

MALTA

Maltese National Report for the Eighth Review Meeting of

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

On the measures taken by Malta to fulfil the obligations laid down by
Article 32

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List of Acronyms and Abbreviations

ALARA	As low as reasonably achievable
ARTEMIS	Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation
BSS	Basic Safety Standards
CPD	Civil Protection Department
CSF	Centralised Radioactive Waste Storage Facility
Commission	Commission for the Protection from Ionising and Non-Ionising Radiation
ECURIE	European Community Urgent Radiological Information Exchange
ERA	Environment and Resources Authority
EU	European Union
EURDEP	European Radiological Data Exchange Platform
IAEA	International Atomic Energy Agency
ILW	Intermediate Level Waste
IRRS	Integrated Regulatory Review Service
ITDB	IAEA Illicit Trafficking Data Base
LLW	Low Level Waste
KPI	Key Performance Indicators
MPE	Medical Physics Expert
RPE	Radiation Protection Expert
RM	Review Meeting
RW	Radioactive Waste
TC	Technical Cooperation
RWMP	Radioactive Waste Management Programme
TSO	Technical Service Organizations
USIE	Unified System for Information Exchange in Incidents and Emergencies
VLLW	Very Low-Level Waste

Section A: Introduction.

Malta and its commitment to safe management of waste

Malta is committed to managing radioactive waste in line with all relevant international legal instruments including the Joint Convention and the European Council Directive on a Community framework for the responsible and safe management of spent fuel and radioactive waste (2011/70/Euratom).

Basic Facts about Malta

Malta is a member state of the European Union, has a population of approximately 550,000, and has a land mass of just over 316 km².

Malta acceded to the Joint Convention in December 2013.

Significant changes since the last review meeting

Malta wishes to report that since the Seventh Review Meeting (RM) of the Joint Convention:

1. Malta hosted an Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) Mission in 2022 which produced 8 recommendations and 4 suggestions.
2. In connection with identifying solutions for the long-term management of radioactive disused radioactive material a report was produced by an overseas expert which shortlisted three leading possible methods for the disposal/recycling, which are:
 - Disposal in narrow borehole at a depth of between 50 and 200m.
 - Disposal in an existing underground man-made structure.
 - Export entire inventory for recycling.

The regulatory body (i.e. Commission for the Protection from Ionising and Non-Ionising Radiation (Commission)) forwarded these options along with cost estimates to the Government.

3. The current compliment of full-time staff in the Commission has risen to five. Training is on-going for the new members of staff.
4. The Commission set up a gamma spectrometry radioanalytical laboratory for routine radiological monitoring of food and environmental media using.

Background and Malta's use of Radioactive Materials

Malta does not have any nuclear power plants, research reactors, nuclear fuel-cycle activities or any facility producing radioactive material. Consequently, many of the requirements under the Joint Convention therefore do not apply.

The use of radioactive material in Malta is limited to the following applications:

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- Diagnostic and therapeutic nuclear medicine (including positron emission tomography).
 - Limited industrial gauging.
 - One organisation performing industrial non-destructive testing with Se-75.
 - Very limited use in teaching.

Malta has a limited number of disused sources, most of which are now stored in the Central Storage Facility (CSF), which became operational in November 2019.

The cyclotron facility, for the production of medical radionuclides, that was reported previously is still not operational.

Applicability of Convention to Malta

In view of the fact that Malta does not have any nuclear fuel activities, Articles 4 to 10 of the Joint Convention are not applicable.

Section B: Policies and Practices (Article 32.1 iii, iv, v)

Radioactive waste management policy (Article 32.1 iii)

The general principles for the management of radioactive waste are stated in section 3 of the RWMP and are reproduced below.

1. That the prime responsibility for radioactive waste shall reside with the waste producer.
2. Minimisation of the generation of radioactive waste.
3. Ensuring adequate and suitable conditioning of radioactive waste.
4. Development of adequate financing schemes to allow for management of radioactive waste.
5. Having a centralised storage facility for disused radioactive material.
6. Prohibition of the importation of radioactive waste into Malta.
7. Requiring that there are take-back arrangements in place with the original suppliers for sealed sources that are imported.
8. To manage radioactive waste that cannot be exported and seek to disposal options in Malta.
9. Gain control over sources that are out of regulatory control.
10. Ensure the safe recovery of orphan sources.
11. Export of sources for reuse/recycling.
12. That stakeholders shall be adequately trained.
13. Participate in international research activities.
14. The reduction of the likelihood of accidents due to, or loss of radioactive wastes.
15. Storage of short lived medical unsealed radioactive sources by waste producer.
16. To have appropriate emergency response systems in place.
17. That radioactive waste shall be centrally managed in the long term.
18. To enhance public confidence in relation to the radioactive waste management through public consultation.

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19. Define how and when the identified goals and requirements will be achieved for the management of radioactive waste.
 20. Identify the competencies needed for achieving the goals and how they will be provided.
 21. Elaboration of the ways in which the various types of radioactive waste in the country, will be managed during all phases of the radioactive waste life cycle (from cradle to grave).
 22. The implementation of waste management options to be proportionate to the waste using a graded approach.
 23. Applying evidence-based and documented decision-making process with regard to all stages of the management of radioactive waste.
 24. Take into account the interdependencies between all steps in radioactive waste generation and management.
 25. The use of passive safety features for the long-term management of radioactive waste.

Radioactive waste management practices (Article 32.1 iv)

Waste minimization

1. The Commission will only give clearance for import of radioactive material for justified uses.
2. The replacement of radioactive sources by non-radioactive alternatives if available.
3. Return of disused sealed sources to the overseas supplier.

