
|-------------------|-------------------------|--------------------------|-----|-----|--------------------------|------|------|
|                   |                         | Max                      | Min | Avg | Max                      | Min  | Avg  |
|                   |                         | (pCi/m <sup>3</sup> )    |     |     | (pCi/m <sup>3</sup> )    |      |      |
| OH:Columbus       | 5                       | 0.1                      | 0.0 | 0.1 | 0.01                     | 0.00 | 0.01 |
| OH:Painesville    | 9                       | 0.2                      | 0.1 | 0.1 | 0.02                     | 0.01 | 0.01 |
| OH:Ross           | 9                       | 0.0                      | 0.0 | 0.0 | 0.02                     | 0.01 | 0.02 |
| OH:Toledo         | 9                       | 0.3                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| OR:Portland       | 7                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.00 | 0.01 |
| PA:Harrisburg     | 9                       | 0.2                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| PA:Pittsburgh     | 8                       | 0.1                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| SC:Barnwell       | 1                       | 0.0                      | 0.0 | 0.0 | 0.01                     | 0.01 | 0.01 |
| SC:Columbia       | 8                       | 0.2                      | 0.0 | 0.1 | 0.02                     | 0.01 | 0.01 |
| SD:Pierre         | 7                       | 0.6                      | 0.1 | 0.3 | 0.02                     | 0.01 | 0.01 |
| TN:Knoxville      | 3                       | 0.3                      | 0.0 | 0.2 | 0.02                     | 0.00 | 0.01 |
| TN:Nashville      | 10                      | 0.2                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| TX:El Paso        | 10                      | 2.3                      | 0.1 | 1.0 | 0.02                     | 0.01 | 0.01 |
| UT:Salt Lake City | 9                       | 0.5                      | 0.1 | 0.2 | 0.02                     | 0.01 | 0.01 |
| VA:Lynchburg      | 9                       | 0.2                      | 0.1 | 0.1 | 0.01                     | 0.01 | 0.01 |
| VA:Virginia Beach | 4                       | 0.1                      | 0.1 | 0.1 | 0.01                     | 0.01 | 0.01 |
| WA:Olympia        | 6                       | 0.2                      | 0.0 | 0.1 | 0.01                     | 0.00 | 0.00 |
| WA:Spokane        | 9                       | 0.4                      | 0.1 | 0.3 | 0.01                     | 0.00 | 0.01 |
| WI:Madison        | 9                       | 0.5                      | 0.0 | 0.2 | 0.02                     | 0.01 | 0.01 |

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

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

| Location          | Depth<br>(mm) | Gross Beta<br>Activity |               | Specific Gamma<br>Activity       |
|-------------------|---------------|------------------------|---------------|----------------------------------|
|                   |               | nCi/m <sup>2</sup>     | $\pm 2\sigma$ | pCi/L $\pm 2\sigma$              |
| AL:Montgomery     | 95.0          | 0.34                   | 0.04          | <sup>7</sup> Be: 82.3 $\pm$ 46.1 |
| AR:Little Rock    | 121.0         | 0.26                   | 0.04          | <sup>7</sup> Be: 79.9 $\pm$ 35.9 |
| CA:Berkeley       | 71.8          | 0.04                   | 0.02          | ND                               |
| CO:Denver         | 6.0           | 0.02                   | 0.00          | <sup>7</sup> Be: 138 $\pm$ 29    |
| FL:Jacksonville   | 245.2         | 0.17                   | 0.07          | <sup>40</sup> K: 39.8 $\pm$ 33.1 |
| FL:Miami          | 85.2          | 0.15                   | 0.03          | ND                               |
| HI:Honolulu       | 45.0          | 0.11                   | 0.02          | ND                               |
| ID:Boise          | 45.0          | 0.05                   | 0.01          | ND                               |
| ID:Idaho Falls    | 0.0           | 0.00                   | 0.00          | ND                               |
| IL:Chicago        | 43.4          | 0.18                   | 0.02          | ND                               |
| LA:New Orleans    | 54.0          | 0.04                   | 0.02          | ND                               |
| MO:Jefferson City | 21.0          | 0.03                   | 0.01          | ND                               |
| MS:Jackson        | 39.0          | 0.01                   | 0.01          | <sup>40</sup> K: 57.2 $\pm$ 23.5 |
| NC:Charlotte      | 118.0         | 0.24                   | 0.04          | <sup>7</sup> Be: 77.4 $\pm$ 31.4 |
| NC:Wilmington     | 63.0          | 0.05                   | 0.02          | ND                               |
| ND:Bismarck       | 3.4           | 0.01                   | 0.00          | <sup>7</sup> Be: 28.8 $\pm$ 24.0 |
| NJ:Trenton        | 94.4          | 0.22                   | 0.04          | ND                               |
| NY:Albany         | 26.6          | 0.07                   | 0.01          | <sup>7</sup> Be: 51.1 $\pm$ 32.3 |
| OH:Painesville    | 30.4          | 0.12                   | 0.01          | <sup>7</sup> Be: 94.2 $\pm$ 38.9 |
| OH:Toledo         | 75.6          | 0.05                   | 0.02          | <sup>7</sup> Be: 42.0 $\pm$ 24.2 |
| OR:Portland       | 32.0          | 0.03                   | 0.01          | <sup>7</sup> Be: 47.3 $\pm$ 23.8 |
| PA:Harrisburg     | 132.4         | 0.30                   | 0.05          | <sup>7</sup> Be: 34.2 $\pm$ 27.6 |
| SC:Barnwell       | 140.4         | 0.27                   | 0.05          | <sup>7</sup> Be: 28.6 $\pm$ 27.7 |
| SC:Columbia       | 110.2         | 0.17                   | 0.04          | <sup>7</sup> Be: 38.5 $\pm$ 22.6 |
| TN:Knoxville      | 10.0          | 0.04                   | 0.00          | <sup>7</sup> Be: 68.2 $\pm$ 26.7 |
| TN:Nashville      | 86.6          | 0.12                   | 0.03          | ND                               |
| TX:Austin         | 40.0          | 0.07                   | 0.01          | <sup>7</sup> Be: 63.0 $\pm$ 23.1 |
| UT:Salt Lake City | 17.0          | 0.01                   | 0.01          | ND                               |
| VA:Lynchburg      | 99.0          | 0.08                   | 0.03          | ND                               |
| WA:Olympia        | 96.0          | 0.05                   | 0.02          | <sup>7</sup> Be: 34.5 $\pm$ 25.2 |
| WI:Madison        | 55.0          | 0.27                   | 0.03          | ND                               |

