



**Monterey County Health Department
Consolidated Environmental Laboratory**

1270 Natividad Rd.
Salinas, CA 93906
(831) 755-4516

RADIOLOGICAL ANALYSIS (GROSS ALPHA, URANIUM AND RADIUM)

PURPOSE: Gross alpha particle measurement is used to test for naturally occurring radionuclides. If gross alpha levels exceed the 5 picocuries per liter, additional testing for uranium and radium may be necessary as described under "Interpretation of Results." High levels of radionuclides are associated with cancer. *Note: According to revised radionuclide-monitoring requirements, all community water systems are required to conduct separate radium-228 monitoring for one year to obtain occurrence data. This initial monitoring must be completed by December 31, 2007. Gross alpha activity may not be used as a "screening test" for the radium-228 initial monitoring requirement.*

SAMPLE COLLECTION: Generally, four samples should be collected during the year that monitoring is required; collect samples three months apart. Water samples taken for gross alpha measurement must be collected and handled carefully in order to ensure reliability of laboratory results. The following procedures will help you in this regard:

1. Samples should be collected at the source or the distribution system entry point. Once you have identified a suitable tap, open it and allow water to flow for a few minutes before collecting a sample.
2. Carefully fill the appropriate sample collection bottle:
Gross Alpha: 2 x 1L. Plastic w/ HNO₃
Uranium: 1 x 8 oz. Plastic w/ HNO₃
Radium 228: 1 L. Plastic w/ HNO₃
Radium 226: 1 L. Plastic w/ HNO₃
3. Label the sample with sample identification, date and time of collection.
4. Complete the laboratory form including mailing address, name of sample collector, well number, description of sample point, date and time of collection, and test ordered (i.e. "Gross Alpha" and/or "Radium-228"). Refer to "Interpretation of Results" to determine whether testing for uranium and radium is necessary.

CARE OF SAMPLE

Samples may be delivered directly to the laboratory or at one of the following health department offices:

Monterey Co. Environmental Health
1200 Aguajito Rd.
Monterey, CA
831-647-7654

Monterey Co. Environmental Health
200 Broadway St. Suite 70
King City, CA
831-386-6899

Monterey - Drop off by 9:00 a.m.

King City – Drop off by 9:00 a.m.

FEE FOR TESTING

Analyte	Cost
Gross Alpha	\$75.00
Uranium	\$70.00
Radium 226 & Radium 228 Combined	\$300.00
Radium 228	\$201.00

If you do not have an account with our laboratory, you must pay in advance for this testing. Clients who have an account will be billed at the end of the month that the results were reported.

INTERPRETATION OF RESULTS

A system is considered to be in compliance with maximum radioactivity levels if the average gross alpha particle activity from four consecutive quarterly samples does not exceed 5 picocuries per liter (pCi/L). If gross alpha activity exceeds 5 pCi/L in any sample, the sample must be analyzed for uranium and in some cases for radium:

- If the gross alpha measurement exceeds 5 piC/L in any sample, then testing will be performed for uranium
- If the gross alpha minus the uranium concentration in any sample exceeds 5 piC/L, then testing must be performed for radium 226.
- If the radium 226 exceeds 3 piC/L, then testing must be performed for radium 228.

Up to 1 gallon of water is necessary for all the tests listed above and collection of additional sample may be necessary. Note that compliance with the maximum radioactivity levels is based on the average of four consecutive quarterly samples. Therefore, if required to analyze a water sample for uranium and/or radium, the water system must complete four consecutive quarters of uranium and/or radium analysis.

MCL

Analyte	MCL
Gross Alpha	15 pCi/L
Uranium	20 pCi/L
Radium 226 & Radium 228	5 pCi/L total