Waste Conditioning

1. Conditioning to be done in accordance with waste acceptance criteria of storage or waste facilities.
2. Disused sources to be transferred to CSF for storage.
3. Waste is not to be embedded in any permanent matrix such as lead or concrete.
4. Waste to be shielded using the ALARA principle.
5. Documentation to be created for each waste package.
6. Organisation managing the CSF is to consult with Commission before performing any conditioning.
7. Sources that need to be treated as waste are to have their non-active components removed as long as it does not affect the shielding of or compromising the source.

Financing of radioactive waste management

1. Ensure all stakeholders are aware of their financial obligations in the management of their waste.

Public Participation

1. Seek to keep public fully informed and involved in the long-term management of radioactive waste.
2. Public be given the necessary opportunities to participate effectively in the decision-making process regarding radioactive waste management.

Central Radioactive Waste Storage Facility (CSF)

1. CSF facility is operated by a private company and has been issued with annual Commission licenses since November 2019.
2. Most disused sources have been transferred to the CSF.
3. Commission will not authorise the indefinite storage of disused sources at any other site.
4. Organisation running the CSF takes ownership for all disused/spent radioactive sources within its facility.
5. Undertakings which transfer radioactive material to the CSF may be charged for usage of this facility (under the polluter pays principle).

Future Disposal

1. A viable disposable option will be sought before 2044. The permanent solution (i.e. disposal) will take into account the current inventory and sources recovered from:
 - Detection at the ports and
 - Sources recovered due to the campaigns.
2. It is likely that the following options could be considered:
 - Relatively shallow bore hole disposal option;
 - The disposal within an existing underground man-made structure
 - Export of material for recycling;
3. Any disposal option will need to take into account the nature of the waste, namely:
 - Total number of existing sources and possible future acquisitions to waste inventory.
 - Radionuclides.
 - Activities.
 - Physical state of the source, including any possible degradation in the sources.
 - Site characterisation.

Gaining control over sources that are out of regulatory control.

1. On discovery of a source, the Commission or the Civil Protection Department (CPD) are to be informed. And if required radiological emergency plan to initiated.
2. Customs to monitor imports at major ports of entry.
3. Radioactive material discovered at the Malta Freeport to be returned to country of origin.

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4. Commission to decide on targeted areas may be subject to search within Malta.
 5. Commission is to run campaigns for collection of sources, including schools, laboratories and lightening rods.
 6. Initiatives targetted at metal recycling facilities in Malta.

Emergency Plans

1. Commission to ensure that undertakings have emergency plans in place through the authorisation and inspection process.
2. Commission/CPD to initiate the National Radiological Emergency Plan when required.
3. Commission is to keep the radiological emergency plan and the hazard assessment updated (Radiological Hazard Assessment last updated October 2022, Radiological Emergency Response Framework was updated August 2020).

Orphan Source Recovery

1. Recovery to be performed in line with the National Radiological Emergency Plan which assigns CPD as the lead technical agency.
2. The Secretariat of the Commission to advice CPD on recovery operations.
3. Immediate action to be taken in the event that a Category 1, 2 and 3 source is discovered.
4. National radiological emergency to be initiated by either Commission or CPD.

Return of radioactive sealed sources

1. Commission will not authorise the import of new sealed sources unless a declaration is provided by the user for the export of the source at the end of its useful life.

Shipment of Radioactive waste out of Malta

1. Commission to ensure licensees are aware of Waste Management (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) SL 549.51.
2. The Environmental Resources Authority (ERA) to process any applications in consultation with the Secretariat of the Commission.

Imports of Radioactive Waste

1. Commission will not give clearance for import of radioactive waste.

Discharges from nuclear medicine departments

1. Discharges from nuclear medicine departments to the environment of unsealed radioactive waste must be under the limits set by a discharge authorisation issued by the Commission made under the Basic Safety Standards (BSS) Regulations.

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2. Nuclear medicine departments are required to store waste for as long as reasonably achievable.
 3. Emissions to be subject to radiological assessment following Commission operating procedure.

Education and Training

1. Commission to enforce that staff are adequately trained in line with the requirements of the BSS Regulations.
2. Commission to facilitate participation in any IAEA training activities in the field of radioactive waste management.

Research

1. Commission to keep abreast of any EU/IAEA activities in this area and to get support for such activities.
2. Commission to seek to get any relevant stakeholders involved in any EU/IAEA training activities.

Criteria used to define and categorize radioactive waste (Article 32.1 v)

Malta has no categories of waste stated in legislation, radioactive waste is defined in the regulations simply as material for which no further use is foreseen by the user or if the Commission considers that it needs to be considered as waste.

The Commission uses the Indicative IAEA Radioactive Waste Class and Source categories as shown in Table 1 of Section D.

The following types of material in storage are:

- Disused sealed sources.
- Uranium and thorium salts.
- Am-241 lightning arrestors.
- Am-241 smoke detectors.
- Short-lived unsealed sources used in the 3 nuclear medicine sites.

Details of long-lived material is given in Section D.

Section C: Scope of Application.

Article 3

Further to Article 3 of the Convention:

- a. Malta does not have any activities relating to spent fuel management.

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- b. There is no waste that contains naturally occurring radioactive material apart from some former laboratory uranium and thorium salts in storage.
 - c. There is no radioactive waste within any military or defence programmes.

Section D: Inventories and Lists.

Article 32(2) (i & ii)

Not applicable as there are no spent fuel activities.

