Radionuclide Rule Facts Job Aid

Regulations for radionuclides in drinking water first became effective in 1976. The revised radionuclides rule improves public health protection by requiring monitoring at all entry points to a drinking water distribution system, creating a new standard for uranium, changing monitoring frequencies, and revising the monitoring requirements for radium-226 and radium-228.

Who does this rule apply to?

The Radionuclides Rule applies to all community water systems.

A community water system is a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Bottled, vended, retail, and bulk water hauling systems are also required to provide water that complies with the radionuclide MCLs and to conduct routine compliance monitoring once every four years.

What types of monitoring does the rule require?

All community water systems must sample for the following 4 radiologicals:

- gross alpha particle activity
- radium-226
- radium-228
- uranium

(There is additional monitoring for systems determined to be “vulnerable” or “utilizing waters contaminated by effluents from nuclear facilities.” Page 3 of this fact sheet has more information on these system types.)

What are the health effects of ingesting radionuclides in drinking water?

Radionuclide health effects include increased risk of the following:

- Cancer
- Genetic mutations (to exposed individual or passed on to offspring)
- Physical or mental retardation can occur in fetuses exposed to ionizing radiation
- Kidney damage from uranium

Key radionuclide monitoring requirements

- MCL Compliance is based on the **running annual average** of each contaminant at each **entry point**.
- Monitoring/reporting compliance is specific for each contaminant at each entry point.
- Repeat monitoring frequency changes based on the most recent sampling results.

How do radionuclides get into drinking water?

Some radionuclides are naturally occurring in rocks, soil and water. As a result, all community water systems are being required to monitor for certain naturally occurring radionuclides.

Other radionuclides may be man-made due to human activity. For example, water sources located near facilities such as nuclear power plants, Department of Energy test centers, and military bases utilizing nuclear materials may have a greater chance of containing man-made radionuclides. As a result, water systems in these locations may be required to monitor for additional radionuclides.

How does the revised Radionuclide Rule further protect consumers?

The Radionuclides Rule (originally published in 1976) has been revised to further protect consumers by:

- Reduction in cancer cases due to radium-228 monitoring and treatment.
- Reduction in cancer cases due to uranium monitoring and treatment.
- Reduction in kidney toxicity cases due to uranium monitoring and treatment.

When do systems have to start radiological monitoring?

Existing Entry Points:

Water suppliers must begin radiological monitoring based on dates that correspond to their system size:

- Systems serving greater than 3,300 people begin initial monitoring January 2005.*
- Systems serving 500-3,300 people begin initial monitoring January 2006.*
- Systems serving less than 500 people begin initial monitoring January 2007.*

*Unless grandfathered. The rule allows for possible grandfathering via acceptable historical radiological laboratory data collected from June 2000 to December 2003. A system that has been grandfathered by DEP may be able to skip initial monitoring and go directly to the repeat monitoring schedule.

New Entry Points associated with New Sources:

- Begin initial monitoring in the first full quarter after the new entry point begins serving the public.

What about systems that are" vulnerable" or "utilizing waters contaminated by nuclear effluents?"

"**Vulnerable systems**" are drinking water systems that are located near significant man-made radionuclide sources. The Pennsylvania drinking water systems that meet this criterion have been notified by Pa. DEP that they are required to perform additional monitoring.

If a Pennsylvania drinking water system is ever determined to be **"utilizing waters contaminated by effluents from nuclear facilities**," they will be notified by Pa. DEP and required to perform additional monitoring.

How do I obtain more information about Radionuclides?

If you are a member of the general public looking for more information on radionuclides, EPA's web site "Understanding Radiation" is very informative and can be found at the following web address: http://www.epa.gov/radiation/understand/index.html

If you are associated with the regulated drinking water community, Pa. DEP web-based courses are available to explain the Radionuclide Rule. These courses are available through the DEP Earthwise Academy.

To take a DEP Earthwise Academy course, follow these directions:

- Go to www.depweb.state.pa.us .
- In upper left corner, click "DEP Keywords.
- Scroll down to the "E's" and click on the keyword "**EarthWise Academy**." This will take you to the DEP EarthWise Academy Web site.

For answers to specific radionuclide questions, contact the DEP Bureau of Water Standards and Facility Regulation at 717-772-4018.