# Nuclear Analytical service

The Life Science Division is mainly responsible for providing efficient and effective analytical services based on Nuclear Analytical Technique in Compliance with international standards to fulfill customer satisfaction, serving the nation through utilization of Nuclear Technology for Agriculture, Health and Environmental sector's for Socio-economic development in the country and becoming a Reference Laboratory for Nuclear Analytical Techniques with International acceptance.

## The major fields of the Division are:

- Nuclear Analytical Services for Environmental, Health, Commercial and Agricultural Sectors - The specific objective of Nuclear Analytical services Section is to establish a reference laboratory for nuclear analytical techniques in Sri Lanka and this laboratory provides professional and standardized services for Sri Lankan exporters, importers, researchers and other customers.

- Use of Nuclear Technology for Agricultural Sector for enhancing the productivity and Quality - The Specific objective of the agriculture section is to promote the nuclear technology for agricultural activities to meet the national requirements.

- Use of Nuclear Technology for R & D activities in Environmental and Health sectors -

## Nuclear Analytical Testing (NAT) Capabilities

This Division has three major Nuclear Analytical Laboratories namely Low level counting lab for gamma spectrometry, Low level counting lab for alpha and beta spectrometry and X-ray Fluorescence analytical laboratory. Low level counting lab for gamma spectrometry has already been accredited for gamma analysis of selected isotopes in 2006. The XRF laboratory has also accredited for several selected analysis in 2010. The laboratories adopt the ISO 17025 international standards.

## Low Level Gamma Counting Laboratory

This laboratory of the AEA is the only laboratory for radioactivity measurements which has obtained national accreditation in compliance with ISO IEC 17025 from National Accreditation Board. It uses equipment calibrated according to international standards and employs skilled and trained staff with good professional practice to achieve the goals. Major activities are as follows.

- Radioactivity measurements in Food( Milk powder etc) and Agricultural products (Tea, Coconut etc)
- Environmental Radioactive assessments.

## X-Ray Fluorescence (XRF) Laboratory

This laboratory has both EDXRF (Energy Dispersive X ray fluorescence) and TXRF (Total Reflection XRF) facilities to analyze elemental composition/concentration qualitatively as well as quantitatively in varies sample matrices. Using EDXRF technique heavy metal concentrations in food and other materials( soil, plants etc) . and also metal composition in alloys can be determined.
Using high sensitive TXRF technique elemental concentrations in tracer levels can be analyzed in water, liquid based samples and biomedical samples.

## Low Level Alpha- beta Counting Laboratory

This laboratory has alpha spectroscopy system and beta spectroscopy system which allow to measure alpha and beta emitting radio-nuclides. The establishment of analytical procedures is underway for alpha and beta spectroscopic analytical service. It is expected to utilize this facility for Gross alpha measurements in water and other similar samples in the beginning and to extend the analysis for other samples. It has initiated the analysis of radionuclide specific alpha emitting radio-nuclide analysis using radiochemical techniques and alpha spectrometry. The environmental radioactivity monitoring programme is being supported by this laboratory too.

## Detailed Information about NAT services

| Type of Analysis/Service | Quantity Required | Analytical Technique | Charge per Sample exclusive of 15%VAT (Rs.) |
|---|---|---|---|
| Issuance of Radio-activity analysis certificate for food samples (imported milk powder, liquid milk, other milk products, tea, spices, desiccated coconut etc)<br>a.) Normal service (within 2-3 working days)<br>b.) One-day service (on priority basis) | 2×500g | Direct Measurement using Gamma Spectrometry | a.)3270.00<br><br>b.) 6540.00 |
| Testing of Radio-active Contamination in different sample materials/geometry | Contact the laboratory for details | Direct Measurement using Gamma Spectrometry | 6540.00 |
| Activity measurement Pb-210 and Cs-137 in environmental sample (sediment, sand, soil etc) | 1 kg | Direct Measurement using Gamma Spectrometry | 6540.00 |
| Radio-activity measurement of Ra-226, Ra-228 (or Ac-228), K-40 etc. in environmental samples (sediment, sand, water etc.) | 1 kg | Direct Measurement using Gamma Spectrometry | 9800.00 |
| Analysis of soil, sediment, plant and suspended particulate matter in air for heavy metal concentrations (1g of material & suspended matter deposited on filters for air) | 1g<br>SPM on filter media | Direct measurement using XRF technique at XRF laboratory | 3000.00 |
| Water analysis for heavy metal such as Cu, Zn, Pb, As, Hg etc. in water samples (effluent and fresh water) | 2×500ml | a)Pre-concentration & XRF technique | 3500.00 |

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|---|---|---|---|
| Heavy metal testing in drinking water | 2x500 ml | TXRF | 3500.00 |
| Water Pollution monitoring | 2x500 ml | TXRF | 3500.00 |
| Determination of contaminant Heavy metals in biological samples | 1-2 g | ET-XRF | 3500.00 |
| Alpha emitters in environmental samples | Not specified | Gross Alpha Analysis by alpha spectrometry | Under Review |

All charges are subjected to 2% NBT & 12% VAT.
Taxes are calculated by using following formulaTaxes= [(Service charge x 102/100) x 12/100]

## CONTACT PERSONNEL

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Organization Information.
Atomic Energy Board

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Baseline Road,
Orugodawatta,
Wellampitiya.

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Atomic Energy Board

The Atomic Energy Board (AEB) of Sri Lanka is a Statutory Body functioning under the Ministry of Power and Energy which was established by the Sri Lanka Atomic Energy Act No.40 of 2014.Radiation and Radioisotope Technology has a wide range of applications in many fields that can make a significant contribution to the development of medical, agricultural, industrial, energy and environmental sectors in Sri Lanka. The Atomic Energy Board (AEB) has the responsibility of facilitating the utilization of this technology in the above-mentioned sectors in Sri Lanka.

New Act of Sri Lanka Atomic Energy

The ATOMIC ENERGY AUTHORITY (AEA) which was established by the Sri Lanka Atomic Energy Authority Act,

Number 19 of 1969, has been repealed and two institutions – The Sri Lanka Atomic Energy Board and The Sri Lanka Atomic Energy Regulatory Council, have been established by the Sri Lanka Atomic Energy Act, No. 40 of 2014. The new Act was published as a Supplement to Part II of the Gazette of the Democratic Socialist Republic of Sri Lanka of November 07th, 2014.

Sri Lanka Atomic Energy Act, No. 40 of 2014 certified on 04th November, 2014, empowers the Sri Lanka Atomic Energy Board (AEB) to carry out activities to promote and encourage the use of Nuclear Science and Technology for national development purposes; while the Atomic Energy Regulatory Council for the regulation of practices involving ionizing radiation, the safety and security of sources and the Non- Proliferation of nuclear weapons and the safeguards.

The Sri Lanka Atomic Energy Board permits the beneficial and peaceful applications of nuclear science and technology in health, industry, environment and agriculture, for national development within Sri Lanka.

The Sri Lanka Atomic Energy Regulatory Council ensures adequate protection of individuals, society and the environment now and in the future, against the potentially harmful effects of ionizing radiation and for the safety and security of radiation sources, by the establishment and maintenance of a regulatory control system, including the adoption of standards, licensing system, inspection and enforcement to govern all practices involving ionizing radiation.

The New Act fulfills obligations of the government of Sri Lanka under relevant international instruments in the field of nuclear energy entered into by Sri Lanka, and in particular the Treaty on the Non-Proliferation of Nuclear Weapons and the Safeguards Agreements.The new Act came into operation on 1st January 2015.

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