Article 32(2)(iii)

Malta does not have a disposal facility but has one storage facility, the pertinent details of which are:

A centralised radioactive waste storage facility (CSF) is managed by a private company and was issued initially licenced by the Commission in November 2019.

- CSF is not designed for the indefinite storage in time of the radioactive material. In accordance with the Radioactive Waste Management Programme (RWMP) the Government is to seek a disposal/recycling option by 2044 and was due to take a decision on viability of disposal options by the end of 2023.
- The CSF performs basic volume reduction techniques, segregates the material according to radionuclide and stores the material in appropriately shielded containers within a specially adapted 20-foot ISO shipping container.
- The company managing the CSF receives funding from central government (not from the Commission's budget) and charges users for the collection and storage of radioactive material.

Article 32(2)(iv)

Disused sources in the CSF

Radionuclide	Quantity	Original use	Activity of individual DSRS	Total activity	Indicative IAEA Radio-active Waste Class	IAEA Source Category (A/D)
Co-60	8	Schools	0.185MBq	0.0015GBq	VLLW	5
Cs-137	1	NDT	37.8 GBq	76 GBq	ILW	4
	1	Road density	370 MBq			
	4	Liquid Level	10 MBq			
	1	NDT	37.8 GBq			
	1	NDT	Unknown			
Ra-226	1	Calibration	Unknown	0.00056 GBq	ILW	5
	3	School sources	0.185 MBq			
Am-241	1	Road density	1.48 GBq	12.83 GBq	ILW	4
	5	Liquid Level	1.67 GBq			
	12	Lightning Rod	35 MBq			
	113	Lightning Rod	23 MBq			
	88	Smoke Detectors	37 kBq			
	7	School sources	0.185 MBq			
Sr-90	8	School sources	0.185 MBq	0.00148 GBq	LLW	5
Pu-239	1	School sources	0.185 MBq	0.000185 GBq	LLW	5
Uranium salts	1.686kg	Research/teaching				
Thorium salts	0.454kg	Research/teaching				

Section E. Legislative and Regulatory System

Article 18: Implementing Measures

Obligations pertaining to this Convention are met through the legislative framework that consists of the Nuclear Safety and Radiation Protection Act and regulations made under this Act.

Regulation 2(2)(d) of the Management of Radioactive Waste Regulations specifically has within its scope to bring into effect the provisions of the Joint Convention.

The Commission as the regulatory body is to bring into effect the provisions of the Act and the Regulations.

Article 19: Legislative and regulatory framework

The Maltese regulatory infrastructure consists of:

Law:

- Nuclear Safety and Radiation Protection Act CAP585 (published 2018)

Regulations:

- Basic Safety Standards for Ionising Radiation Regulations SL585.01 (initially published 2018)
- Nuclear Safety Regulations SL585.02 (initially published 2018)
- Management of Radioactive Waste Regulations SL585.03 (initially published 2019)
- Commission for the Protection from Ionising and Non-Ionising Radiation Regulations SL585.04 (published 2021)
- Waste Management (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) SL 549.51 (initially published 2009)

The Nuclear Safety and Radiation Protection Act is to ensure regulation of the use and safety of ionising radiation and allow for the implementation of requirements of international treaties, conventions or protocols related to ionising radiation and nuclear safety and security.

The regulatory body was set up in accordance with the Nuclear Safety and Radiation Protection Act called Commission for the Protection from Ionising and Non-Ionising Radiation. The Commission consists of a non-executive chairperson, deputy chairperson and nine expert members representing different aspects such as: environment; occupational health and safety; civil protection; public health; transport The executive functions of the Commission are performed by the Commission's Secretariat which has five full time staff members. At the time of writing (August 2024) the Secretariat is in the process of attempting to recruit two additional junior technical staff.

As required by the Management of Radioactive Waste Regulations policies and strategies were developed and are contained within the National Framework for Radioactive Waste Management.

