# California Department of Public Health

# Fukushima

# Initial Incident Consolidated Radiation Monitoring Reports

# March 20, 2011 To 2012 (First Quarter)

**Links to individual preliminary analysis reports are provided at the end of each individual Consolidated Radiation Monitoring Report.**

# California Department of Public Health
# Radiation Monitoring Report March 24, 2011

California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Eureka, Humboldt Bay, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles and San Diego from March 16-18 indicate the trace presence of Iodine-131. Testing from two of the sites, Livermore and San Luis Obispo, also showed trace amounts of another radioactive element, Tellurium-132.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least ten thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in Eureka the readings indicate that an individual's annual radiation dose would increase by two tenths (0.20) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.79 | 0.20 |
| Humboldt Bay | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.10 | 0.03 |
| Richmond | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.19 | 0.05 |
| Livermore | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detections of: | Iodine-131 | 0.51 | 0.13 |
| | | | Tellurium-132 | 0.04 | 0.00 |
| Avila Beach | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.64 | 0.16 |
| San Luis Obispo | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detections of: | Iodine-131 | 0.44 | 0.11 |
| | | | Tellurium-132 | 0.04 | 0.00 |
| Los Angeles | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.22 | 0.06 |
| San Diego | 3/16/2011 | No Detections | | | |
| | 3/18/2011 | Detection of: | Iodine-131 | 0.13 | 0.03 |

**Notes:**
CDPH has air sampling stations in eight locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Links to data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-3-16-18.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report March 25, 2011

California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Eureka, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles and San Diego from March 20-21 indicate the trace presence of Iodine-131. Testing from one of the sites, San Luis Obispo, also showed trace amounts of another radioactive element, Tellurium-132.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least ten thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in Los Angeles the readings indicate that an individual's annual radiation dose would increase by one fourth (0.25) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 3/20/2011 | Detection of: | Iodine-131 | 0.49 | 0.12 |
| Humboldt Bay | 3/20/2011 | No Detection | | | |
| Richmond | 3/20/2011 | Detections of: | Iodine-131 | 0.09 | 0.02 |
| Livermore | 3/21/2011 | Detections of: | Iodine-131 | 1.20 | 0.30 |
| Avila Beach | 3/20/2011 | Detection of: | Iodine-131 | 1.45 | 0.36 |
| San Luis Obispo | 3/20/2011 | Detection of: | Iodine-131 | 1.55 | 0.39 |
| | | | Tellurium-132 | 0.06 | 0.03 |
| Los Angeles | 3/21/2011 | Detection of: | Iodine-131 | 1.00 | 0.25 |
| San Diego | 3/21/2011 | Detection of: | Iodine-131 | 1.26 | 0.32 |

**Notes:**
CDPH has air sampling stations in eight locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-03-25.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report March 28, 2011

California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Eureka, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente and San Diego from March 22-24 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least ten thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in Richmond on March 24, the readings indicate that an individual's annual radiation dose would increase by slightly more than one fourth (0.28) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 3/22/2011 | Detection of: | Iodine-131 | 0.33 | 0.08 |
| | 3/24/2011 | Detection of: | Iodine-131 | 0.97 | 0.24 |
| Humboldt Bay | 3/22/2011 | No Detection | | | |
| Richmond | 3/22/2011 | Detection of: | Iodine-131 | 0.09 | 0.02 |
| | 3/24/2011 | Detection of: | Iodine-131 | 1.11 | 0.28 |
| Livermore | 3/23/2011 | Detection of: | Iodine-131 | 0.33 | 0.08 |
| Avila Beach | 3/22/2011 | Detection of: | Iodine-131 | 0.85 | 0.21 |
| | 3/24/2011 | Detection of: | Iodine-131 | 0.43 | 0.11 |
| San Luis Obispo | 3/22/2011 | Detection of: | Iodine-131 | 0.86 | 0.21 |
| | 3/24/2011 | Detection of: | Iodine-131 | 0.45 | 0.11 |
| San Clemente | 3/24/2011 | Detection of: | Iodine-131 | 0.36 | 0.09 |
| Los Angeles | 3/23/2011 | Detection of: | Iodine-131 | 0.48 | 0.12 |
| San Diego | 3/23/2011 | Detection of: | Iodine-131 | 0.56 | 0.14 |

