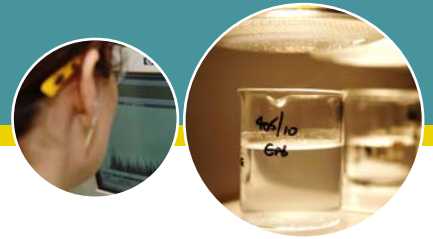


Radiochemical Analysis in Drinking Water



The water industry is required to provide evidence to the Drinking Water Inspectorate that activity levels do not exceed legislated levels. NIRAS has been providing radiochemical analysis services to the drinking water industry for over 10 years.

NIRAS is the largest commercial radiochemical analysis laboratory in the UK, consisting of 36 professional staff, 20 self contained laboratories and comprehensive modern analytical equipment. The key benefits of using the NIRAS laboratory are:

Qualified staff and experience

NIRAS has 36 staff dedicated to laboratory-based analysis; the team performs all the main consultancy, analysis and results interpretation functions. The team is highly skilled and qualified having six postgraduate radiochemists, so we are not reliant on one single expert. The majority of staff are graduates.

Quality

Results must be as accurate as possible and the client must have full confidence in the final report. We believe that we can give clients confidence based on our robust quality system.

The NIRAS laboratory is committed to maintaining and improving its high quality culture. NIRAS is a UKAS accredited testing laboratory (no. 1011) with a quality system meeting the requirements of BS EN ISO/IEC 17025:2005. The laboratory also complies with ISO 9001:2000 and ISO 14001:2004 respectively. Our high standards in quality also extend to our radiological and conventional health and safety systems.

Rapid response

We understand it is important to water companies to have confidence in the laboratories' turnaround and capacity. NIRAS has the ability to analyse up to 1000 samples per month, and we have a 99% delivery on

time record on turnaround. We are able to offer various rapid turnaround options for analysis, demonstrating flexibility to our client requirements. Typically we offer both 7 and 10 day turnarounds for water samples, for the initial radiochemical screening.

Modern and reliable equipment

The laboratory has benefited from significant investment in facilities and equipment over the last 7 years meaning more reliability in our services. Since 2000 more than £2.4 million Capital Expenditure has been invested on facilities and equipment. This investment programme has boosted our capacity significantly enabling us to handle large numbers of samples.

Pricing

As a large competitive laboratory, we are able to benefit from economies of scale and can pass on these savings to our clients. We can therefore offer cost-effective pricing for our services, plus additional volume discounts are available to reward clients who frequently send samples.

OUR CAPABILITIES AND EXPERIENCE

As per Water Supply (Water Quality) Regulations 2001, water companies are required to monitor for radioactivity in drinking water. At NIRAS, we are committed to providing analytical services of the highest standard, on which you can trust and rely. Our capabilities include:

- Analysis of various sample types including raw, treated and bottled waters, wastewater, groundwater and borehole water.
- Total indicative dose. Providing emergency sampling and analysis

following incidents involving radioactivity releases into the environment.

- Guidance in civil emergencies involving radioactive substances.

Water analysis available at NIRAS

To comply with regulations the following radiochemical analysis methods are available:

Gross screening analysis

- Gross alpha *
- Gross beta *

Beta emitter analysis

- Tritium in water *
- Iodine-129
- Strontium-90*
- Technetium-99
- Plutonium-241

Alpha emitter analysis

- Natural uranium analysis (238U, 235U, 234U) *
- Plutonium isotopes (242Pu, 240Pu, 239Pu, 238Pu) *
- Americium-241 *
- Thorium isotopes (232Th, 230Th, 228Th) *
- Radium-226
- Polonium-210

Gamma emitter analysis

- High resolution gamma spectrometry *
(The calibrated energy range is 60 keV to 2000 keV)

* These tests are UKAS accredited

NIRAS can also offer other radionuclides if required. Analytical method summaries are available on our website www.niras.co.uk/customersupport.asp.

Radiochemical analysis for drinking water- the process

We offer a value for money screening package that meets DWI requirements. This will involve monitoring water samples sent to the laboratory for radioactivity. This process is as follows:

1) Sample receipt

On delivery, samples are sent through to environmental sample receipt where they are booked in to our LIMS system. We have a state of the art LIMS (Laboratory Information

Management System) to uniquely record and track all sample data and analysis information, from sample arrival to report and archiving. The LIMS system also handles all radioactive material inventory and Safeguards reporting issues. Each sample is assigned a unique lab number and the corresponding paperwork is filed to its own folder.

2) Preparation

The water samples are then sent through to the environmental water laboratory where they are prepared for gross alpha/beta and tritium measurements.

3) Analysis

After the analytical procedure they are counted on one of the Berthold/Protean instruments for gross alpha/beta and on one of the quantulus machines for tritium. The drinking water guidelines state that provided that the gross alpha/beta and tritium results are below the action levels of 0.1/1/100 Bq/l then the total indicative dose is below the 0.1mSv/yr level and therefore no further action is required. If any of the results are above the action levels the NIRAS laboratories are well equipped to determine the radionuclide or radionuclides responsible for the elevation with 64 alpha spectrometry detectors and 8 high resolution gamma spectrometry detectors with the highest number of PhD's in a commercial radiochemical laboratory in the country.

For more information on our services please contact:

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