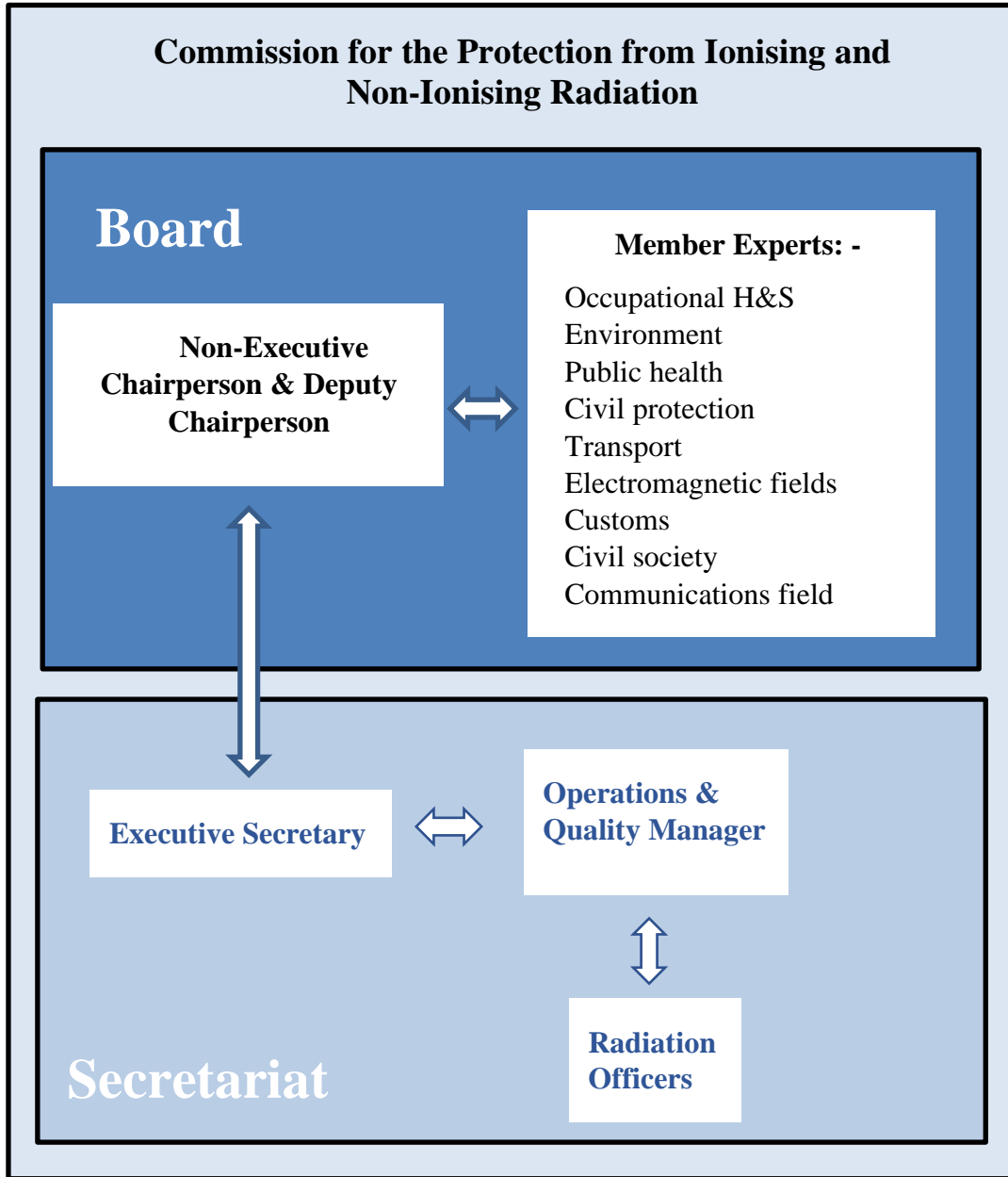
A diagrammatic representation of the framework is shown below:



Article 20: Regulatory Body

Structure of the Commission

The organogram of the Commission is.



The Commission was first constituted by the Government in October 2018 and since then has held formal meetings approximately once a month.

Legislative and regulatory framework

A complete list of Maltese legislation relating to radiation protection/nuclear issues along with the list of conventions/agreements is attached in Annex 1.

Functions of the Commission

The functions of the Commission are given in Article 10 of the Act.

Commission Procedures

A Management System has been developed using Microsoft Excel and is based on the management system of the Icelandic Radiation Safety Authority.

Each element of the management system has its own documentation. Procedures have supporting documentation, including instructions, checklists, documents, standard forms, and standard letters or email texts.

Work on the further development of the management system is on-going.

The management system is in use by the staff of the Secretariat.

Inspections

The number of inspections performed in 2023 in the relevant applications is shown below:

Application	Inspections in 2023
Radiotherapy	10
Nuclear medicine	2
Diagnostic radiology	13
Veterinary	2
Dental	71
Cyclotron	1
Security Screening	2
Container Shipment	1
Public Enquiry	1
School	1
Total	104

Authorisations (licenses)

The Commission issues licenses to for medical exposure applications (excluding dental), higher risk industrial, and the CSF.

Radiation Protection Experts and Medical Physics Experts

The Commission has criteria in place for the recognition of Radiation Protection Experts (RPE) and Medical Physics Experts (MPE). The publicly available list found at: (<https://rpc.gov.mt/approved-service-providers/>) indicates that there are 18 RPEs and 16 MPEs.

Technical Service Organizations (TSOs)

Owing to the small size of Malta, technical services normally need to be provided from overseas TSOs, for such services as:

- Personal Dosimetry,
- Monitor Calibration,
- Laboratory analysis of food/environmental samples.

Section F: Other General Safety Provisions.

Article 21: Responsibilities of the license holder

In general terms, under Maltese legislation for the use of ionising radiation the *undertaking* has the prime responsibility for safety. The undertaking must justify, optimize and ensure dose limitation is performed, taking actions in order to protect the workers, the patients, the public and the environment from risks arising from the use of ionising radiation.

Regulation 14 of the Management of Radioactive Waste Regulations deals specifically with the responsibilities of the undertaking with regard to the management of radioactive waste.

In the case where there is no identified licence holder, Regulation 9 of the Management of Radioactive Waste Regulations states that responsibility for the source rests with the government.

Article 22: Human and financial resources

Following the Commission procedure “Notification and Authorization for Waste or Storage Facility” operators during the review and assessment process, shall confirm that the undertaking:

- Have staff that are trained, qualified and competent, and, where applicable, licensed by the regulatory body.
- Have considered that there is a mechanism to provide and ensure adequate financial resources to discharge its responsibilities.

Article 23: Quality assurance

The Commission’s quality assurance programme is contained within its management system.

There is a specific procedure within the management system on the “Notification and Authorization for Waste or Storage Facility” which includes sections on requirements for long-term dedicated storage facility.

Undertakings are required to by the BSS Regulations to have Radiation Protection Programme in place, which forms part of the undertaking's quality assurance.

Article 24: Operational radiation protection

Radiation exposure of workers and the public

Undertakings are required to optimize the doses to workers and the public by virtue of the BSS Regulations.