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-03-28.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 1, 2011

**AIR:**

California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Humboldt Bay, Eureka, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente and San Diego from March 24-30 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least a thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in Los Angeles on March 25, the readings indicate that an individual's annual radiation dose would increase by slightly more than eighteen hundredth (0.18) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Humboldt Bay | 3/24/11 | Detection of: | Iodine-131 | 0.46 | 0.11 |
| | 3/26/28 | Detection of: | Iodine-131 | 0.26 | 0.06 |
| | 3/28/11 | Detection of: | Iodine-131 | 0.19 | 0.05 |
| Eureka | 3/26/11 | Detection of: | Iodine-131 | 0.32 | 0.08 |
| | 3/28/11 | Detection of: | Iodine-131 | 0.14 | 0.04 |
| Richmond | 3/28/11 | Detection of: | Iodine-131 | 0.22 | 0.13 |
| | 3/30/11 | Detection of: | Iodine-131 | 0.16 | 0.04 |
| Livermore | 3/28/11 | Detection of: | Iodine-131 | 0.30 | 0.07 |
| | 3/30/11 | Detection of: | Iodine-131 | 0.10 | 0.02 |
| Avila Beach | 3/28/11 | Detection of: | Iodine-131 | 0.29 | 0.07 |
| Los Angeles | 3/25/11 | Detection of: | Iodine-131 | 0.73 | 0.18 |
| | 3/28/11 | Detection of: | Iodine-131 | 0.30 | 0.08 |
| San Luis Obispo | 3/28/11 | Detection of: | Iodine-131 | 0.15 | 0.04 |
| San Clemente | 3/28/11 | Detection of: | Iodine-131 | 0.16 | 0.04 |
| San Diego | 3/28/11 | Detection of: | Iodine-131 | 0.27 | 0.07 |

**Milk:**

Like the air samples outlines above, CDPH detected only trace amounts of radiation in milk sampled in San Luis Obispo. The iodine-131 concentration level detected in the milk sample is 1,395 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.01 millirem per week. Further, iodine-131 has a physical half-life of 8 days, which means iodine-131 detected in the milk sample decays very quickly.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (pCi/liter) | Estimated Dose (millirem/week) |
|---|---|---|---|---|---|
| CalPoly Dairy Farm | 3/28/11 | Detection of: | iodine-131 | 3.33 | 0.01 |

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-01.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 4, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Eureka, Humboldt Bay, Richmond, Livermore, San Luis Obispo, Avila Beach, and San Clemente from March 30 to April 1, 2011 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least a thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in San Clemente on March 30, the readings indicate that an individual's annual radiation dose would increase by about 5 hundredths (0.05) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 3/30/11 | Detection of: | Iodine-131 | 0.14 | 0.04 |
| Humboldt Bay | 3/30/11 | Detection of: | Iodine-131 | 0.10 | 0.03 |
| Richmond | 4/1/11 | Detection of: | Iodine-131 | 0.05 | 0.01 |
| Livermore | 4/1/11 | Detection of: | Iodine-131 | 0.05 | 0.01 |
| San Luis Obispo | 3/30/11 | Detection of: | Iodine-131 | 0.10 | 0.03 |
| Avila Beach | 3/30/11 | Detection of: | Iodine-131 | 0.11 | 0.03 |
| San Clemente | 3/30/11 | Detection of: | Iodine-131 | 0.19 | 0.05 |

**MILK:**
No milk samples were collected on March 30 or April 1, 2011.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-04.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 5, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

