Nuclear Application For Water Management And Environmental Protection- Malaysian Experience

R. Ahmad
Permanent Mission of Malaysia

Symposium on Peaceful Uses of Nuclear Science and Technology:

Towards the 2015 NPT Review Conference and beyond "

Outline

- Geography
- Malaysian Nuclear Agency
- Applicable Nuclear Technology
- Nuclear Technology Facilities
- Highlights of Water Management Studies
- Highlights of Environmental Protection Studies
- Benefits and Challenges

Location

SECONDARY STANDARD DOSIMETRY LAB (SSDL)

REACTOR TRIGA PUSPATI

GAMMA IRRADIATION

ELECTRON BEAM

ISOTOPE PRODUCTION LAB

NUKLEAR MALAYSIA

NON-DESTRUCTIVE TEST (NDT)

GAMMA GREEN HOUSE

NUCLEAR MALAYSIA TRAINING CENTER

RAYMINTEX

WASTE & ENERGY TECHNOLOGY LAB

Water Management and Environment Protection

RADIOACTIVE WASTE MANAGEMENT CENTER

RADIOCHEMICAL & ENVIRONMENTAL LAB

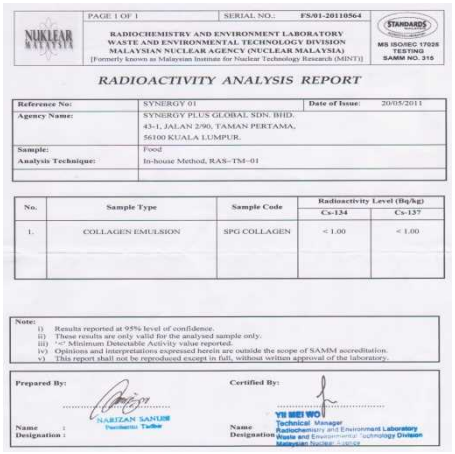
ISOTOPE RATIO MASS SPECTROMETER (IRMS) LABORATORY

Applicable Nuclear Technology

- Nuclear analytical techniques – e.g. to analyze trace amounts of pollutants
- Radiation technique – e.g as a tool to achieve reduced levels of water and industrial pollutants
- Isotope technique – ideal for examining environmental processes

NATIONAL RADIOACTIVE WASTE MANAGEMENT CENTER

RADIOCHEMICAL & ENVIRONMENTAL LAB



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NUKLEAR MALAYSIA

RADIOCHEMISTRY AND ENVIRONMENT LABORATORY
WASTE AND ENVIRONMENTAL TECHNOLOGY DIVISION
MALAYSIAN NUCLEAR AGENCY (NUCLEAR MALAYSIA)
[Formerly known as Malaysian Institute for Nuclear Technology Research (MINT)]

STANDARDS MS ISO/IEC 17025 TESTING SAMM NO. 315

RADIOACTIVITY ANALYSIS REPORT

Reference No:	SYNERGY 01	**Date of Issue:**	20/05/2011
Agency Name:	SYNERGY PLUS GLOBAL SDN. BHD. 43-1, JALAN 2/90, TAMAN PERTAMA, 56100 KUALA LUMPUR.		
Sample:	Food		
Analysis Technique:	In-house Method, RAS-TM-01		

No.	Sample Type	Sample Code	Radioactivity Level (Bq/kg)	
			Cs-134	Cs-137
1.	COLLAGEN EMULSION	SPG COLLAGEN	< 1.00	< 1.00

Note:
i) Results reported at 95% level of confidence.
ii) These results are only valid for the analysed sample only.
iii) "<" Minimum Detectable Activity value reported.
iv) Opinions and interpretations expressed herein are outside the scope of SAMM accreditation.
v) This report shall not be reproduced except in full, without written approval of the laboratory.

Prepared By: Certified By:

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Name : YS BIN WO
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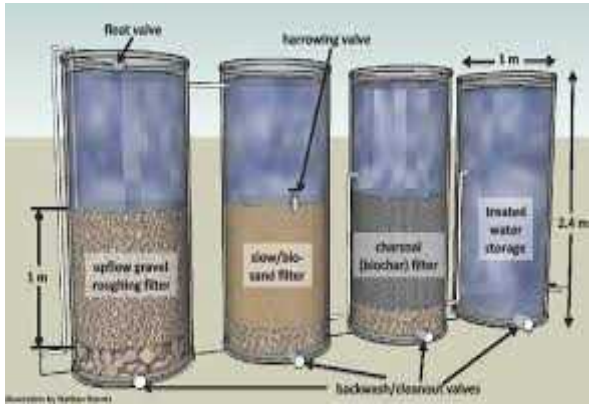
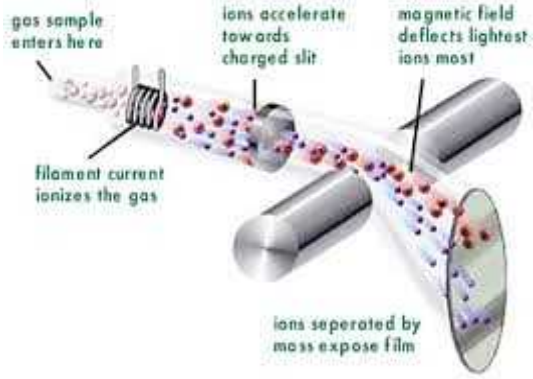
Radiochemistry and Environment Laboratory
Waste and Environmental Technology Division
Malaysian Nuclear Agency





ISOTOPE RATIO MASS SPECTROMETER (IRMS) LABORATORY

$^{2}_{1}H$ Hydrogen-2 2.014101	$^{13}_{6}C$ Carbon-13 13.00335	$^{15}_{7}N$ Nitrogen-15 15.00010	$^{18}_{8}O$ Oxygen-18 17.99916	$^{34}_{16}S$ Sulphur-34 33.96786
$^{1}_{1}H$ Hydrogen-1 1.007825	$^{12}_{6}C$ Carbon-12 12.00000	$^{14}_{7}N$ Nitrogen-14 14.00307	$^{16}_{8}O$ Oxygen-16 15.99491	$^{32}_{16}S$ Sulphur-32 31.97207

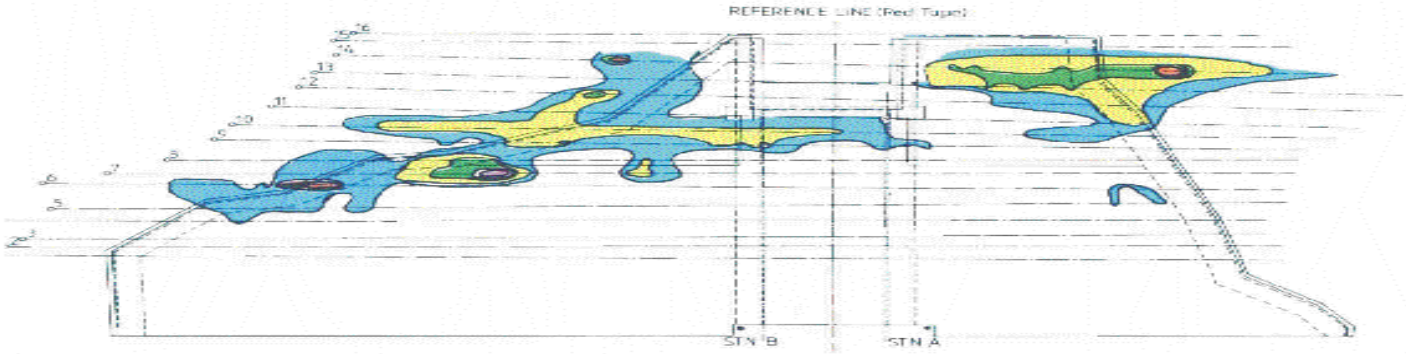
Early studies using ^{137} Cs

1981 : Sungai Lui catchment area, Selangor state – sedimentation rate

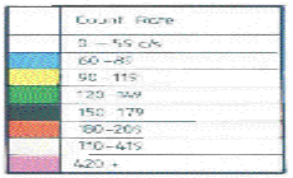
Kalumpang Agriculture Estate – erosion & sendimention rates

Seepage investigation of Timah Tasoh Dam and its Interconnection with Other Water Bodies

Identification of Seepage in Pedu Dam



Iso-activity contours of Gold-198 labelled sediment, Pedu Dam



Contamination of Groundwater

- Late 1990's , studies at Gemencheh landfill : data on migration capability and distribution direction of seepage in the water system.
- Contamination of surface water : industrial pollutants in Juru Industrial Estate using ^{82}Br

Marine Environment

Investigative studies of landslides

Slope failures especially during rainy season

Natural and man made slopes

Related Regional Projects

- Promotes the use of environmentally safe isotope techniques in the operation and management of dams and reservoirs
- Promotes the use of environmentally safe isotope techniques for improving freshwater resource management

Benefits

- Availability of expertise and related facilities
- Impact assessment
- Remedial strategies
- Understand and management the water resources and environment

Challenges

- Climate change
- Sustain Expertise
- Keeping pace


Thank
You!