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

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

| Location          | Depth<br>(mm) | Gross Beta<br>Activity |               | Specific Gamma<br>Activity       |
|-------------------|---------------|------------------------|---------------|----------------------------------|
|                   |               | nCi/m <sup>2</sup>     | $\pm 2\sigma$ | pCi/L $\pm 2\sigma$              |
| AL:Montgomery     | 88.4          | 0.08                   | 0.03          | ND                               |
| AR:Little Rock    | 67.0          | 0.10                   | 0.02          | <sup>7</sup> Be: 36.7 $\pm$ 33.1 |
| AZ:Phoenix        | 24.0          | 0.02                   | 0.01          | ND                               |
| CA:Berkeley       | 125.2         | 0.05                   | 0.03          | ND                               |
| CO:Denver         | 11.4          | 0.05                   | 0.01          | <sup>7</sup> Be: 35.6 $\pm$ 34.4 |
| CT:Hartford       | 40.0          | 0.05                   | 0.01          | ND                               |
| FL:Jacksonville   | 23.2          | 0.03                   | 0.01          | ND                               |
| FL:Miami          | 91.8          | 0.05                   | 0.03          | ND                               |
| HI:Honolulu       | 47.0          | 0.09                   | 0.02          | ND                               |
| ID:Boise          | 20.0          | 0.06                   | 0.01          | ND                               |
| IL:Chicago        | 13.8          | 0.01                   | 0.00          | ND                               |
| LA:New Orleans    | 46.0          | 0.05                   | 0.01          | <sup>7</sup> Be: 52.2 $\pm$ 34.0 |
| MN:Minneapolis    | 5.0           | 0.01                   | 0.00          | ND                               |
| MO:Jefferson City | 41.0          | 0.05                   | 0.01          | ND                               |
| NC:Charlotte      | 63.0          | 0.18                   | 0.03          | <sup>7</sup> Be: 82.7 $\pm$ 31.9 |
| NC:Wilmington     | 78.0          | 0.12                   | 0.03          | ND                               |
| ND:Bismarck       | 9.4           | 0.03                   | 0.00          | ND                               |
| NJ:Trenton        | 53.8          | 0.11                   | 0.02          | ND                               |
| NM:Santa Fe       | 14.0          | 0.02                   | 0.01          | ND                               |
| NV:Las Vegas      | 14.6          | 0.03                   | 0.01          | ND                               |
| NY:Albany         | 14.4          | 0.01                   | 0.00          | ND                               |
| NY:Niagara Falls  | 14.0          | 0.07                   | 0.01          | <sup>7</sup> Be: 153 $\pm$ 34    |
| OH:Painesville    | 8.6           | 0.03                   | 0.00          | <sup>7</sup> Be: 79.5 $\pm$ 35.1 |
| OH:Toledo         | 12.0          | 0.01                   | 0.00          | ND                               |
| OR:Portland       | 109.0         | 0.13                   | 0.03          | ND                               |
| PA:Harrisburg     | 88.0          | 0.15                   | 0.03          | ND                               |
| SC:Barnwell       | 145.8         | 0.18                   | 0.05          | ND                               |
| SC:Columbia       | 129.6         | 0.43                   | 0.06          | ND                               |
| TN:Knoxville      | 47.0          | 0.05                   | 0.01          | ND                               |
| TN:Nashville      | 127.6         | 0.12                   | 0.04          | <sup>7</sup> Be: 26.6 $\pm$ 20.7 |
| TX:El Paso        | 9.0           | 0.01                   | 0.00          | ND                               |
| UT:Salt Lake City | 45.8          | 0.26                   | 0.03          | ND                               |
| VA:Lynchburg      | 74.0          | 0.06                   | 0.02          | ND                               |
| WA:Olympia        | 191.6         | 0.12                   | 0.05          | <sup>7</sup> Be: 103 $\pm$ 51    |
| WI:Madison        | 55.2          | 0.02                   | 0.01          | ND                               |

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

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

| Location          | Depth<br>(mm) | Gross Beta<br>Activity |               | Specific Gamma<br>Activity       |
|-------------------|---------------|------------------------|---------------|----------------------------------|
|                   |               | nCi/m <sup>2</sup>     | $\pm 2\sigma$ | pCi/L $\pm 2\sigma$              |
| AK:Juneau         | 40.0          | 0.02                   | 0.01          | <sup>7</sup> Be: 44.0 $\pm$ 26.8 |
| AL:Montgomery     | 132.0         | 0.18                   | 0.04          | ND                               |
| AR:Little Rock    | 111.0         | 0.21                   | 0.04          | <sup>7</sup> Be: 52.5 $\pm$ 31.0 |
| AZ:Phoenix        | 33.0          | 0.03                   | 0.01          | ND                               |
| CA:Berkeley       | 8.4           | 0.01                   | 0.00          | ND                               |
| CO:Denver         | 8.6           | 0.01                   | 0.00          | ND                               |
| CT:Hartford       | 50.0          | 0.08                   | 0.02          | <sup>7</sup> Be: 62.7 $\pm$ 36.0 |
| DE:Wilmington     | 101.0         | 0.11                   | 0.03          | <sup>7</sup> Be: 44.3 $\pm$ 40.9 |
| FL:Jacksonville   | 43.6          | 0.03                   | 0.01          | ND                               |
| FL:Miami          | 13.4          | 0.01                   | 0.00          | ND                               |
| HI:Honolulu       | 99.0          | 0.19                   | 0.04          | ND                               |
| ID:Boise          | 10.0          | 0.01                   | 0.00          | ND                               |
| ID:Idaho Falls    | 19.2          | 0.03                   | 0.01          | ND                               |
| IL:Chicago        | 74.8          | 0.05                   | 0.02          | ND                               |
| LA:New Orleans    | 104.0         | 0.12                   | 0.03          | ND                               |
| MN:Minneapolis    | 13.0          | 0.02                   | 0.00          | <sup>7</sup> Be: 45.0 $\pm$ 22.9 |
| MO:Jefferson City | 43.0          | 0.06                   | 0.01          | ND                               |
| MS:Jackson        | 40.0          | 0.02                   | 0.01          | ND                               |
| NC:Charlotte      | 111.0         | 0.19                   | 0.04          | <sup>7</sup> Be: 36.9 $\pm$ 27.7 |
| NC:Wilmington     | 96.0          | 0.03                   | 0.02          | ND                               |
| NJ:Trenton        | 131.4         | 0.15                   | 0.04          | <sup>7</sup> Be: 36.2 $\pm$ 24.9 |
| NM:Santa Fe       | 25.0          | 0.02                   | 0.01          | <sup>7</sup> Be: 38.5 $\pm$ 29.2 |
| NV:Las Vegas      | 4.6           | 0.05                   | 0.00          | <sup>40</sup> K: 46.2 $\pm$ 34.5 |
| NY:Albany         | 105.0         | 0.08                   | 0.03          | <sup>7</sup> Be: 30.5 $\pm$ 21.1 |
| NY:Niagara Falls  | 56.0          | 0.02                   | 0.02          | <sup>7</sup> Be: 21.5 $\pm$ 20.9 |
| NY:Yaphank        | 24.0          | 0.03                   | 0.01          | <sup>7</sup> Be: 34.4 $\pm$ 25.1 |
| OH:Painesville    | 41.4          | 0.12                   | 0.02          | <sup>7</sup> Be: 174 $\pm$ 40    |
| OH:Toledo         | 55.0          | 0.07                   | 0.02          | ND                               |
| OR:Portland       | 49.0          | 0.03                   | 0.01          | <sup>7</sup> Be: 42.9 $\pm$ 26.5 |
| PA:Harrisburg     | 181.6         | 0.18                   | 0.06          | <sup>7</sup> Be: 58.8 $\pm$ 24.0 |
| SC:Barnwell       | 66.6          | 0.15                   | 0.03          | ND                               |
| SC:Columbia       | 117.4         | 0.12                   | 0.03          | ND                               |
| TN:Knoxville      | 74.8          | 0.04                   | 0.02          | ND                               |
| TN:Nashville      | 131.2         | 0.16                   | 0.04          | <sup>7</sup> Be: 40.7 $\pm$ 27.3 |
| TX:El Paso        | 8.0           | 0.01                   | 0.00          | <sup>7</sup> Be: 40.0 $\pm$ 32.9 |
| UT:Salt Lake City | 10.2          | 0.02                   | 0.00          | ND                               |
| VA:Lynchburg      | 97.8          | 0.04                   | 0.03          | ND                               |
| WA:Olympia        | 132.8         | 0.06                   | 0.03          | ND                               |
| WI:Madison        | 11.0          | 0.02                   | 0.00          | <sup>7</sup> Be: 70.4 $\pm$ 32.5 |