To protect the environment the Commission has a specific operating procedure for the control of radioactive discharges from nuclear medicine establishments.

Environmental Monitoring in Malta

The Commission has a specific operating procedure for radiation/radioactivity monitoring of:

- Food,
- Milk,
- Drinking water,
- Sea water,
- Soil,
- Ambient gamma dose rate,
- Air-particulates collected through high volume air sampler.

Article 25: Emergency preparedness

National Plan

The Commission has a national radiological emergency plan. The emergency plan was completed following a radiological emergency hazard assessment.

The scope of the hazard assessment document is to identify the radiological threats in the event of an incident that would require the radiological emergency procedures to be activated.

In line with GSR Part 7:

- Malta only has threat emergency preparedness categories IV and V activities.
- The only emergency class in Malta is "*Other nuclear or radiological emergency*".

The scope of the radiological emergency plan document is to:

- Provide a framework for the operation of the activities by government entities to mitigate the effects of the risks identified in threat assessment document.
- Outline the government entities likely to be involved and their responsibilities.
- Place responsibilities on each government agency involved in the plan to develop its own procedures.

The review of the medical response capabilities in the event of a radiological emergency is still has not been completed.

Resources available for emergency response

CPD is fully equipped with field equipment and has undergone training in radiological response with the assistance of the IAEA.

The Accident and Emergency Department in the main hospital in Malta, has basic monitoring equipment. An operating procedure for the Accident and Emergency Department as well as training plan for hospital staff was drafted, but not implemented.

Testing of emergency procedures

The Commission along with CPD participates in both European Community Urgent Radiological Information Exchange (ECURIE) and USIE desk-top exercises.

The staff within the Secretariat go through internal training exercises for scenarios, such as discovery of radioactive source at a port or other location.

Routine monitoring at large container seaport

Currently the Malta Freeport handles about 3 million container movements per year with a large proportion of them being subject to screening with portal monitors fitted with gamma and neutron detection capability.

Emergency monitoring

Data capture from the Maltese gamma dose environmental monitor is managed by ERA and is sent on an hourly basis to the CPD 24-hour response centre and to European Radiological Data Exchange Platform (EURDEP) system. In the event of a nuclear incident in Europe, Malta would access EURDEP real-time data.

Exchange of information

Malta participates in the European Community Urgent Radiological Information Exchange (ECURIE) system and participates in ECURIE exercises.

In the event of a radiological emergency the public would receive information from the Director of the CPD.

On-site Plans

Undertakings in terms of Maltese regulations are obliged to have in place on-site emergency procedures.

The procedure within the management system of the Commission on the “Notification and Authorization for Waste or Storage Facility” requires undertakings to consider emergency preparedness issues.

Article 26: Decommissioning

Malta does not have any current or past nuclear facility that needs/needed decommissioning.

Section G: Safety of Spent Fuel Management.

Not applicable for Malta.

Section H: Safety of Radioactive Waste Management.

Article 11: General safety requirements

General requirements laid down Management of Radioactive Waste Regulations.

Policies and strategies have been developed and are contained within the National Framework for Radioactive Waste Management, refer to section B of this report.

Article 12: Existing facilities and past practices

Sealed sources in long term storage

Disused sources that are stored in the CSF are listed in Section D. The facility is licensed and subject to inspections from the Commission.

Unsealed radioactive material

The only use of unsealed sources in Malta is in diagnostic and therapeutic nuclear medicine. There are currently three nuclear medicine sites, two of which have positron emission tomography technology, and one site performing therapeutic techniques for thyroid disorders.

All the above sites have delay storage tanks and are required to take steps to ensure that the ALARA principal is applied to their radioactive discharges to the environment.

Each site is set limits on the activity levels they can discharge through a Commission licence issued under BSS Regulations. The limits are based on the generic dose constraint of an effective dose, among individuals of the critical group of the public, of 0.25 mSv/y as given in Regulation 12 of the BSS Regulations.

The Commission issues annual authorisation for the accumulation and disposal of Radioactive Waste.

The undertaking is required to:

- Apply the ALARA principal in any discharges.
- Comply with all conditions of Authorisation to Accumulate and Discharge Radioactive Waste.
- Set up a suitable monitoring programme for the waste.
- Send annual returns of all discharges to the Commission.

Article 13: Siting of proposed facilities

The CSF consists of a modified 20-foot ISO container.

In the review and assessment of the storage facility the Commission considered:

- The site related factors that could affect the safety and security of the facility
- The external dose rates and the contamination risks.
- Owing to the low risks involved with the facility and the location of the facility no specific information was given to the public.

Article 14: Design and construction of facilities

The design of the CSF has limited impacts on workers and the population at large. The small inventory of radioactive sources is kept in heavily shielded containers within the 20-foot ISO container.

The storage facility is not designed for the indefinite storage of the radioactive material. In accordance with the RWMP the Government is to seek a disposal/recycling option by 2044 and is due to take a decision on viability of disposal options by the end of 2023.

Article 15: Assessment of the safety of facilities

As part of the licensing process for the CSF the operator (undertaking) had to provide the Commission with safety and environmental assessments for the proposed facility.

Article 16: Operation of facilities

Malta's only management facility is the CSF.

The Commission issued a licence to the facility in 2019 based on its review and assessment provided by the company which included:

- Safety assessment.
- Environmental assessment.
- Radiation Protection Programme.

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- Emergency Procedures.
 - Maintenance program.
 - Method statements for characterisation and segregation of disused sources.
 - Procedures for:
 - Preparation of cemented drums
 - Dismantling of smoke detectors
 - Dismantling of lightning rods.

