



Strål
säkerhets
myndigheten

Swedish Radiation Safety Authority

Radioanalytical Laboratory (RAL)

*A supporting laboratory for SSM's
monitoring and regulatory work*

Obaidur Rahman, Ph. D

Radiochemist

Radioanalytical Laboratory

Swedish Radiation Safety Authority (SSM)





Overview

- Staff
- Responsibilities
- Laboratory facility
- Instrument and measurement capabilities
- Services provided by RAL
- Looking for staff





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Staff



Obaidur Rahman
Radiochemist



Maisa Al-Zahili
Radiophysicist





Responsibilities of RAL

Major responsibilities

- To provide radioanalytical services for national environmental radioactivity monitoring program
- To support SSM's control program of nuclear facilities regarding discharges and site related environmental monitoring
- To provide radioanalytical services supporting the authority's regulation, supervision and control functions over other non-nuclear industries and activities subjected to license
- RAL is a part of the national network of expertise and measurement capacity for emergency preparedness



Laboratory facility

- 4 measurement labs
- 2 sample preparation labs



Gamma lab



Beta & alpha lab



Mass spectrometry lab



Whole body counter



Sample preparation room 1



Sample preparation room 2





Instruments and measurement capabilities

Instruments and methods

- Gamma spectrometry (5 HPGe detectors from Canberra):
 - *Measurement of gamma emitting radionuclides (norm and anthropogenic) in diverse geometries and matrices*
- Beta spectrometry (LSC Hidex 300 SL):
 - *H-3 in water*
 - *Sr-90 in water, milk and mixed diet*
 - *Gross alfa-beta in water (method validation in progress)*





Instruments and measurement capabilities

- *In-vivo* gamma measurement (whole body counter with 3xNaI detectors from Canberra)
 - *In-vivo* measurement of Cs-137 and K-40 in human
- Alfa spectrometry (Alfa analyst from Canberra):
 - *Validated method for measurement of Po-210, Po-222, U-234, U-235, U-238 is available but no competent staff is in place*
- Mass spectrometry (ICP-MS, Agilent 8900 QQQ):
 - *No competent person or validated method is in place right now*



Services provided by RAL

Services provided under different program

Services provided for	Sample Matrix	Measured Radionuclides
National environmental radioactivity monitoring program	Milk	Cs-137 and other gamma-emitting radionuclides, Sr-90
	Surface water Drinking water	Gamma- emitting radionuclides, Sr-90, H-3, gross alpha/beta, Ra-226
	Sea water	Gamma- emitting radionuclides, H-3
	Marine fishes	Cs-137
	Mixed diet	Gamma- emitting radionuclides, Sr-90
	<i>In-vivo</i> measurements (Control group of people)	Cs-137, K-40 (Whole body counting)



Services provided by RAL

Services provided for	Sample Matrix	Measured Radionuclides
Site-related environmental radioactivity monitoring program	Moss, local sediments and fishes, spruce shoots, fucus	Gamma- emitting radionuclides
Control program for discharges	Water discharges before/after outage and pooled yearly	Gamma- emitting radionuclides, H-3
	Particle filters	Gamma- emitting radionuclides
SSM's own regulatory functions and inspections	Different matrices (ashes, samples from NORM-industry, decommissioning activities, etc.)	Gamma- emitting radionuclides NORM Sr-90, gross alpha/beta
Accredited commercial laboratories	Drinking water Mushrooms, berries, meat from wild boars, etc	Rn-222, Cs-137
National and international inter-comparisons and proficiency tests	Different matrices	Gamma- emitting radionuclides, Sr-90, H-3, gross alpha/beta





Looking for staff

- We need 2 skilled radiochemist/radiophysicst in our laboratory.
- Interested candidates are requested to contact with me.

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Questions?