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

**Table 8**  
**Tritium in Precipitation**  
January–March 1994

| Location          | January 1994 |               | February 1994 |               | March 1994 |               |
|-------------------|--------------|---------------|---------------|---------------|------------|---------------|
|                   | nCi/L        | $\pm 2\sigma$ | nCi/L         | $\pm 2\sigma$ | nCi/L      | $\pm 2\sigma$ |
| AK:Juneau         | NS           |               | NS            |               | 0.1        | 0.1           |
| AL:Montgomery     | 0.1          | 0.1           | 0.2           | 0.2           | 0.1        | 0.1           |
| AR:Little Rock    | 0.1          | 0.2           | 0.1           | 0.1           | 0.1        | 0.1           |
| AZ:Phoenix        | NS           |               | 0.1           | 0.1           | 0.2        | 0.2           |
| CA:Berkeley       | 0.1          | 0.1           | 0.1           | 0.2           | 0.1        | 0.2           |
| CO:Denver         | 0.1          | 0.1           | 0.1           | 0.1           | 0.2        | 0.2           |
| CT:Hartford       | NS           |               | 0.2           | 0.1           | 0.2        | 0.1           |
| DE:Wilmington     | NS           |               | NS            |               | 0.2        | 0.2           |
| FL:Jacksonville   | 0.1          | 0.2           | 0.2           | 0.1           | 0.1        | 0.2           |
| FL:Miami          | 0.2          | 0.1           | 0.1           | 0.1           | 0.1        | 0.1           |
| HI:Honolulu       | 0.1          | 0.1           | 0.1           | 0.1           | 0.1        | 0.2           |
| ID:Boise          | 0.1          | 0.1           | 0.2           | 0.1           | 0.1        | 0.2           |
| ID:Idaho Falls    | 0.1          | 0.1           | NS            |               | 0.1        | 0.1           |
| IL:Chicago        | 0.1          | 0.2           | 0.2           | 0.1           | 0.1        | 0.2           |
| LA:New Orleans    | 0.1          | 0.2           | 0.4           | 0.2           | 0.1        | 0.1           |
| MN:Minneapolis    | NS           |               | 0.1           | 0.1           | 0.2        | 0.2           |
| MO:Jefferson City | 0.1          | 0.1           | 0.1           | 0.1           | 0.1        | 0.1           |
| MS:Jackson        | 0.1          | 0.1           | NS            |               | 0.1        | 0.2           |
| NC:Charlotte      | 0.1          | 0.1           | 0.1           | 0.1           | 0.2        | 0.1           |
| NC:Wilmington     | 0.2          | 0.1           | 0.2           | 0.1           | 0.1        | 0.2           |
| ND:Bismarck       | 0.1          | 0.2           | 0.3           | 0.2           | NS         |               |
| NJ:Trenton        | 0.1          | 0.1           | 0.1           | 0.1           | 0.1        | 0.1           |
| NM:Santa Fe       | NS           |               | 0.2           | 0.1           | 0.2        | 0.1           |
| NV:Las Vegas      | NS           |               | 0.1           | 0.1           | 0.1        | 0.2           |
| NY:Albany         | 0.2          | 0.1           | 0.3           | 0.2           | 0.1        | 0.1           |
| NY:Niagara Falls  | NS           |               | 0.1           | 0.1           | 0.1        | 0.1           |
| NY:Yaphank        | NS           |               | NS            |               | 0.1        | 0.1           |
| OH:Painesville    | 0.3          | 0.2           | 0.1           | 0.1           | 0.1        | 0.1           |
| OH:Toledo         | 0.1          | 0.1           | 0.1           | 0.1           | 0.1        | 0.1           |
| OR:Portland       | 0.1          | 0.2           | 0.1           | 0.1           | 0.1        | 0.2           |
| PA:Harrisburg     | 0.1          | 0.1           | 0.1           | 0.1           | 0.1        | 0.1           |
| SC:Barnwell       | 1.3          | 0.2           | 0.5           | 0.2           | 0.8        | 0.2           |
| SC:Columbia       | 0.3          | 0.2           | 0.3           | 0.2           | 0.3        | 0.2           |
| TN:Knoxville      | 0.4          | 0.2           | 0.2           | 0.1           | 0.1        | 0.1           |
| TN:Nashville      | 0.1          | 0.1           | 0.2           | 0.1           | 0.1        | 0.1           |
| TX:Austin         | 0.1          | 0.1           | NS            |               | NS         |               |
| TX:El Paso        | NS           |               | 0.1           | 0.2           | 0.1        | 0.2           |
| UT:Salt Lake City | 0.1          | 0.1           | 0.2           | 0.2           | 0.1        | 0.1           |
| VA:Lynchburg      | 0.1          | 0.1           | 0.1           | 0.2           | 0.1        | 0.1           |
| WA:Olympia        | 0.1          | 0.2           | 0.1           | 0.2           | 0.1        | 0.2           |
| WI:Madison        | 0.2          | 0.1           | 0.2           | 0.1           | 0.1        | 0.1           |

Note:  $\sigma$  = Counting Error. NS = No Sample.

