



**Workshop on “Supporting European Member States in
responding to and reporting on the EU Waste Directive”
Luxembourg, 4-5 December 2013**

Implementation of the Directive 2011/70/Euratom on the “responsible and safe management of spent fuel and radioactive waste” in Cyprus

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National framework

Regulatory and organizational framework for RWM:

- Minister of Labour and Social Insurance through the Radiation Inspection and Control Service, Department of Labour Inspection:
 - Regulatory Authority for Radiation Protection, Nuclear Safety and Radioactive Waste Management.
 - No other competent body for RWM (advisory, no need for coordination).
- Primary responsibility for safe management of RW/DSRS lies with the licensees (waste generators).
- Temporary storage facility for legacy sources.
- Any sealed sources imported to Cyprus have to be returned to the manufacturer/supplier when they are no longer in use (condition of the import license, prior written guarantee from the manufacturer).
- Cyprus has no nuclear power stations, nuclear research reactors, cyclotrons or any other nuclear facilities or U/Th mines.
- The amount of radioactive waste produced in Cyprus is very small and consists of short-lived radioisotopes (medicine, industry, research).



Human and financial resources

- Regulatory Authority:
 - licensing, control, inspections, enforcement.
 - staffed with 5 inspectors, trained on radiation protection and nuclear safety, including radioactive waste management issues.
 - new challenges with respect to Directive 2011/70/Euratom requirements.
 - supported by other institutions (e.g. SGL, MoH/MPhU).
- Waste generators employ personnel trained in the management of their waste.
- The temporary storage facility employs properly trained personnel.
- The Regulatory Authority and the temporary storage facility are financed by the Government.
- The hospitals and research centres belonging to the Government are financed by the Government.
- In the private sector, licensees have the ultimate responsibility for the management of their waste (industrial, medical etc.).



Legislative framework

- The Protection from Ionising Radiation and Nuclear Safety Laws of 2002 to 2011 (in line with the EU Acquis and international standards).
 - Entered into force in 2002 - Amended in 2009 and 2011.
- Relevant Regulations issued under the Laws:
 - Basic principles.
 - Medical exposure.
 - Information to the Public on Measures to be applied in Case of Emergency.
 - Supervision and Control of Shipments of Radioactive Waste and Spent Fuel.
 - Control of High-activity Sealed Radioactive Sources and Orphan Sources.
 - Responsible and safe management of RW (approval pending).
- New challenges: revision of the whole legislative framework: new “BSS Directive”, new regulations under preparation (e.g. for drinking water).
- EURATOM Treaty and all relevant Decisions and Regulations of the EU Regulations issued by EURATOM.
- International Conventions, Treaties, Agreements, Protocols, etc.



Waste classification system

- RICS currently applies the IAEA classification system, but
 - The classification system may be adjusted in future based on the specific end-point solutions identified for RW.

Existing facilities for RWM

- There is only one centralised temporary storage facility for DSRS.
- The solid waste produced in NM centres is stored for decay and then disposed off accordingly.
- The cost for disposal is covered by the licensee.



RW inventory

- No manufacture of radioactive sources in Cyprus.
- No nuclear facilities in Cyprus.
- All sources in Cyprus are imported.
- Most sealed sources are low activity (gauges, NM calibration sources).
- Some high activity sources are used in hospitals (blood irradiators, Co-60 units, etc) and in industrial radiography.
- Any sealed sources imported in Cyprus have to be returned to the manufacturer/supplier when they are no longer in use (disused sources).
 - [condition of the import license.](#)
- Some legacy sources are in secure temporary storage.
- The registry of sources is complete and it is maintained by RICS.



RW inventory

- NM centres in Cyprus mainly use Tc-99^m and I-131.
- Other isotopes are also used in medical centres and specialized laboratories but their quantities are very small (a few GBq per year in total).
- Nearly all of these waste enter the sewage system, as liquid waste (if needed left to decay).
- Short half life isotopes, and/or the quantities used are very small so there is no need to segregate them from other normal waste.
- The import, usage and release of these isotopes is licensed.