Article 17: Institutional measures after closure

The CSF is designed for the interim storage of radioactive material prior to its recycling or disposal.

At the end of the working life of the facility all radioactive material will be removed.

Once Malta has recycled/disposed of its current inventory Malta may decide to keep some form of central facility available for any long lived radioactive material that may need to be managed by the government.

Section I: Transboundary movement (Article 27).

Maltese Customs performs portal gamma and neutron monitoring on a large percentage of shipping containers in trans-shipment and all containers entering Malta through the Freeport.

This monitoring has led in the past to the detection of contaminated scrap metal and finished metal goods.

The Commission and the Customs Department use a standard operating procedure drawn up between them to deal with the detection of radioactive material at Maltese ports. These procedures include:

- Arrangements to send the items back to the country of origin in compliance with international transport regulations.
- The regulatory authority of the country of origin is informed of the return shipment.
- Notification to the IAEA Illicit Trafficking Data Base (ITDB).

Section J: Disused sealed sources (Article 28).

National Legislation

The management of disused sealed sources falls under two regulations, namely:

- Management of Radioactive Waste Regulations.
- BSS Regulations, in particular regulations 112 to 120.

Shipment of waste falls under

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- Waste Management (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) SL 549.51.

Strategy

As required by Management of Radioactive Waste Regulations policies and strategies have been developed and are contained within the National Framework for Radioactive Waste Management.

All Sources that are either in the CSF or at other locations are subject to Commission inspections.

The National Framework for Radioactive Waste Management envisages:

- Take back arrangements by the supplier when new sources are purchased.
- The setting up of CSF for existing sources.
- The export of sources whenever possible.
- Exploring disposal option within Malta.

Status of Sources

The list of sources is given in Section D.

Since the last Review Meeting (RM) most of the sources have been transferred to the CSF.

Section K: General efforts to improve safety.

Actions in connection with challenges identified in the 7th RM

The actions taken with respect to the four challenges that were identified at the last RM are as follows:

Challenge 1- Prepare a plan for disposal/recycling by 2023.
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Actions:

A report was commissioned in 2023 through an IAEA National Technical Cooperation Project (MAT 9009) entitled *"The Management of Radioactive Waste in Malta: Options Analysis for DSRS Disposal A Report To The Commission For The Protection From Ionising & Non-Ionising Radiation of Malta October 2023"*.

Three leading possible solutions were identified by the international expert. The most viable disposal options at this stage are:

1. Purposefully construct a relatively narrow diameter borehole with waste emplacement at a depth of between 50 and 200 m. In line with the IAEA borehole disposal concept.
2. Convert an existing underground man-made structure for the disposal of all radioactive waste types.

3. Export the entire current inventory for recycling.

The outline cost estimates of export for recycling were substantially less than disposal in Malta were presented to the government in April 2024.

The expert identified that the next step for any of the disposal options identified would be the detailed study of the potential suitability of prospective options, the cost of such study is expected to be in the order of €150,000.

Challenge 2- Enhance training for new regulatory staff.
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Actions:

- Currently there are five full-time staff members, in-house training continues for the three newer staff members.
- Staff training is a major component of current national TC Project which is due to run 2024-2025. This project includes scientific visits to other states including Greece and Portugal.

Challenge 3- Implement plan in case contractor decides not to continue with contract for operating CSF.
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Actions:

- As the current contract with the contractor expired in 2024 it was renewed for a further year.
- Preparations are under way for a new five year contract to be issued for 2025 to 2030.

Challenge 4- Consolidate all legacy sources (including lightning rods)

Actions:

- Any new lightning rods that are discovered are transferred to the CSF.
- Any unwanted school's sources are transferred to CSF.
- All uranium and thorium salts are now at CSF.

Actions in connection with suggestions identified in the 7th RM

The actions taken with respect to the two suggestions that were identified at the last RM are as follows:

Suggestion 1- Consider addressing the RW and releases from the operation of future cyclotron.

Action:

- The cyclotron has not been made operational, prior to any licence being issued, the operator will need to provide information on RW and releases as part of the Commission’s review and assessment process.

Suggestion 2- Consider competence needed in-house for dealing with disposal options.

Action:

- Components of training included in national Commission TC project for 2024-2025 and Commission national TC project proposal for 2026-2027.

Actions in connection with planned measures mentioned in the 7th RM

The actions taken with respect to the four planned measures to improve safety that were mentioned at the last RM are as follows:

Planned Measure 1- Gaining control over sources that are out of regulatory control through a national campaign.

Action:

- No national campaign has been performed to date.

Planned Measure 2- The Government is due to take a decision on viability of disposal options by the end of 2023. The option disposal/recycling will be completed by 2044.

Actions:

- Government has been presented with costing of the disposal/recycling options in April 2024.

- Government has not yet committed itself to which disposal/recycling option to pursue.

Planned Measure 3- ARTEMIS mission in October 2022.

Action:

- Completed and discussed later in this report.

Planned Measure 4- To get Commission's radioanalytical lab functioning.

Actions:

- The intention of the laboratory is to provide analysis for the National Radioactivity Monitoring Programme as well as to provide analysis in the event of a radiological emergency that affects Malta.
- 2023 was the first full year of the Commission laboratory performing gamma spectrometry of analysis of food, water, feed, and environmental samples. The below table shows the number of analysis performed.