## **Plutonium and Uranium in Airborne Particulates and Precipitation**

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

Concentrations of the specific isotopes of plutonium-238, -239, and -240 and uranium-234, -235, and -238 are determined by alpha spectroscopy following chemical separation. The volume of air represented by the semiannual composite ranges from 60,000 to 250,000 cubic meters.

Plutonium and uranium results are published when they become available.

## **2. Water Program**

The ERAMS water program provides data on ambient radiation levels in the nation's rivers, streams, and drinking water supplies.

### **Surface Water**

Quarterly grab samples are taken downstream from operating or future nuclear facilities at 58 stations. Surface water samples are analyzed for tritium quarterly and specific gamma activity annually. Tritium is a primary radioactive pollutant from nuclear power plants and weapons production activities. Tritium concentrations are determined by liquid scintillation counting of distilled samples. Gamma scans are performed annually to determine levels of gamma emitting radionuclides.

Table 9 contains the tritium concentration data for January–March 1994.

**Table 9**  
**Tritium in Surface Water**  
**January–March 1994**

| Location            | Source              | Date<br>Collected | <sup>3</sup> H |     |
|---------------------|---------------------|-------------------|----------------|-----|
|                     |                     |                   | nCi/L          | ±2σ |
| AL:Decatur          | Tennessee River     | 01/12/94          | 0.1            | 0.1 |
| AL:Gordon           | Chattahoochee River | 01/13/94          | 0.1            | 0.1 |
| AL:Scottsboro       | Tennessee River     | 01/12/94          | 0.1            | 0.2 |
| AR:Little Rock      | Arkansas River      | 01/24/94          | 0.3            | 0.2 |
| CA:Clay Station     | Folsom S. Canal     | 01/18/94          | 0.1            | 0.2 |
| CA:Diablo Canyon    | Pacific Ocean       | 03/28/94          | 0.1            | 0.1 |
| CA:San Onofre       | Pacific Ocean       | 02/16/94          | 0.1            | 0.1 |
| CO:Platteville      | South Platte River  | 01/06/94          | 0.1            | 0.2 |
| CT:East Haddam      | Connecticut River   | 01/10/94          | 0.3            | 0.2 |
| CT:Waterford        | Long Island Sound   | 01/10/94          | 0.2            | 0.2 |
| FL:Crystal River    | Gulf Of Mexico      | 01/11/94          | 0.1            | 0.2 |
| FL:Ft. Pierce       | Atlantic Ocean      | 01/10/94          | 0.1            | 0.2 |
| FL:Homestead        | Biscayne Bay        | 01/14/94          | 0.2            | 0.2 |
| GA:Baxley           | Altamaha River      | 01/11/94          | 0.2            | 0.2 |
| IA:Cedar Rapids     | Cedar River         | 01/20/94          | 0.1            | 0.2 |
| ID:Buhl             | Snake River         | 01/07/94          | 0.1            | 0.1 |
| IL:Zion             | Lake Michigan       | 03/29/94          | 0.1            | 0.1 |
| KS:Le Roy           | Neosho River        | 03/29/94          | 0.1            | 0.2 |
| LA:New Orleans      | Mississippi River   | 01/29/94          | 0.1            | 0.2 |
| MA:Plymouth         | Cape Cod Bay        | 02/03/94          | 0.1            | 0.2 |
| MD:Conowingo        | Susquehanna River   | 01/24/94          | 0.1            | 0.1 |
| MD:Lusby            | Chesapeake Bay      | 01/11/94          | 0.1            | 0.1 |
| ME:Wiscasset        | Montseway Bay       | 01/11/94          | 0.1            | 0.2 |
| MI:Bridgman         | Lake Michigan       | 03/31/94          | 0.4            | 0.2 |
| MI:Monroe           | Lake Erie           | 01/03/94          | 0.2            | 0.1 |
| MI:South Haven      | Lake Michigan       | 03/31/94          | 0.1            | 0.2 |
| MN:Monticello       | Mississippi River   | 01/05/94          | 0.1            | 0.2 |
| MN:Red Wing         | Mississippi River   | 01/04/94          | 0.1            | 0.1 |
| MS:Port Gibson      | Mississippi River   | 01/04/94          | 0.1            | 0.2 |
| NC:Charlotte        | Catawba River       | 01/12/94          | 0.5            | 0.2 |
| NC:Southport        | Atlantic Ocean      | 01/04/94          | 0.1            | 0.2 |
| NE:Rulo             | Missouri River      | 01/12/94          | 0.1            | 0.2 |
| NJ:Bayside          | Delaware River      | 01/25/94          | 0.2            | 0.2 |
| NJ:Oyster Creek     | Oyster Creek        | 01/13/94          | 0.2            | 0.2 |
| NV:Boulder City     | Colorado River      | 03/02/94          | 0.1            | 0.1 |
| NY:Chelsea          | Hudson River        | 01/10/94          | 0.1            | 0.1 |
| NY:Croton-On-Hudson | Hudson River        | 03/11/94          | 0.1            | 0.2 |

**Table 9 (continued)**  
**Tritium in Surface Water**  
**January–March 1994**

| Location        | Source                 | Date<br>Collected | <sup>3</sup> H |     |
|-----------------|------------------------|-------------------|----------------|-----|
|                 |                        |                   | nCi/L          | ±2σ |
| NY:Oswego       | Lake Ontario           | 03/17/94          | 0.3            | 0.2 |
| OH:Toledo       | Lake Erie              | 01/02/94          | 0.3            | 0.1 |
| OR:Bradwood     | Columbia River         | 01/12/94          | 0.1            | 0.1 |
| PA:Danville     | Susquehanna River      | 02/02/94          | 0.1            | 0.2 |
| PA:Danville     | Susquehanna River      | 03/02/94          | 0.1            | 0.1 |
| PA:Philadelphia | Delaware River-Baxter  | 03/02/94          | 0.1            | 0.1 |
| PA:Philadelphia | Schuylkill River-Queen | 03/02/94          | 0.1            | 0.1 |
| SC:Allendale    | Savannah River         | 01/31/94          | 2.3            | 0.2 |
| SC:Broad River  | Broad River            | 01/13/94          | 0.2            | 0.2 |
| SC:Hartsville   | Lake Robinson          | 01/07/94          | 2.9            | 0.2 |
| TN:Daisy        | Tennessee River        | 01/10/94          | 0.2            | 0.2 |
| TN:Kingston     | Clinch River           | 01/04/94          | 0.3            | 0.1 |
| TN:Oak Ridge    | Clinch River           | 02/15/94          | 0.4            | 0.2 |
| TX:Matagorda    | Colorado River         | 01/11/94          | 0.2            | 0.2 |
| VA:Doswell      | North Anna River       | 01/05/94          | 2.2            | 0.2 |
| VA:Newport News | James River            | 01/17/94          | 0.1            | 0.2 |
| VT:Vernon       | Connecticut River      | 03/09/94          | 0.3            | 0.2 |
| WA:Northport    | Columbia River         | 01/19/94          | 0.1            | 0.2 |
| WA:Richland     | Columbia River         | 01/06/94          | 0.1            | 0.1 |
| WI:Two Creeks   | Lake Michigan          | 02/24/94          | 0.1            | 0.2 |
| WI:Victory      | Mississippi River      | 01/10/94          | 0.2            | 0.2 |
| WV:Wheeling     | Ohio River             | 01/10/94          | 0.1            | 0.1 |

Note:  $\sigma$  = Counting Error.