The air samples, taken in Eureka, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, and San Diego from March 30 to April 4, 2011 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least a thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in San Diego on March 30, the readings indicate that an individual's annual radiation dose would increase by about five one hundredths (0.05) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/1/11 | No Detection | | | |
| Richmond | 4/3/11 | Detection of: | Iodine-131 | 0.06 | 0.01 |
| Livermore | 4/4/11 | Detection of: | Iodine-131 | 0.03 | 0.01 |
| Avila Beach | 4/1/11 | Detection of: | Iodine-131 | 0.11 | 0.03 |
| San Luis Obispo | 4/1/11 | Detection of: | Iodine-131 | 0.09 | 0.02 |
| Los Angeles | 3/30/11 | Detection of: | Iodine-131 | 0.16 | 0.04 |
| San Diego | 3/30/11 | Detection of: | Iodine-131 | 0.20 | 0.05 |
| | 4/1/11 | Detection of: | Iodine-131 | 0.12 | 0.03 |

**Milk:**
No milk results for March 30 - April 4, 2011.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

The iodine-131 concentration level detected in the milk sample is 1395 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.01 millirem per week. Further, iodine-131 has a physical half-life of 8 days, which means iodine-131 detected in the milk sample decays very quickly.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-05.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 6, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples, taken in Humboldt Bay and Richmond, March 30 to April 5, 2011 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least a thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in Humboldt Bay on March 30, the readings indicate that an individual's annual radiation dose would increase by three one hundredths (0.03) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Humboldt Bay | 3/30/11 | Detection of: | Iodine-131 | 0.10 | 0.03 |
| | 4/1/11 | No Detection | | | |
| | 4/3/11 | Detection of: | Iodine-131 | 0.08 | 0.02 |
| Richmond | 4/5/11 | Detection of: | Iodine-131 | 0.06 | 0.02 |
| Avila Beach | 4/3/11 | No Detection | | | |
| San Luis Obispo | 4/3/11 | No Detection | | | |
| Los Angeles | 4/4/11 | No Detection | | | |
| San Clemente | 4/4/11 | No Detection | | | |
| San Diego | 4/4/11 | No Detection | | | |

**Milk:**
The milk sample collected April 4, 2011 had no detection of Iodine-131.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (pCi/liter) | Estimated Dose per Week (millirem) |
|---|---|---|---|---|---|
| CalPoly Dairy Farm | 4/4/11 | No Detection | | | |

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-06.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 12, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples taken in Eureka, Avila Beach, San Luis Obispo, Los Angeles and San Clemente from April 1 to April 7, 2011 indicate the trace presence of Iodine-131.

The amounts are so small that according to U.S. Nuclear Regulatory Commission standards, they are at least a thousand times less than amounts that would cause a public health concern. Due to the distance from Japan to the West Coast, no health impacts from the nuclear emergency in Japan are currently expected.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

On the chart below, the numbers in the final column represent the additional dose (in millirems) to a person if they were breathing air for one year with the trace amounts of radiation detected. For example, in San Clemente on April 1, the readings indicate that an individual's annual radiation dose would increase by three one hundredths (0.03) of one millirem over the course of a full year. As a basis of comparison, a typical chest x-ray results in a dose of approximately 4-10 millirem. A Los Angeles-to-Chicago airplane flight results in a dose of approximately 2-3 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/5/11 | Detection of: | Iodine-131 | 0.06 | 0.02 |
| Humboldt Bay | 4/5/11 | No Detection | | | |
| Richmond | 4/7/11 | No Detection | | | |
| Avila Beach | 4/5/11 | Detection of: | Iodine-131 | 0.07 | 0.02 |
| San Luis Obispo | 4/5/11 | Detection of: | Iodine-131 | 0.06 | 0.02 |
| Los Angeles | 4/6/11 | Detection of: | Iodine-131 | 0.08 | 0.02 |
| San Clemente | 4/1/11<br>4/6/11 | Detection of:<br>No Detection | Iodine-131 | 0.12 | 0.03 |

**Milk:**
The milk sample collected April 4, 2011 had no detection of Iodine-131.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-12.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 14, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples taken in Eureka, Humboldt Bay, Richmond, Livermore, Avila Beach, San Luis Obispo, and San Diego from April 6 to April 9, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/7/11 | No Detection | | | |
| Humboldt Bay | 4/7/11 | No Detection | | | |
| Richmond | 4/9/11 | No Detection | | | |
| Livermore | 4/8/11 | No Detection | | | |
| Avila Beach | 4/7/11 | No Detection | | | |
| San Luis Obispo | 4/7/11 | No Detection | | | |
| San Diego | 4/6/11 | No Detection | | | |