Media	Number of gamma spectrometry analysis performed in 2023
Air Filter	28
Soil	12
Tap water	5
Milk	2
Foodstuffs	7
Seawater	16
Feed	1
Total	77

- Intercomparison exercise was started in 2023 to compare air filter, soil, sea water results between the Commission laboratory and an overseas laboratory in Greece.
- In June 2024 the laboratory commenced analysis of samples in the IAEA worldwide proficiency test exercise on the determination of anthropogenic and natural radionuclides in water, bauxite, sediment and simulated contaminated surface samples (IAEA-TERC-2024-01).

Maltese ARTEMIS Mission

Malta hosted a six-day Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) mission in October 2022.

The review team noted:

“...the remarkable work done by the Maltese authorities in ensuring safety of waste in Malta given the human resources available. The review team considered that Malta is managing radioactive waste and Disused Sealed Radioactive Sources in a safe and responsible manner. The review team identified recommendations and suggestions to maintain and further improve the safe management of radioactive waste and Disused Sealed Radioactive Sources in Malta”.

The review team made 8 recommendations and 4 suggestions:

Recommendation/Suggestion		Actions to date
R1	The government should demonstrate its intent and commitment to the effective management and control of radioactive waste and disused sealed radioactive sources by approving the policy at the government’s level.	Policies are contained in the RWMP which was amended and approved by the Commission in June 2022.
R2	The regulatory body should ensure that: <ul style="list-style-type: none"> — The Radioactive Waste Management Programme (RWMP) is systematically reviewed, updated, or revised, as appropriate, including incorporating and monitoring on a systematic basis the SMART KPIs, to enable the regulatory body to effectively evaluate the progress against the milestones in the RWMP. – Clear timeframes and KPIs are defined for all policy areas in the RWMP, to provide effective means to prevent and mitigate the consequences of potential delays, omissions, failures, and deviations. 	The Commission will keep the RWMP under review. Section 6 of the RWMP addresses the issues of KPIs.
R3	The regulatory body should ensure that regulatory provisions are in place for characterization of sources and waste at the CSF in order to: <ul style="list-style-type: none"> — facilitate planned predisposal waste 	No additional regulatory provisions have been enacted however the Commission performs regulatory inspections of the CSF.

	<p>management activities.</p> <ul style="list-style-type: none"> — verify compliance with acceptance criteria. — ensure that the inventory of the CSF fully reflects waste volumes and properties. 	
S1	<p>The regulatory body should consider including in the national inventory current and anticipated radioactive waste streams.</p>	<p>The national inventory includes the current waste streams.</p> <p>If the cyclotron become operational the Commission will consider this waste stream.</p>
R4	<p>The government should continue to explore and evaluate options for safe, secure, and sustainable long term management solutions for radioactive waste.</p>	<p>External expert produced report at the end of 2023 which explored disposal and recycling options.</p>
S2	<p>The regulatory body should consider establishing requirements to ensure that, when return to a supplier is the selected option for a disused source, the user is required, prior to the acquisition of a radioactive source, to have an agreement with the supplier for its return that includes binding provisions on:</p> <ul style="list-style-type: none"> — A specified time period within the supplier undertakes to take the DSRS. — The initial estimation, periodic revision, if needed, and allocation of the costs of return between the user and the supplier. 	<p>If the need arises the Commission will expand the requirements for the return of disused sources.</p>
S3	<p>The regulatory body should consider establishing requirements to ensure that for the acquisition and use of a radioactive source:</p> <ul style="list-style-type: none"> — Adequate financial provisions are in place to cover the costs of management once the radioactive source becomes disused. — Provisions are in place for unforeseen circumstances that may require the management of the source, such as abandonment of the source or bankruptcy of the user. 	<p>If the need arises the Commission will expand the requirements for the return of disused sources which would include financial provisions.</p> <p>In the event of an unforeseen circumstance that may require the management of the source, such as abandonment of the source or bankruptcy of the user the currently the Commission would apply 5.6/5.8 of RWMP. The Commission will consider including a new section to be included in the RWMP to better</p>

		address this issue
R5	The government should provide for a clear allocation of responsibility for safety throughout the entire waste management process, in particular with respect to the Centralized Storage Facility (CSF) and the transfer of responsibility between operating organizations.	The government has renewed the contract for one year and is now issuing a call for the management of waste for a five-year period.
R6	The regulatory body should establish requirements for decommissioning of the Centralized Storage Facility (CSF), including provisions for an initial decommissioning plan to be submitted by the operating organization for authorization.	Even if all the radioactive material is disposed of in Malta or recycled overseas some sort of central store is likely to be required to manage any source that is found in or arrives in Malta that is out of regulatory control.
R7	The government should ensure that appropriate financial provision for the management of radioactive waste and disused sealed radioactive sources, including disposal, is made available on a timely basis.	The Commission has supplied budget estimates for two disposal options and recycling export option to the government in April 2024
S4	The regulatory body should consider preparing updated cost estimates for the potential long term management solutions, taking into account the associated risks and uncertainties, and integrate them to the RWMP accordingly.	The Commission has supplied updated budget estimates, based on the 2023 expert's report for two disposal options and recycling export option to the government in April 2024
R8	The government should ensure that sufficient human and financial resources, are available for the regulatory body to acquire and maintain appropriate competence to be able to perform its regulatory functions, ensuring the unimpeded implementation of the Radioactive Waste Management Programme (RWMP).	The Commission forwarded the government its financial needs up to 2027. The estimates includes the increased number of staff for the Secretariat.

ARTEMIS recommendations and suggestions.