## Drinking Water

This program monitors ambient radiation levels in drinking water at 78 sites. These data serve to assess trends and anomalies in concentrations, and to compare with standards set forth in the EPA “National Interim Primary Drinking Water Regulations.” These regulations provide for approval of supplies when the combined radium-226 and radium-228 levels do not exceed 5 pCi/L, when the gross alpha (excluding radon and uranium) levels do not exceed 15 pCi/L, when tritium levels do not exceed 20,000 pCi/L, when the strontium-90 levels do not exceed 8 pCi/L, and when the gross beta levels do not exceed 50 pCi/L.

Grab samples are taken at the 78 sites which are either major population centers or selected nuclear facility environs.

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

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

Table 10 contains the data from drinking water samples for January–March 1994.

**Table 10**  
**Tritium in Drinking Water**

January–March 1994

| Location          | Date<br>Collected | <sup>3</sup> H |     |
|-------------------|-------------------|----------------|-----|
|                   |                   | nCi/L          | ±2σ |
| AK:Fairbanks      | 01/13/94          | 0.1            | 0.2 |
| AL:Dothan         | 01/13/94          | 0.1            | 0.2 |
| AL:Muscule Shoals | 01/12/94          | 0.2            | 0.1 |
| AL:Scottsboro     | 01/12/94          | 0.1            | 0.1 |
| AR:Little Rock    | 01/24/94          | 0.2            | 0.2 |
| CA:Berkeley       | 03/31/94          | 0.1            | 0.2 |
| CA:Los Angeles    | 01/03/94          | 0.2            | 0.2 |
| CO:Denver         | 01/07/94          | 0.1            | 0.2 |
| CO:Platteville    | 01/06/94          | 0.2            | 0.1 |
| DC:Washington     | 01/04/94          | 0.2            | 0.1 |
| DE:Dover          | 01/18/94          | 0.1            | 0.1 |
| FL:Miami          | 01/31/94          | 0.1            | 0.1 |
| FL:Tampa          | 01/20/94          | 0.1            | 0.2 |
| GA:Baxley         | 01/11/94          | 0.1            | 0.1 |
| GA:Savannah       | 03/18/94          | 0.1            | 0.2 |
| HI:Honolulu       | 01/06/94          | 0.1            | 0.2 |
| IA:Cedar Rapids   | 01/20/94          | 0.1            | 0.2 |
| ID:Boise          | 01/03/94          | 0.1            | 0.1 |
| ID:Idaho Falls    | 01/21/94          | 0.1            | 0.2 |
| IL:W. Chicago     | 01/31/94          | 0.1            | 0.1 |
| KS:Topeka         | 01/03/94          | 0.1            | 0.1 |
| LA:New Orleans    | 01/03/94          | 0.2            | 0.1 |
| MA:Lawrence       | 01/19/94          | 0.1            | 0.1 |
| MD:Baltimore      | 01/03/94          | 0.2            | 0.2 |
| MD:Conowingo      | 01/24/94          | 0.3            | 0.2 |
| ME:Augusta        | 01/13/94          | 0.1            | 0.2 |
| MI:Lansing        | 01/18/94          | 0.1            | 0.1 |
| MN:Minneapolis    | 01/13/94          | 0.3            | 0.2 |
| MN:Red Wing       | 01/11/94          | 0.1            | 0.1 |
| MO:Jefferson City | 01/01/94          | 0.1            | 0.2 |
| MS:Jackson        | 01/20/94          | 0.1            | 0.1 |
| MS:Port Gibson    | 01/04/94          | 0.1            | 0.1 |
| MT:Helena         | 01/12/94          | 0.1            | 0.1 |
| NC:Charlotte      | 01/12/94          | 0.5            | 0.2 |
| NC:Wilmington     | 01/04/94          | 0.2            | 0.1 |
| ND:Bismarck       | 01/04/94          | 0.2            | 0.1 |
| NE:Lincoln        | 03/22/94          | 0.1            | 0.1 |
| NH:Concord        | 01/11/94          | 0.1            | 0.2 |
| NJ:Trenton        | 01/13/94          | 0.1            | 0.1 |
| NJ:Trenton        | 01/12/94          | 0.1            | 0.1 |
| NM:Santa Fe       | 01/10/94          | 0.2            | 0.2 |

**Table 10 (continued)**  
**Tritium in Drinking Water**  
**January–March 1994**

| Location               | Date<br>Collected | $^3\text{H}$ |               |
|------------------------|-------------------|--------------|---------------|
|                        |                   | nCi/L        | $\pm 2\sigma$ |
| NV:Las Vegas           | 01/03/94          | 0.1          | 0.1           |
| NY:Albany              | 01/03/94          | 0.1          | 0.1           |
| NY:New York City       | 01/05/94          | 0.2          | 0.1           |
| NY:Niagara Falls       | 01/07/94          | 0.1          | 0.2           |
| NY:Syracuse            | 03/18/94          | 0.1          | 0.1           |
| OH:Cincinnati          | 03/31/94          | 0.1          | 0.2           |
| OH:East Liverpool      | 02/17/94          | 0.1          | 0.2           |
| OH:Painesville         | 01/04/94          | 0.2          | 0.2           |
| OH:Toledo              | 01/02/94          | 0.3          | 0.1           |
| OK:Oklahoma City       | 03/23/94          | 0.1          | 0.2           |
| OR:Portland            | 01/05/94          | 0.1          | 0.2           |
| PA:Columbia            | 01/26/94          | 0.2          | 0.2           |
| PA:Harrisburg          | 01/27/94          | 0.1          | 0.1           |
| PA:Philadelphia        | 03/02/94          | 0.1          | 0.1           |
| PA:Philadelphia-Baxter | 03/02/94          | 0.1          | 0.1           |
| PA:Philadelphia-Queen  | 03/02/94          | 0.1          | 0.1           |
| PA:Pittsburgh          | 02/17/94          | 0.1          | 0.1           |
| PC:Corozal             | 01/12/94          | 0.1          | 0.1           |
| RI:Providence          | 01/01/94          | 0.1          | 0.1           |
| SC:Barnwell            | 01/14/94          | 0.2          | 0.2           |
| SC:Columbia            | 01/04/94          | 0.3          | 0.2           |
| SC:Jenkinsville        | 01/14/94          | 0.2          | 0.2           |
| SC:Seneca              | 01/25/94          | 0.2          | 0.2           |
| TN:Chattanooga         | 02/02/94          | 0.1          | 0.2           |
| TN:Knoxville           | 01/26/94          | 0.1          | 0.1           |
| TX:Austin              | 01/04/94          | 0.1          | 0.1           |
| VA:Doswell             | 03/08/94          | 0.1          | 0.2           |
| VA:Lynchburg           | 01/04/94          | 0.2          | 0.2           |
| VA:Virginia Beach      | 01/03/94          | 0.1          | 0.2           |
| WA:Richland            | 01/06/94          | 0.1          | 0.2           |
| WA:Seattle             | 01/05/94          | 0.2          | 0.2           |
| WI:Genoa City          | 01/10/94          | 0.1          | 0.1           |
| WI:Madison             | 01/07/94          | 0.1          | 0.1           |