**Milk:**
The milk sample collected April 11, 2011 had no detection of Iodine-131.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-14.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 19, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples taken in Richmond, Livermore, Avila Beach, San Luis Obispo, San Clemente, and San Diego from April 8 to April 11, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Richmond | 4/11/11 | No Detection | | | |
| Livermore | 4/11/11 | No Detection | | | |
| Avila Beach | 4/9/11 | No Detection | | | |
| San Luis Obispo | 4/9/11 | No Detection | | | |
| San Clemente | 4/8/11 | No Detection | | | |
| San Diego | 4/8/11 | No Detection | | | |

**Milk:**
The milk sample collected April 11, 2011 had no detection of Iodine-131.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-19.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 20, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente, and San Diego shown below from April 1 to April 11, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/11/11 | No Detection | | | |
| Humboldt Bay | 4/9/11 | No Detection | | | |
| | 4/11/11 | No Detection | | | |
| Livermore | 4/6/11 | No Detection | | | |
| San Luis Obispo | 4/11/11 | No Detection | | | |
| Avila Beach | 4/11/11 | No Detection | | | |
| Los Angeles | 4/1/11 | No Detection | | | |
| | 4/11/11 | No Detection | | | |
| San Clemente | 4/11/11 | No Detection | | | |
| San Diego | 4/11/11 | No Detection | | | |

**Milk:**
The milk sample collected April 18, 2011 had no detection of Iodine-131.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-20.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report April 26, 2011

**AIR:**
California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, Richmond, San Luis Obispo, Avila Beach, Los Angeles, San Clemente, and San Diego shown below from April 9 to April 13, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/9/11 | No Detection | | | |
| | 4/13/11 | No Detection | | | |
| Humboldt Bay | 4/13/11 | No Detection | | | |
| Richmond | 4/13/11 | No Detection | | | |
| San Luis Obispo | 4/13/11 | No Detection | | | |
| Avila Beach | 4/13/11 | No Detection | | | |
| Los Angeles | 4/13/11 | No Detection | | | |
| San Clemente | 4/13/11 | No Detection | | | |
| San Diego | 4/13/11 | No Detection | | | |

**Milk:**
The milk sample collected April 18, 2011 had no detection of Iodine-131.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-04-26.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report May 5, 2011

**AIR:** California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, Richmond, Livermore, San Luis Obispo, Avila Beach, Los Angeles, San Clemente, and San Diego shown below from April 8 to April 21, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/15/11 | No Detection | | | |
| | 4/17/11 | No Detection | | | |
| | 4/20/11 | No Detection | | | |
| Humboldt Bay | 4/15/11 | No Detection | | | |
| | 4/17/11 | No Detection | | | |
| | 4/19/11 | No Detection | | | |
| Richmond | 4/15/11 | No Detection | | | |
| | 4/17/11 | No Detection | | | |
| | 4/19/11 | No Detection | | | |
| | 4/21/11 | No Detection | | | |
| Livermore | 4/13/11 | No Detection | | | |
| | 4/15/11 | No Detection | | | |
| | 4/18/11 | No Detection | | | |
| | 4/20/11 | No Detection | | | |
| San Luis Obispo | 4/15/11 | No Detection | | | |
| | 4/17/11 | No Detection | | | |
| | 4/19/11 | No Detection | | | |
| Avila Beach | 4/15/11 | No Detection | | | |
| | 4/17/11 | No Detection | | | |
| | 4/19/11 | No Detection | | | |
| Los Angeles | 4/8/11 | No Detection | | | |
| | 4/15/11 | No Detection | | | |
| | 4/18/11 | No Detection | | | |
| | 4/20/11 | No Detection | | | |
| San Clemente | 4/15/11 | No Detection | | | |
| | 4/18/11 | No Detection | | | |
| | 4/20/11 | No Detection | | | |
| San Diego | 4/15/11 | No Detection | | | |
| | 4/18/11 | No Detection | | | |