Existing RWM practices

- Most low activity or short half-life isotopes used in medical centres and specialized laboratories enter the sewage system as liquid waste.
- Any sealed sources imported to Cyprus have to be exported to the manufacturer when they are no longer in use (requirement for the import license).
- Some legacy sources are in secure temporary storage, until a solution for their final disposal is implemented.



RWM policy

- Safe and responsible management of RW
 - essential for the protection of human health and the environment, in the present and in future.
- National policy
 - serves as a national commitment to address the country's waste issues in a coordinated and cooperative manner, in line with the country's EU and other international obligations.
 - addresses the country's RWM issues in a safe, secure, responsible and sustainable manner, in accordance with national objectives and recognized international principles to protect individuals, society and environment from the harmful effects of ionizing radiation due to RW, and to avoid imposing undue burdens on future generations.
 - drives the establishment of a coherent, comprehensive and integrated RWM system in Cyprus, taking into account all types of RW generated in the country from civilian applications of ionizing radiation.



RWM policy

- Legislative framework
- Regulatory framework
 - R.A. : ensures the implementation of NAPRO for RWM covering:
 - all types of RW under its jurisdiction, and
 - “cradle-to-grave” control: all stages of RWM from generation to disposal.
- Allocation of responsibilities
 - **The Minister of Labour and Social Insurance:**
 - R.A. for Radiation Protection and Nuclear Safety and Security (including RWM)
 - Licensing, inspection and enforcement system in place.
 - Prohibition of RWM activities without a license.
 - Prohibition of the operation of a RWM facility without a license.
 - Documentation and reporting obligations as conditions of the license.
 - Enforcement actions: Suspension of activities, modification/ revocation of a license, offences and penalties (fines/imprisonment).



RWM policy

- **The Minister of Labour and Social Insurance (cont'd):**

- effective independence: functionally separate from any other body/organization linked with the promotion or use of nuclear energy or other radioactive materials, radioisotope applications or with RWM.
- policy-making.
- cooperative governance.
- nationally-coordinated graded approach to RWM.
- allocation of responsibilities to various players in RWM.
- international agreements.
- reviewing, updating and ensuring compliance with the national Policy and Strategy for RWM, based on:
 - operating experience,
 - insights gained from the decision-making process,
 - any technological advancements.



RWM policy

- Allocation of responsibilities (cont'd)

Generators of radioactive waste:

- primary responsibility for the safe, technical, financial and administrative RWM.
- responsibility cannot be delegated.
- responsibility lies with the license holders to whom the responsibility has been entrusted/allocated by the competent authority.

Government:

- shall assign responsibility for the long-term RWM (as needed).
- responsibility for RWM where the generator no longer exists (ownerless radioactive waste).
- provision of control over closed disposal facilities and funding.



RWM policy

- Availability of resources
- Compliance with requirements/obligations/principles
 - minimization of the quantity of RW generated (activity and volume).
 - reuse or recycle the whole or part of the RW produced.
 - minimization of the effects of disposal: environment / members of public.
 - licensees shall:
 - establish and implement integrated RWM systems (quality assurance).
 - regularly assess, verify and continuously improve to the reasonably achievable extent the safety of their RWM facilities.
 - take measures to prevent accidents and mitigate the consequences of accidents.
- Export/Import/Disposal of radioactive waste
 - disposal of radioactive waste is allowed only for radioactive waste generated within the territory of Cyprus and is accomplished only in an authorised facility.
 - management of spent fuel in the country: prohibited.