Note:  $\sigma$  = Counting Error.

### **3. Milk Program**

#### **Pasteurized Milk**

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

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

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

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

Tables 11–13 contain the concentrations of radionuclides in pasteurized milk for January–March 1994. Table 14 contains the concentrations of strontium-90 in pasteurized milk EPA Regional Composites for January 1994.

**Table 11**  
**Radionuclides in Pasteurized Milk**  
January 1994

| Location         | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|------------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|                  |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| AL:Montgomery    | 01/10/94          | 1.54 | 0.09          | ND                |               | ND                |               | ND               |               |
| AR:Little Rock   | 01/04/94          | 1.56 | 0.06          | ND                |               | ND                |               | ND               |               |
| AZ:Phoenix       | 01/12/94          | 1.59 | 0.08          | ND                |               | ND                |               | ND               |               |
| CA:Los Angeles   | 01/03/94          | 1.67 | 0.08          | ND                |               | ND                |               | ND               |               |
| CA:Sacramento    | 01/04/94          | 1.66 | 0.09          | ND                |               | ND                |               | ND               |               |
| CA:San Francisco | 01/06/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| CO:Denver        | 01/10/94          | 1.55 | 0.06          | ND                |               | ND                |               | ND               |               |
| CT:Hartford      | 01/05/94          | 1.65 | 0.06          | ND                |               | ND                |               | ND               |               |
| DE:Wilmington    | 01/11/94          | 1.59 | 0.06          | ND                |               | ND                |               | ND               |               |
| FL:Tampa         | 01/03/94          | 1.66 | 0.09          | 5                 | 3             | ND                |               | ND               |               |
| GA:Atlanta       | 01/11/94          | 1.49 | 0.08          | ND                |               | ND                |               | ND               |               |
| HI:Honolulu      | 01/10/94          | 1.64 | 0.08          | ND                |               | ND                |               | ND               |               |
| IA:Des Moines    | 01/03/94          | 1.57 | 0.06          | ND                |               | ND                |               | ND               |               |
| IL:Chicago       | 01/06/94          | 1.64 | 0.12          | ND                |               | ND                |               | ND               |               |
| IN:Indianapolis  | 01/10/94          | 1.55 | 0.08          | ND                |               | ND                |               | ND               |               |
| KS:Wichita       | 01/26/94          | 1.49 | 0.14          | ND                |               | ND                |               | ND               |               |
| KY:Louisville    | 01/03/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| MA:Boston        | 01/03/94          | 1.47 | 0.13          | ND                |               | ND                |               | ND               |               |
| MD:Baltimore     | 01/06/94          | 1.56 | 0.14          | ND                |               | ND                |               | ND               |               |
| ME:Portland      | 01/05/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| MI:Detroit       | 01/05/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| MI:Grand Rapids  | 01/03/94          | 1.54 | 0.09          | ND                |               | ND                |               | ND               |               |
| MO:Kansas City   | 01/13/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| MS:Jackson       | 01/06/94          | 1.61 | 0.09          | ND                |               | ND                |               | ND               |               |
| MT:Helena        | 01/14/94          | 1.68 | 0.07          | ND                |               | ND                |               | ND               |               |
| NC:Charlotte     | 01/24/94          | 1.63 | 0.08          | ND                |               | ND                |               | ND               |               |
| ND:Minot         | 01/04/94          | 1.66 | 0.09          | ND                |               | ND                |               | ND               |               |
| NJ:Trenton       | 01/06/94          | 1.61 | 0.06          | ND                |               | ND                |               | ND               |               |
| NM:Albuquerque   | 01/25/94          | 1.51 | 0.09          | ND                |               | ND                |               | ND               |               |
| NV:Las Vegas     | 01/04/94          | 1.70 | 0.08          | ND                |               | ND                |               | ND               |               |
| NY:Buffalo       | 01/19/94          | 1.62 | 0.14          | ND                |               | ND                |               | ND               |               |
| NY:Syracuse      | 01/13/94          | 1.54 | 0.09          | ND                |               | ND                |               | ND               |               |
| OH:Cincinnati    | 01/07/94          | 1.62 | 0.09          | ND                |               | ND                |               | ND               |               |
| OH:Cleveland     | 01/28/94          | 1.57 | 0.09          | ND                |               | ND                |               | ND               |               |
| OR:Portland      | 01/03/94          | 1.68 | 0.06          | ND                |               | ND                |               | ND               |               |
| PA:Philadelphia  | 01/03/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| PA:Pittsburgh    | 01/05/94          | 1.69 | 0.09          | ND                |               | ND                |               | ND               |               |

**Table 11 (continued)**  
**Radionuclides in Pasteurized Milk**  
January 1994

| Location      | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|---------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|               |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| PC:Cristobal  | 01/03/94          | 1.58 | 0.05          | 7                 | 1             | ND                |               | ND               |               |
| PR:San Juan   | 01/07/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| SC:Charleston | 01/06/94          | 1.48 | 0.09          | ND                |               | ND                |               | ND               |               |
| SD:Rapid City | 01/03/94          | 1.63 | 0.08          | ND                |               | ND                |               | ND               |               |
| TN:Knoxville  | 01/09/94          | 1.58 | 0.14          | ND                |               | ND                |               | ND               |               |
| TN:Memphis    | 01/05/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| TX:Austin     | 01/11/94          | 1.55 | 0.09          | ND                |               | ND                |               | ND               |               |
| TX:Ft. Worth  | 01/11/94          | 1.60 | 0.08          | ND                |               | ND                |               | ND               |               |
| VT:Burlington | 01/04/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| WA:Seattle    | 01/04/94          | 1.66 | 0.08          | ND                |               | ND                |               | ND               |               |
| WA:Spokane    | 01/03/94          | 1.68 | 0.09          | ND                |               | ND                |               | ND               |               |
| WV:Charleston | 01/10/94          | 1.57 | 0.08          | ND                |               | ND                |               | ND               |               |