**Milk:** The milk sample collected April 18, 2011 had no detection of Iodine-131.

**Notes:** CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-05-05.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report May 16, 2011

**AIR:** California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, Richmond, Livermore, San Luis Obispo, Avila Beach, Los Angeles, San Clemente, and San Diego shown below from April 20 to April 29, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/22/11 | No Detection | | | |
| Humboldt Bay | 4/21/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |
| Richmond | 4/23/11 | No Detection | | | |
| | 4/25/11 | No Detection | | | |
| | 4/28/11 | No Detection | | | |
| Livermore | 4/22/11 | No Detection | | | |
| | 4/25/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| San Luis Obispo | 4/21/11 | No Detection | | | |
| | 4/23/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |
| Avila Beach | 4/21/11 | No Detection | | | |
| | 4/23/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |
| Los Angeles | 4/22/11 | No Detection | | | |
| San Clemente | 4/22/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |
| San Diego | 4/20/11 | No Detection | | | |
| | 4/27/11 | No Detection | | | |

**Milk:** Trace amounts of radiation was detected in the milk sampled from the San Luis Obispo area.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (pCi/liter) | Estimated Dose (millirem/week) |
|---|---|---|---|---|---|
| CalPoly Dairy Farm | 5/2/2011 | Detection of: | Iodine-131 | 4.14 | 0.016 |
| | | | Cesium-134 | 4.55 | 0.003 |
| | | | Cesium-137 | 5.11 | 0.002 |

The Iodine-131 concentration level detected in the milk sample is 1,122 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.016 millirem per week. Further, Iodine-131 has a physical half-life of 8 days, which means Iodine-131 detected in the milk sample decays very quickly. The Cesium-134 concentration in the milk sample is 1,021 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.003 millirem per week. The Cesium-137 concentration in the milk sample is 909 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.002 millirem per week.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-05-16.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report May 20, 2011

**AIR:** California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, San Luis Obispo, Avila Beach, Los Angeles, San Clemente, and San Diego shown below from April 23 to April 25, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/24/11 | No Detection | | | |
| Humboldt Bay | 4/23/11 | No Detection | | | |
| | 4/25/11 | No Detection | | | |
| San Luis Obispo | 4/24/11 | No Detection | | | |
| Avila Beach | 4/25/11 | No Detection | | | |
| Los Angeles | 4/25/11 | No Detection | | | |
| San Clemente | 4/25/11 | No Detection | | | |
| San Diego | 4/25/11 | No Detection | | | |

**Milk:** Trace amounts of radiation were detected in the milk sampled from the San Luis Obispo area.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (pCi/liter) | Estimated Dose (millirem/week) |
|---|---|---|---|---|---|
| CalPoly Dairy Farm | 5/2/2011 | Detection of: | Iodine-131 | 4.14 | 0.016 |
| | | | Cesium-134 | 4.55 | 0.003 |
| | | | Cesium-137 | 5.11 | 0.002 |

The Iodine-131 concentration level detected in the milk sample is 1,122 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.016 millirem per week. Further, Iodine-131 has a physical half-life of 8 days, which means Iodine-131 detected in the milk sample decays very quickly. The Cesium-134 concentration in the milk sample is 1,021 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.003 millirem per week. The Cesium-137 concentration in the milk sample is 909 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.002 millirem per week.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-05-20.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report May 27, 2011

**AIR:** California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. Radiation levels remain below the average amount from natural sources in California.

