Environmental Radiation Overview

Background

The New York State Department of Health (DOH) measures the levels of radiation exposure and concentration of radioactive isotopes at locations where potential releases may occur. This program is not intended to provide comprehensive mapping of environmental radiation levels throughout the State. Radiation measurements and environmental samples are also collected from several sites (near places where use of radioactive materials is not likely to have impacted the environment) to determine the ambient or average background levels in New York State. These background sites are used for comparison and may contain Naturally Occurring Radioactive Material (NORM) in addition to ubiquitous amounts of man-made radionuclides. NORM is not usually considered of any special health or safety significance as the levels are normally low. Specific information about the Nine Mile Point Readings can be found in the NYSDOH_Env_Radiation_NineMilePoint_Overview.

Radiation and radioactive materials are part of the environment. The radiation in the environment comes from both cosmic radiation that originates in outer space and from radioactive materials that occur naturally in the earth and in our bodies. Together, these are known as background radiation. Everyone is exposed to background radiation on a daily basis. The worldwide distribution of radionuclides from atmospheric nuclear weapons testing, and the use of radioactive materials in electric energy generation, and industrial and medical applications are the primary man-made sources of radiation and radioactivity in the environment

The information in the datasets is a continuation of the annual reports on Environmental Radiation in New York State prepared by the Department of Health (DOH) since 1982 and previously prepared by the New York State Department of Environmental Conservation (DEC). We have data files from 1989 through last year available electronically. Data prior to 1989 has been archived and is not readily accessible. Because there is a lag time in receiving the data from the laboratory, the most current data may not be available.

The Environmental Radiation Surveillance Program measures the level of radionuclides in environmental media to determine the normal levels (background) of radioactivity at several locations in the State, and monitors the influence of human activities on these levels. This program is not designed, or intended to monitor releases from discharge points at a specific facility (e.g., a stack). The facility operator performs this type of monitoring to meet the requirements of its licensing agency (e.g., a federal agency or the New York State Department of Environmental Conservation). A column has been added for values which can be graphed. Readings where a less than value is displayed show a value that is less than the detection limit of the measurement method and are essentially equivalent to 0. Variations in detection limit are due to variations in sample collection and measurement instrument performance. Limits for discharge to the environment are specified in Department of Environmental Conservation Regulations 6 NYCRR Part 380 (http://www.dec.ny.gov/chemical/23475.html) and also

incorporated in the New York State Sanitary Code 10 NYCRR Part 16 Appendix 16-C (http://www.health.ny.gov/environmental/radiological/radon/radioactive_material_licensing/docs/part16_appendc.pdf).

Observations

Monitoring is performed around three operating nuclear power plant sites containing six operational plants, several other research reactors, and industrial facilities using radioactive materials.

The data show the continuation of certain trends observed over the past 26 years. The level of fission products in the environment resulting from previous atmospheric weapons testing continues to show a slow decrease with time. Although low-levels of radionuclides above normal background levels were measured in the environment near some facilities, they did not indicate a public health concern.

Air sampling datasets from 2011 show increased levels of radionuclides for a short time period due to the Fukushima Dai'ichi incident in Japan which, occurred on March 11, 2011. This incident was caused by an earthquake and a tsunami. The tsunami resulted in significant amounts of damage to the reactors of the nuclear power plant causing the three cores to melt within the first three days of the accident. The accident was rated 7 on the International Nuclear Events Scale (INES) scale, due to the high amounts of radioactive release. The radiation levels seen in NYS were well below action levels and therefore not of immediate concern. More information about this incident can be found at: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-japan-events.html.

More information on radiation and the environment can be found at: http://www.epa.gov/radiation/.