

# 48-Hour Rapid Gross Alpha Test

## New Jersey Private Well Testing Act

### Method Overview

The 48-hour rapid gross alpha test is required in 12 New Jersey counties as part of the overall scope of tests specified in the New Jersey Private Well Testing Act (N.J.S.A. 58:12A-26 et seq). The test identifies the presence of gross alpha particle activity in water. Alpha particles are emitted during the decay of certain substances such as radium, uranium and thorium – radioactive isotopes found naturally in the earth’s crust. Most of the gross alpha radioactivity found in drinking water is from radium. The 48-hour rapid gross alpha test includes the alpha particle activity of radium-224, an isotope with a half-life of 3.64 days, which is not captured using the standard USEPA method 900.0. The modified USEPA method requires that separate measurements, or “counts”, be performed within specific time intervals following sample collection. The initial counting of the prepared sample must be initiated between 36 to 48 hours from the time of sample collection. If the calculated value from the initial gross alpha count is less than or equal to 5 pCi/L, that value shall be reported and no further radiochemical analysis of the sample is required. If the gross alpha value from the 36 to 48 hour count exceeds 5 pCi/L, then the same prepared sample shall be recounted between 20 to 28 hours after the initial count. The calculated value from the second count shall be reported as the final gross alpha result.

### Maximum Contaminant Levels

The standard unit for gross alpha particle activity in drinking water is the picocurie (pCi). The State and Federal Maximum Contaminant Level (MCL) standard for gross alpha particle activity in drinking water is 15 pCi per liter (pCi/l). The following illustrates the degree of significance for gross alpha particle activity if detected and what, if any, appropriate action is recommended:

- If the gross alpha particle activity is greater than 15 pCi/l, then the DEP recommends water treatment to reduce concentrations to below the standard.
- If the gross alpha particle activity is greater than 5, but less than 15 pCi/l, then the DEP recommends testing for radium 226 and 228 (USEPA Method 903.1 and 904.0, respectively). If this additional testing shows that combined radium levels are above 5 pCi/l, then water treatment is recommended to reduce concentrations to below the standard.
- If testing results show gross alpha activity is less than 5 pCi/l, then no further action is recommended.

*Please note: Any testing beyond the 48-hour Gross Alpha is only **recommended** by the DEP. It is **not required** by the Act.*

### Method Sampling and Reporting Guide

Each sample should be collected in (1) 1 liter plastic container, preserved with Nitric Acid (HNO<sub>3</sub>) to pH <2. Pace Analytical will provide appropriate sample containers upon request. Ship samples via overnight carrier. Ice is not required. Include completed chain of custody document.

Pace Analytical will report the results of the initial and second (if required) counts within 1 week after receipt using our standard report forms. The customer (certified lab) must then compile these results with those of the other tests required by the PWTA. (See PWTA FAQ #20 and the PWTA rules at N.J.A.C. 7:9E-3.1(b).)