Air samples from Eureka, Humboldt Bay, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente, and San Diego shown below from April 23 to May 2, 2011 did not detect any radioactive material in air due to the nuclear accident in Fukushima, Japan.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|---|---|
| Eureka | 4/24/11 | No Detection | | | |
| | 4/28/11 | No Detection | | | |
| | 4/30/11 | No Detection | | | |
| | 5/2/11 | No Detection | | | |
| Humboldt Bay | 4/23/11 | No Detection | | | |
| | 4/25/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/1/11 | No Detection | | | |
| Richmond | 4/30/11 | No Detection | | | |
| Livermore | 5/2/11 | No Detection | | | |
| Avila Beach | 4/25/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/1/11 | No Detection | | | |
| San Luis Obispo | 4/24/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/1/11 | No Detection | | | |
| Los Angeles | 4/25/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/2/11 | No Detection | | | |
| San Clemente | 4/25/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/2/11 | No Detection | | | |
| San Diego | 4/25/11 | No Detection | | | |
| | 4/29/11 | No Detection | | | |
| | 5/2/11 | No Detection | | | |

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

Link to raw data: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-PreLabAnalysis-2011-05-27.pdf

Link to Air Sampling Map: http://www.cdph.ca.gov/programs/Documents/CDPH-RHB-SamplingStationMap.pdf

# California Department of Public Health
# Radiation Monitoring Report June 21, 2011

**AIR:** California Department of Public Health (CDPH) air monitors detected only trace amounts of radiation following the nuclear emergency in Japan. At the end of April 2011, CDPH resumed its routine weekly sampling schedule and analyses. Air samples collected from Eureka, Humboldt Bay, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente, and San Diego from April 27 to June 8, 2011 did not detect any Iodine-131.

We are exposed to radiation every day, both from natural sources, such as minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. The average annual radiation dose per person in the U.S. is 620 millirem.

| Sample Station | Date Collected | Iodine–131 Results (picoCuries per cubic meter of air) | Estimated Radiation Dose per Year (millirem) |
|---|---|---|---|
| Eureka | 5/9/11 | No Detection | |
| | 5/16/11 | No Detection | |
| | 5/23/11 | No Detection | |
| | 5/31/11 | No Detection | |
| | 6/6/11 | No Detection | |
| Humboldt Bay | 5/9/11 | No Detection | |
| | 5/14/11 | No Detection | |
| | 5/23/11 | No Detection | |
| | 5/30/11 | No Detection | |
| | 6/5/11 | No Detection | |
| Richmond | 5/4/11 | No Detection | |
| | 5/10/11 | No Detection | |
| | 5/18/11 | No Detection | |
| | 5/25/11 | No Detection | |
| | 6/1/11 | No Detection | |
| | 6/8/11 | No Detection | |
| Livermore | 5/12/11 | No Detection | |
| | 5/17/11 | No Detection | |
| | 5/24/11 | No Detection | |
| | 5/31/11 | No Detection | |
| | 6/8/11 | No Detection | |
| Avila Beach | 5/6/11 | No Detection | |
| | 5/13/11 | No Detection | |
| | 5/20/11 | No Detection | |
| | 5/27/11 | No Detection | |
| | 6/3/11 | No Detection | |
| San Luis Obispo | 5/6/11 | No Detection | |
| | 5/13/11 | No Detection | |
| | 5/20/11 | No Detection | |
| | 5/27/11 | No Detection | |
| | 6/3/11 | No Detection | |
| Los Angeles | 4/27/11 | No Detection | |
| | 5/9/11 | No Detection | |
| | 5/16/11 | No Detection | |
| | 5/23/11 | No Detection | |
| | 5/31/11 | No Detection | |
| | 6/7/11 | No Detection | |
| San Clemente | 5/9/11 | No Detection | |
| | 5/16/11 | No Detection | |
| | 5/23/11 | No Detection | |
| | 6/1/11 | No Detection | |
| | 6/6/11 | No Detection | |
| San Diego | 5/4/11 | No Detection | |
| | 5/11/11 | No Detection | |
| | 5/19/11 | No Detection | |
| | 5/25/11 | No Detection | |
| | 6/2/11 | No Detection | |

**Milk:** Trace amounts of radiation were detected in milk sampled from the San Luis Obispo area.

| Sample Station | Date Collected | Results | Element Detected | Concentration Measured (pCi/Liter) | Estimated Dose (millirem/week) |
|---|---|---|---|---|---|
| CalPoly Dairy Farm | 6/14/2011 | Detection of: | Cesium-134 | 2.37 | 0.002 |
| | | | Cesium-137 | 2.95 | 0.001 |

The Cesium-134 concentration in the milk sample is 1,960 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.002 millirem per week. The Cesium-137 concentration in the milk sample is 1,575 times less than standard of the US FDA (4,645 pCi/liter of milk). The resultant dose is approximately 0.001 millirem per week.