RWM policy

- **Import/export of sealed radioactive sources**
 - on the condition that SRS are accepted back by the supplier/manufacturer at the end of their useful life.
- **Expertise and skills development**
 - arrangements for education and training of staff.
- **Transparency and information to the public**
 - all RWM activities to be conducted in an open and transparent manner.
 - the Minister of L&SI publishes in the Official Government Gazette applications for license.
 - any interested citizen may inspect the file of the applicant for license.
 - local authorities (and indirectly citizens living within a municipality) are invited to express their views during the licensing procedure.
 - access to information regarding RWM to be granted to the public, where this does not infringe upon national laws, security and defence.



RWM policy

- **Decision-making and public participation**
 - decision-making to be based on proven scientific information and recommendations of the national R.A.
 - the public is given the necessary opportunities to participate effectively in the decision-making process regarding RWM:
 - any interested person may ask for access and inspect the applicant's for a license record file.
 - any draft piece of legislation is subject to a period (usually two months) of public consultation (announcement, web available).
 - local authorities (and indirectly citizens living within a municipality) are invited to express their views during the licensing procedure.



RWM policy

- Capacity building and education
 - create opportunities to develop people's understanding, skills and general capacity concerning RWM.
- Definition and classification of radioactive waste
 - the guidelines of IAEA regarding the definition and classification of radioactive waste are followed.



RWM strategy

- Responsibility for strategy development and implementation

RICS:

- long-term strategic planning.
- up-to-date national inventory of the existing radioactive waste in the country.
- waste categorization scheme based on the end-point solution(s) identified for radioactive waste.
- services for the collection, characterization, transport, and processing of all RW generated in Cyprus are contracted on an ad-hoc basis and performed under the control of RICS.

- Waste management routes

- Disused sealed radioactive sources (DSRS) are not considered as radioactive waste.
- Only those DSRS for which no further use is foreseen or can not be repatriated, will be ultimately considered as radioactive waste.

- DSRS for repatriation

- DSRS to be repatriated are under regulatory control of RICS till shipment to the manufacturer/supplier.



RWM strategy

- **DSRS for disposal**
 - DSRS that cannot be repatriated will be stored at the territory of Cyprus until they can be disposed of.
 - Preferable option is a centralized storage for such sources.
- **Radioactive waste from nuclear applications (hospitals, labs, etc.)**
 - Whenever appropriate, radioactive waste is stored for decay and then managed as a normal waste.
 - Other radioactive waste will be treated and conditioned for disposal.
- **Orphan sources/contaminated material**
 - A system exists for the control of orphan sources and other radioactively-contaminated material.
- **NORM**
 - NORM waste was produced in the past due to the activities of a decommissioned fertilizer plant at Vasilikos area, and
 - was safely managed under the supervision and monitoring of RICS.



Specific issues regarding policy and strategy for RWM

- Transposition of the SF&RW Euratom Directive (2011/70/Euratom).
- Primary responsibility for safe management of RW lies with the licensees.
- SRS “take-back” policy at the end of useful life.
- Disposal allowed only for RW generated within the territory of Cyprus.
- Development of strategic and annual plans regarding RWM.
- Review, update and ensuring compliance with the national P&S for RWM.
- Decision on the creation of a centralised RWM system (for storage and/or disposal) and assign responsibilities accordingly.
- Initiation of the process for selecting end-points.
- Adjustment of the classification system based on the end-point solutions identified for RW.
- Assessment of DSRS disposal options.



Specific issues regarding policy and strategy for RWM

- Strengthening of human resources.
- Assessment of the resources needed, in particular the cost for each management step, including disposal.
- Assessment of the need for safety/security upgrade of DSRS storage.
- Assessment of the options for conditioning/processing of radioactive waste/DSRS and the need for equipment.
- Notification to the EC of the NAPRO and any subsequent significant changes.
- Reporting to EC on the implementation of Directive 2011/70/Euratom for the first time by 23 August 2015, and every 3 years thereafter.
- Self-assessment of the national framework, the national programme and its implementation (periodically, at least every 10 years).
- Invitation of international peer review of the national framework.



Thank you for your attention

