

Radiochemical Analysis



- Radiological guidelines for drinking water
- Environmental
- Agricultural products for export
- NORM (Naturally occurring radioactive materials)
- Special radioactivity measurements
- Gamma Spectroscopy
- Alpha Spectroscopy
- Delayed neutron counting
- Neutron activation
- Specific isotopes

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Analysis of Radiological Parameters

SRC Environmental Analytical Laboratories offers unique capabilities in radiochemical analysis.

Radiological Parameters in Drinking Water

SRC Environmental Analytical Laboratories tests drinking water for radiological parameters to verify compliance with the Guidelines for Canadian Drinking Water Quality. Water samples may be screened initially for radioactivity by measuring **Gross Alpha and Beta** activity. Compliance with the drinking water guidelines may be inferred if measurements for gross alpha and beta activity are less than 0.1 Bq/L and 1 Bq/L respectively. If the measurements exceed the limits, additional testing for specific isotopes as listed in the guideline may be required and can be carried out by SRC Analytical.

Environmental

SRC Environmental Analytical Laboratories offers a comprehensive range of radiochemical testing services to assist customers in carrying out their environmental programs and ensuring that regulatory obligations are being fulfilled. Tests include **Uranium, Radium ²²⁶, Thorium isotopes, Lead ²¹⁰, Polonium ²¹⁰ and other natural radionuclides**. These tests are conducted on a wide variety of sample types including water, soil, sediment, vegetation, biological tissue, airborne particulates, tailings and waste rock.

Agricultural Products for Export

Many countries have guidelines for radioactive isotopes in agricultural products. SRC Environmental Analytical Laboratories tests for a wide range of isotopes including **Cadmium ¹⁰⁹, Cerium ¹⁴⁴, Cesium ¹³⁴, Iodine ¹³¹, Manganese ⁵⁴, Ruthenium ¹⁰³ and Tin ¹¹³**. Other tests for radioactivity include **gross alpha, gross beta and gamma spectroscopy**. Products tested include all types of grains, seeds and plants.

Naturally Occurring Radioactive Materials (NORM)

NORM is found naturally almost everywhere in low concentrations. It can be transported along with gas and petroleum and concentrate in pipe scale and waste products. As such, NORM causes concerns in transportation, handling and disposal. SRC Environmental Analytical Laboratories carries out the testing to determine whether materials meet the Unconditional Release Limits (URL) for the isotopes regulated under the NORM guidelines. These isotopes include the **Uranium ²³⁸ series, Thorium ²³⁰, Radium ²²⁶, Lead ²¹⁰, Thorium ²³², Radium ²²⁸, Thorium ²²⁸, and Potassium ⁴⁰**.

Neutron Activation Analysis (NAA)

SLOWPOKE II is a miniature nuclear reactor housed at SRC Environmental Analytical Laboratories. It is used as an analytical tool for doing NAA. NAA is used for the analysis of numerous elements including **uranium** and total and extractable organic halides (**TOX/EOX**).

Radon in Indoor Air

Radon is a radioactive gas formed by the natural breakdown of uranium in soil, rock and water. When radon enters an enclosed space, such as a home, it can sometimes accumulate to levels high enough to cause a long term health risk. SRC Environmental Analytical Laboratories supplies charcoal adsorption canisters which are exposed for 48 hours, after which the average air concentration of radon ²²² is determined.

Radon in Water

Measurable radon concentrations in ground water can be used as an indication of nearby uranium deposits. Small water samples are collected and returned to the laboratory for sensitive liquid scintillation counting.

Special Radioactivity Measurements

SRC Environmental Analytical Laboratories has the capability of carrying out specialized testing such as Gamma Spectroscopy, Alpha Spectroscopy, Radon Emanation Rates, Radon Fractional Release Measurements, K_d studies and Equilibrium between Uranium and its Progenies. Also, SRC Environmental Analytical Laboratories is approved by the Canadian Nuclear Safety Committee (CNSC) for **leak testing services of sealed radioactive sources**.