**Notes:**
CDPH has air sampling stations in nine locations in California. Samples collected from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132, and Zirconium-95.

Estimated dose is calculated by methods described in Title 10 of the Code of Federal Regulations Part 20, Standards for Protection Against Radiation, Appendix B, Table 2. Dose values for each radionuclide assume the individual will be exposed at this concentration continuously over the course of a year. Information to date indicates that the duration of exposure should not exceed a few weeks.

# California Department of Public Health
# Radiation Monitoring Report
# 3rd Quarter 2011

**Air:** In response to the Japanese nuclear incident, the California Department of Public Health (CDPH) increased its routine air monitoring for six weeks beginning in mid-March 2011. Prior to the resumption of routine monitoring at the end of the April, only trace amounts of radiation attributed to the nuclear emergency had been detected. Since the April 26, 2011 Radiation Monitoring Report, no radiation attributed to Japan has been detected.

CDPH has air sampling stations in nine locations in California. Samples from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132 and Zirconium-95. From mid-June to early September 2011, air samples collected from Eureka, Humboldt Bay, Richmond, Livermore, Avila Beach, San Luis Obispo, Los Angeles, San Clemente and San Diego did not detect Iodine-131 or other radioactive elements listed above.

**Milk:** Trace amounts of radioactive elements (Cesium-134 and Cesium-137) have been detected in milk sampled from the San Luis Obispo area during routine monitoring.

| Sample Station | Date Collected | Results (picoCuries per Liter) | Estimated Radiation Dose per Month (millirem) | Age Group (years old) | Results (picoCuries per Liter) | Estimated Radiation Dose per Month (millirem) | Age Group (years old) |
|---|---|---|---|---|---|---|---|
| CalPoly Dairy Farm | 6/14/2011 | 2.37 Cesium-134 | 0.0041 | 3 mos. | 2.95 Cesium-137 | 0.0041 | 3 mos. |
| | | | 0.0022 | 1 | | 0.0020 | 1 |
| | | | 0.0016 | 5 | | 0.0015 | 5 |
| | | | 0.0019 | 10 | | 0.0017 | 10 |
| | | | 0.0025 | 15 | | 0.0022 | 15 |
| | | | 0.0015 | >17 | | 0.0013 | >17 |
| | 7/19/2011 | 3.59 Cesium-134 | 0.0062 | 3 mos. | 4.38 Cesium-137 | 0.0061 | 3 mos. |
| | | | 0.0033 | 1 | | 0.0030 | 1 |
| | | | 0.0024 | 5 | | 0.0022 | 5 |
| | | | 0.0029 | 10 | | 0.0026 | 10 |
| | | | 0.0038 | 15 | | 0.0032 | 15 |
| | | | 0.0023 | >17 | | 0.0019 | >17 |
| | 8/22/2011 | 3.94 Cesium-134 | 0.0068 | 3 mos. | 5.09 Cesium-137 | 0.0071 | 3 mos. |
| | | | 0.0036 | 1 | | 0.0035 | 1 |
| | | | 0.0027 | 5 | | 0.0027 | 5 |
| | | | 0.0032 | 10 | | 0.0030 | 10 |
| | | | 0.0042 | 15 | | 0.0037 | 15 |
| | | | 0.0025 | >17 | | 0.0022 | >17 |
| CalPoly Dairy Farm | 9/06/2011 | 4.04 Cesium-134 | 0.0070 | 3 mos. | 5.91 Cesium-137 | 0.0082 | 3 mos. |
| | | | 0.0037 | 1 | | 0.0041 | 1 |
| | | | 0.0028 | 5 | | 0.0030 | 5 |
| | | | 0.0033 | 10 | | 0.0035 | 10 |
| | | | 0.0043 | 15 | | 0.0043 | 15 |
| | | | 0.0026 | >17 | | 0.0026 | >17 |
| Humboldt Creamery | 5/9/2011 | No Detection | N/A | | No Detection | N/A | |
| | 8/3/2011 | No Detection | N/A | | No Detection | N/A | |
| Rumiano Cheese | 5/3/2011 | No Detection | N/A | | No Detection | N/A | |
| | 8/2/2011 | No Detection | N/A | | No Detection | N/A | |