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

**Table 12**  
**Radionuclides in Pasteurized Milk**  
February 1994

| Location         | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|------------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|                  |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| AL:Montgomery    | 02/10/94          | 1.59 | 0.06          | ND                |               | ND                |               | ND               |               |
| AR:Little Rock   | 02/03/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| CA:Los Angeles   | 02/07/94          | 1.61 | 0.06          | ND                |               | ND                |               | ND               |               |
| CA:Sacramento    | 02/01/94          | 1.50 | 0.09          | ND                |               | ND                |               | ND               |               |
| CA:San Francisco | 02/07/94          | 1.66 | 0.09          | ND                |               | ND                |               | ND               |               |
| CO:Denver        | 02/07/94          | 1.69 | 0.09          | ND                |               | ND                |               | ND               |               |
| DE:Wilmington    | 02/02/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| FL:Tampa         | 02/07/94          | 1.61 | 0.09          | 3                 | 3             | ND                |               | ND               |               |
| GA:Atlanta       | 02/08/94          | 1.48 | 0.09          | ND                |               | ND                |               | ND               |               |
| HI:Honolulu      | 02/07/94          | 1.60 | 0.14          | ND                |               | ND                |               | ND               |               |
| IA:Des Moines    | 02/07/94          | 1.57 | 0.09          | ND                |               | ND                |               | ND               |               |
| IL:Chicago       | 02/04/94          | 1.73 | 0.09          | ND                |               | ND                |               | ND               |               |
| IN:Indianapolis  | 02/07/94          | 1.61 | 0.06          | ND                |               | ND                |               | ND               |               |
| KS:Wichita       | 02/22/94          | 1.69 | 0.09          | ND                |               | ND                |               | ND               |               |
| KY:Louisville    | 02/08/94          | 1.58 | 0.09          | ND                |               | ND                |               | ND               |               |
| LA:New Orleans   | 02/17/94          | 1.58 | 0.06          | ND                |               | ND                |               | ND               |               |
| MA:Boston        | 02/08/94          | 1.63 | 0.08          | ND                |               | ND                |               | ND               |               |
| MD:Baltimore     | 02/04/94          | 1.60 | 0.06          | ND                |               | ND                |               | ND               |               |
| ME:Portland      | 02/11/94          | 1.63 | 0.06          | ND                |               | ND                |               | ND               |               |
| MI:Detroit       | 02/07/94          | 1.69 | 0.09          | ND                |               | ND                |               | ND               |               |
| MI:Grand Rapids  | 02/07/94          | 1.64 | 0.08          | ND                |               | ND                |               | ND               |               |
| MN:St. Paul      | 02/02/94          | 1.66 | 0.09          | ND                |               | ND                |               | ND               |               |
| MO:Kansas City   | 02/28/94          | 1.61 | 0.07          | ND                |               | ND                |               | ND               |               |
| MS:Jackson       | 02/03/94          | 1.66 | 0.09          | ND                |               | ND                |               | ND               |               |
| MT:Helena        | 02/17/94          | 1.57 | 0.06          | ND                |               | ND                |               | ND               |               |
| NC:Charlotte     | 02/01/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| ND:Minot         | 02/01/94          | 1.80 | 0.08          | ND                |               | ND                |               | ND               |               |
| NJ:Trenton       | 02/10/94          | 1.58 | 0.14          | ND                |               | ND                |               | ND               |               |
| NM:Albuquerque   | 02/07/94          | 1.38 | 0.13          | ND                |               | ND                |               | ND               |               |
| NV:Las Vegas     | 02/08/94          | 1.57 | 0.10          | ND                |               | ND                |               | ND               |               |
| NY:Buffalo       | 02/07/94          | 1.58 | 0.08          | ND                |               | ND                |               | ND               |               |
| NY:Syracuse      | 02/07/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| OH:Cincinnati    | 02/17/94          | 1.57 | 0.08          | ND                |               | ND                |               | ND               |               |
| OH:Cleveland     | 02/28/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| OR:Portland      | 02/08/94          | 1.72 | 0.08          | ND                |               | ND                |               | ND               |               |
| PA:Philadelphia  | 02/07/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| PA:Pittsburgh    | 02/07/94          | 1.54 | 0.07          | ND                |               | ND                |               | ND               |               |

**Table 12 (continued)**  
**Radionuclides in Pasteurized Milk**  
February 1994

| Location      | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|---------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|               |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| PC:Cristobal  | 02/09/94          | 1.62 | 0.07          | 4                 | 2             | ND                |               | ND               |               |
| PR:San Juan   | 02/04/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| SC:Charleston | 02/10/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| SD:Rapid City | 02/07/94          | 1.58 | 0.09          | ND                |               | ND                |               | ND               |               |
| TN:Knoxville  | 02/08/94          | 1.57 | 0.09          | ND                |               | ND                |               | ND               |               |
| TN:Memphis    | 02/16/94          | 1.67 | 0.08          | ND                |               | ND                |               | ND               |               |
| TX:Austin     | 02/08/94          | 1.58 | 0.08          | ND                |               | ND                |               | ND               |               |
| TX:Ft. Worth  | 02/14/94          | 1.50 | 0.08          | ND                |               | ND                |               | ND               |               |
| VA:Norfolk    | 02/03/94          | 1.68 | 0.09          | ND                |               | ND                |               | ND               |               |
| VT:Burlington | 02/25/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| WA:Seattle    | 02/08/94          | 1.59 | 0.06          | ND                |               | ND                |               | ND               |               |
| WA:Spokane    | 02/01/94          | 1.60 | 0.08          | ND                |               | ND                |               | ND               |               |
| WV:Charleston | 02/07/94          | 1.75 | 0.09          | ND                |               | ND                |               | ND               |               |