Maltese Integrated Regulatory Review Service (IRRS) Mission

As was reported in the last review meeting Malta was subject to an IRRS Mission in 2015. Following this mission and the follow-up mission performed in March 2020 Malta worked on implementing the IRRS recommendations and suggestions.

The IRRS reports 2015 and follow-up of 2020 are available at:

https://www.iaea.org/sites/default/files/documents/review-missions/irrs_report_malta_26may2015.pdf

https://www.iaea.org/sites/default/files/documents/review-missions/irrs_malta_fu_2020.pdf

Radiation Safety Information Management system (RASIMS)

Malta in 2019-2020 completed five of the six RASIMS questions sets

Annex 1 – Legal – Conventions – ITDB – Declarations

Legislative

Reference	Date	Title
SL 365.11	23-Jul-2001	Comprehensive Nuclear-Test Ban Treaty Regulations. https://legislation.mt/eli/sl/365.11/eng/pdf
SL 365.15	28-Jan-2003	Nuclear Safety and Radiation Protection Regulations, 2003 https://legislation.mt/eli/sl/365.15/eng/pdf
SL 117.14	30-Apr-2004	Importation Control Regulations, 2004 https://legislation.mt/eli/sl/117.14/eng/pdf
SL 365.12	20-Sep-2004	Dual-use Items (Export Control) Regulations, 2004 https://legislation.mt/eli/sl/365.12/eng/pdf
SL 365.20	10-Jul-2007	Treaty on the Non-Proliferation of Nuclear Weapons (Euratom Safeguards and Additional Protocol) Regulations, 2007 https://legislation.mt/eli/sl/365.20/eng/pdf
SL 549.51	13-Feb-2009	Waste Management (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) Regulations, 2009 https://legislation.mt/eli/sl/549.51/eng/pdf
CAP 585	25-May-2018	Nuclear Safety and Radiation Protection Act https://legislation.mt/eli/cap/585/eng/pdf
SL 585.01	3-Jul-2018	Basic Safety Standards for Ionising Radiation Regulations https://legislation.mt/eli/sl/585.1/eng/pdf
SL 585.02	15-July-2018	Nuclear Safety Regulations https://legislation.mt/eli/sl/585.2/eng/pdf
SL 585.03	18-Jun-2019	Management of Radioactive Waste Regulations https://legislation.mt/eli/sl/585.30/eng/pdf
	14- Jun-2022	Radioactive Waste Management Programme (RWMP) https://rpc.gov.mt/wp-content/uploads/2022/11/Doc-058_001-Rad-Waste-Man-Prog.pdf
SL 585.04	11-Jun-2021	Commission for the Protection from Ionising and Non-Ionising Radiation Regulations https://legislation.mt/eli/sl/585.4/eng
		Council Regulation (Euratom) 1493/93 on shipments of radioactive substances between States https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31993R1493&from=EN

Table 5: Maltese Legislation

Conventions/agreements

Title		Reference
Comprehensive Nuclear-Test Ban Treaty	Ratification 23-Jul-2001	SL 365.11
Convention on the Physical Protection of Nuclear Material	Entry into force 15 Nov 2003	SL 365.15
Amendment to the Convention on the Physical Protection of Nuclear Material	Acceptance 16-Dec-2013	SL 365.15
Agreement between the European Atomic Energy Community, its non-nuclear weapon Member States and the IAEA	Entry into force 1-Jul-2007	SL 365.20
Convention on Nuclear Safety	Entry into force 13-Feb-2008	SL 585.02
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	Entry into force 15-Dec-2013	SL 585.03
Treaty on the Prohibition of Nuclear Weapons	Ratification 21-Sep-2020	

Table 6: Conventions and agreements that Malta has joined.

Illicit Trafficking Data Base

Malta joined the IAEA Illicit Trafficking Data Base on 13th May 2009

Declarations

Malta's Declarations of support	Date
Code of Conduct on the Safety and Security of Radioactive Sources	March 2004
Supplementary Guidance the Import and Export of Radioactive Sources of the Code of Conduct on the Safety and Security of Radioactive Sources	April 2015
Supplementary Guidance on the Management of Disused Sources of the Code of Conduct on the Safety and Security of Radioactive Sources	January 2023

Table 7: Maltese declarations of support

Annex 2 – Overview Matrix

The following table gives an overview over the national radioactive waste management policy according to the matrix suggested for review cycles.

Type of Liability	Long-Term Management Policy	Funding of Liabilities	Current Practice/Facilities	Planned Facilities
Spent Fuel	Not applicable	Not applicable	Not applicable	None
Nuclear Fuel Cycle Wastes	Not applicable	Not applicable	Not applicable	None
Application Wastes	<p>Short-lived liquid wastes from the 3 nuclear medicine departments are stored in delay tanks before release to drains.</p> <p>Low level solid waste from the 3 nuclear medicine departments is allowed to decay before disposal as normal clinical waste</p>	License holder	Short-lived liquid wastes from the 3 nuclear medicine departments are stored in delay tanks before release to drains.	None- No new facilities planned
Decommissioning	Not applicable	Not applicable	Not applicable	None
Disused Sealed Sources	<p>Return to supplier.</p> <p>Storage at centralised storage facility prior to export for recycling or disposal in Malta</p>	<p>License holder for sources still under their control.</p> <p>Sources at centralised storage facility funded by central government.</p>	<p>Sources held at Licensee sites for storage prior to return to supplier.</p> <p>Majority of sources held at centralised storage facility.</p>	Report produced by international expert which included two possible disposal options in Malta for further investigation.

Table 8: Overview Matrix for national radioactive waste management.