**Notes:** CDPH has milk sampling stations in 3 locations in California. Samples from these stations are analyzed for radioactive elements including Barium-140, Cerium-141, Cerium-144, Cesium-134, Cesium-137, Iodine-131, Iodine-132, Ruthenium-103, Ruthenium-106, Tellurium-132 and Zirconium-95. Estimated dose from drinking milk over the course of a month is calculated by methods described in the International Commission on Radiation Protection (ICRP) No. 72 and by age-specific milk consumption rates provided by the U.S. Food and Drug Administration (FDA).

The combined Cesium-134 and Cesium-137 concentrations detected in the CalPoly milk samples ranges from approximately 3,300 to 6,200 times less than the action level set by the U.S. FDA (33,000 pCi/liter of milk http://www.fda.gov/downloads/NewsEvents/PublicHealthFocus/UCM251056.pdf).

We are exposed to radiation every day, both from natural sources, such as in foods, minerals in the ground or radiation from the sun, and from man-made sources such as medical x-rays. According to the National Council on Radiation Protection and Measurements (NCRP) Report No. 160, the average annual radiation dose per person in the U.S. is 620 millirem, which includes exposure from natural background sources and from medical diagnostic and therapeutic procedures.

# California Department of Public Health
# Radiation Monitoring Report 1st Quarter 2012

**Air:** In response to the Japanese nuclear incident, the California Department of Public Health (CDPH) increased its routine air monitoring frequency for six weeks beginning in mid-March 2011. Prior to the resumption of routine weekly monitoring at the end of the April, only trace amounts of radiation attributed to the Japanese nuclear emergency had been detected.

CDPH has air sampling stations in nine locations in California. From Jan 1, 2012 to March 31, 2012, CDPH collected air samples from Eureka, Humboldt Bay, Richmond, Livermore, San Luis Obispo, Avila Beach, Los Angeles, San Clemente, and San Diego. Samples from these stations were analyzed for radioactive elements including beryllium-7, cerium-141, cerium-144, cesium-134, cesium-137, potassium-40, niobium-95, ruthenium-103, ruthenium-106, and zirconium-95. The 1st-quarter composite airborne-particulate samples, comprised of multiple samples taken at each location over the reporting period, were analyzed by gamma spectroscopy. The results revealed only naturally-occurring radionuclides.

**Milk:** No radionuclides were detected in milk sampled during the first quarter of 2012.

| Sample Station | Date Collected | Results (picoCuries per Liter) | Estimated Radiation Dose per Month (millirem) |
|---|---|---|---|
| CalPoly Dairy Farm | 1/9/2012 | No Detection | N/A |
| | 2/6/2012 | No Detection | N/A |
| | 3/5/2012 | No Detection | N/A |
| Rumiano Cheese | 2/2/2012 | No Detection | N/A |
| Humboldt Creamery | 2/7/2012 | No Detection | N/A |

N/A = not applicable

**Notes:** CDPH has milk sampling stations in 3 locations in California. Samples from these stations are analyzed for radioactive elements including barium-140, cerium-141, cerium-144, cesium-134, cesium-137, iodine-131, iodine-132, ruthenium-103, ruthenium-106, tellurium-132 and zirconium-95. No radionuclides were detected in milk sampled during the first quarter of 2012.

We are exposed to radiation every day, both from natural sources including foods, minerals in the ground and radiation from the sun, and from man-made sources such as medical x-rays. According to the National Council on Radiation Protection and Measurements (NCRP) Report No. 160, the average annual radiation dose per person in the U.S. is 620 millirem, which includes exposure from natural background sources and from medical diagnostic and therapeutic procedures.