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

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

| Location         | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|------------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|                  |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| AL:Montgomery    | 03/11/94          | 1.51 | 0.14          | ND                |               | ND                |               | ND               |               |
| AR:Little Rock   | 03/08/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| AZ:Phoenix       | 03/14/94          | 1.62 | 0.09          | ND                |               | ND                |               | ND               |               |
| CA:Los Angeles   | 03/09/94          | 1.56 | 0.08          | ND                |               | ND                |               | ND               |               |
| CA:Sacramento    | 03/04/94          | 1.56 | 0.09          | ND                |               | ND                |               | ND               |               |
| CA:San Francisco | 03/03/94          | 1.57 | 0.08          | ND                |               | ND                |               | ND               |               |
| CO:Denver        | 03/14/94          | 1.36 | 0.08          | ND                |               | ND                |               | ND               |               |
| DE:Wilmington    | 03/29/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| FL:Tampa         | 03/07/94          | 1.57 | 0.08          | 4                 | 2             | ND                |               | ND               |               |
| GA:Atlanta       | 03/15/94          | 1.51 | 0.09          | ND                |               | ND                |               | ND               |               |
| HI:Honolulu      | 03/08/94          | 1.62 | 0.09          | ND                |               | ND                |               | ND               |               |
| IA:Des Moines    | 03/01/94          | 1.61 | 0.09          | ND                |               | ND                |               | ND               |               |
| IL:Chicago       | 03/03/94          | 1.64 | 0.08          | ND                |               | ND                |               | ND               |               |
| IN:Indianapolis  | 03/07/94          | 1.56 | 0.09          | ND                |               | ND                |               | ND               |               |
| KS:Wichita       | 03/22/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| KY:Louisville    | 03/08/94          | 1.63 | 0.09          | ND                |               | ND                |               | ND               |               |
| MA:Boston        | 03/07/94          | 1.59 | 0.06          | ND                |               | ND                |               | ND               |               |
| MD:Baltimore     | 03/04/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| ME:Portland      | 03/07/94          | 1.57 | 0.14          | ND                |               | ND                |               | ND               |               |
| MI:Detroit       | 03/08/94          | 1.57 | 0.06          | ND                |               | ND                |               | ND               |               |
| MI:Grand Rapids  | 03/07/94          | 1.45 | 0.14          | ND                |               | ND                |               | ND               |               |
| MN:St. Paul      | 03/02/94          | 1.67 | 0.09          | ND                |               | ND                |               | ND               |               |
| MO:Kansas City   | 03/29/94          | 1.60 | 0.06          | ND                |               | ND                |               | ND               |               |
| MS:Jackson       | 03/07/94          | 1.58 | 0.09          | ND                |               | ND                |               | ND               |               |
| MT:Helena        | 03/17/94          | 1.64 | 0.09          | ND                |               | ND                |               | ND               |               |
| NC:Charlotte     | 03/08/94          | 1.63 | 0.09          | ND                |               | ND                |               | ND               |               |
| ND:Minot         | 03/02/94          | 1.58 | 0.06          | ND                |               | ND                |               | ND               |               |
| NJ:Trenton       | 03/09/94          | 1.53 | 0.09          | ND                |               | ND                |               | ND               |               |
| NM:Albuquerque   | 03/29/94          | 1.52 | 0.06          | ND                |               | ND                |               | ND               |               |
| NV:Las Vegas     | 03/01/94          | 1.62 | 0.09          | ND                |               | ND                |               | ND               |               |
| NY:Buffalo       | 03/21/94          | 1.61 | 0.09          | ND                |               | ND                |               | ND               |               |
| NY:Syracuse      | 03/07/94          | 1.56 | 0.06          | ND                |               | ND                |               | ND               |               |
| OH:Cincinnati    | 03/15/94          | 1.66 | 0.07          | ND                |               | ND                |               | ND               |               |
| OH:Cleveland     | 03/11/94          | 1.63 | 0.09          | ND                |               | ND                |               | ND               |               |
| OK:Oklahoma City | 03/14/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| OR:Portland      | 03/07/94          | 1.61 | 0.08          | ND                |               | ND                |               | ND               |               |
| PA:Philadelphia  | 03/07/94          | 1.66 | 0.08          | ND                |               | ND                |               | ND               |               |

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

| Location      | Date<br>Collected | K    |               | <sup>137</sup> Cs |               | <sup>140</sup> Ba |               | <sup>131</sup> I |               |
|---------------|-------------------|------|---------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
|               |                   | g/L  | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L             | $\pm 2\sigma$ | pCi/L            | $\pm 2\sigma$ |
| PA:Pittsburgh | 03/08/94          | 1.57 | 0.06          | ND                |               | ND                |               | ND               |               |
| PC:Cristobal  | 03/09/94          | 1.69 | 0.09          | 8                 | 3             | ND                |               | ND               |               |
| PR:San Juan   | 03/09/94          | 1.63 | 0.08          | ND                |               | ND                |               | ND               |               |
| SC:Charleston | 03/11/94          | 1.66 | 0.08          | ND                |               | ND                |               | ND               |               |
| SD:Rapid City | 03/07/94          | 1.61 | 0.09          | ND                |               | ND                |               | ND               |               |
| TN:Knoxville  | 03/07/94          | 1.57 | 0.08          | ND                |               | ND                |               | ND               |               |
| TN:Memphis    | 03/10/94          | 1.56 | 0.10          | ND                |               | ND                |               | ND               |               |
| TX:Austin     | 03/07/94          | 1.57 | 0.08          | ND                |               | ND                |               | ND               |               |
| TX:Ft. Worth  | 03/08/94          | 1.57 | 0.09          | ND                |               | ND                |               | ND               |               |
| VA:Norfolk    | 03/29/94          | 1.57 | 0.06          | ND                |               | ND                |               | ND               |               |
| VT:Montpelier | 03/28/94          | 1.60 | 0.09          | ND                |               | ND                |               | ND               |               |
| WA:Seattle    | 03/09/94          | 1.57 | 0.10          | ND                |               | ND                |               | ND               |               |
| WA:Spokane    | 03/14/94          | 1.58 | 0.09          | ND                |               | ND                |               | ND               |               |
| WV:Charleston | 03/07/94          | 1.55 | 0.08          | ND                |               | ND                |               | ND               |               |

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

**Table 14**  
**Strontium-90 in Pasteurized Milk**  
**EPA Regional Composites**

January 1994

| EPA<br>Region | Collection<br>Date | <sup>90</sup> Sr |               |
|---------------|--------------------|------------------|---------------|
|               |                    | pCi/L            | $\pm 2\sigma$ |
| I             | 01/05/94           | 0.9              | 0.4           |
| II            | 01/11/94           | 1.3              | 0.4           |
| III           | 01/06/94           | 1.4              | 0.4           |
| IV            | 01/08/94           | 0.9              | 0.4           |
| V             | 01/10/94           | 1.2              | 0.4           |
| VI            | 01/13/94           | 1.3              | 0.4           |
| VII           | 01/14/94           | 1.4              | 0.4           |
| VIII          | 01/08/94           | 1.1              | 0.4           |
| IX            | 01/07/94           | 0.5              | 0.3           |
| X             | 01/03/94           | 0.9              | 0.4           |

Note:  $\sigma$  = Counting Error.

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