



6th Review Meeting of the Joint Convention on the safety of spent fuel management and the safety of radioactive waste management

Country Group 1 Presentation by Portugal

Pedro Rosário

President

Comissão Reguladora para a Segurança das Instalações Nucleares

pedro.rosario@comrsin.pt

Summary

- Summary of the National Program under JC
- Changes since last Review Meeting
- Significant events since last Review Meeting
- Action on Challenges and Suggestions from the last Review Meeting
- Current Practices
- Liability Matrix
- Planned Measures to Improve Safety
- Current and future challenges
- Good Practices and Efforts
- Questions Raised about the Report
- Conclusions

Country Outline



Surface area: 91 906 km²

Population: 10.6 million
(Source:
Eurostat)

Around 10.000 authorized
facilities that use radiation
sources

There is 1 Research
Reactor

There are no NPPs in
Portugal

Summary of basic information on the national program

- Portugal became a Contracting Party of the Joint Convention on May 15th 2009 and submitted its 1st report in the 4th Review Meeting. This is the 3rd National Report.
- Exploration for uranium was terminated in 2000.
- There are no NPP's in Portugal and there are no plans for building one.

Summary of basic information on the national program

- Since 1961, there is a single Research Reactor, the Portuguese Research Reactor (RPI), which is a 1 MW pool type reactor.
- The RPI was converted from HEU to LEU in 2006 with the technical cooperation of the IAEA and on the basis of a bilateral agreement with the USA. All HEU was returned to the United States and there is no spent fuel (SF) at the RPI facility or anywhere in Portugal.



Summary of basic information on the national program

- Radioactive waste (RW) in Portugal comes from:
 - Medical, industrial, and research applications of radioactive materials in the form of sealed and unsealed sources;
 - Past U and Ra mining and milling;
 - Contaminated or irradiated scrap metal;
 - Smoke detectors and lightning rods;
 - Depleted uranium;
 - Spent/Disused sealed sources

Summary of basic information on the national program



Summary of basic information on the national program

- Except for authorized discharges of VSLW at the producer, all solid and liquid LLW and ILW produced in Portugal is segregated, packed and stored on the surface in a disposal facility (PRR) located on the same site as the RPI.
- The regulatory body for the safety of nuclear installations (COMRSIN) was created in 2012 through Decree-Law 30/2012.
- In 2013 the regulatory responsibility for the safe management of SF and of RW was also attributed to COMRSIN.
- Portugal is in full compliance with the EU Directive 2009/71/ EURATOM of June 25th.

Changes in the national program since the last Review Meeting

PRR, operated by IST

- In place since the 60's (former-ITN)
- Last wing was built in the 90's
- Improvements being made by the Operator under the conditions of its license by COMRSIN, such as:
 - new security perimeter fence;
 - video surveillance system;
 - upgrade of the radiation monitoring system
 - ...



Courtesy: IST



Changes in the national program since the last Review Meeting

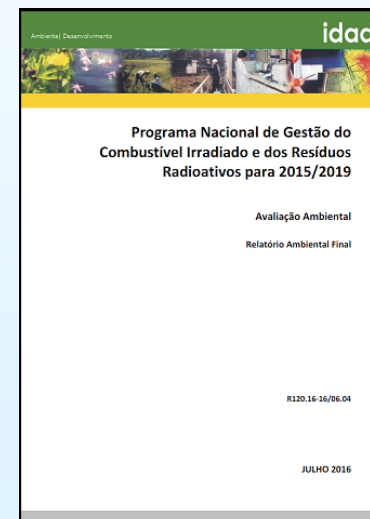
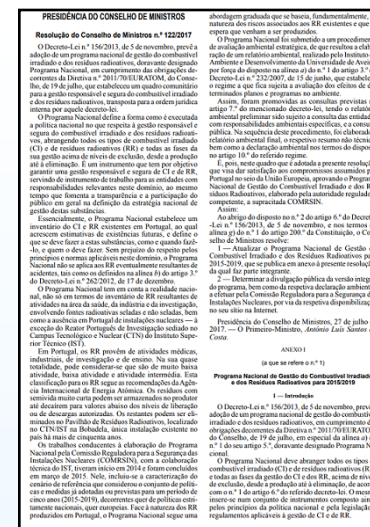
- Ordinance 44/2015 of February 20th adopts clearance and exemption levels from EU Directive 2013/59/EURATOM of December 5th.
- Full compliance with EU Directive 2011/70/EURATOM has not been recognized yet by the EC.
 - Awaiting notification letter from EC.

Significant events since the last Review Meeting

- Publishing of COMRSIN advisory document containing technical guidelines for management of RW.
- The RPI underwent an INSARR mission in February 2016.
- Approval of the National Programme for the Management of Spent Fuel and Radioactive Waste occurred in 2017.
- In late 2017, the Government decided to accept the recommendation of the Operator of RPI to proceed with its permanent shutdown.
- There were no reported accidents in the management or storage of RW.

Action on Challenges from the last Review Meeting

- Approval and effective implementation of National Policy and Strategy for SNF and RWM
- Approval and publication of RW classification
- The National Programme for the Management of Spent Fuel and Radioactive Waste, containing the National Policy and Strategy was prepared by COMRSIN.
- The programme underwent a Strategic Environmental Evaluation, as required by Decree-Law 232/2007 and approved by Resolution from the Council of Ministers 122/2017.
- The National Programme includes the classification for RW.



Action on Challenges from the last Review Meeting

- *Establish COMRSIN as an effective, adequately resourced and independent regulatory body*
- Ongoing.
- The legal framework is currently being revised.
- The current draft that is undergoing approval aims to consolidate regulatory competencies in a single regulatory authority, with assigned resources.

Action on Challenges from the last Review Meeting

- COMRSIN is an independent Regulatory Body responsible for licensing and inspecting nuclear installations, as well as SF and RW activities, as well as storage and disposal installations, in all phases from sitting to decommissioning.
- There is clear allocation of responsibilities and enforcement capabilities under Decree-Law 156/2013.
- Clearance and exclusion procedures are being applied.

Action on Challenges from the last Review Meeting

- *Continue efforts to enable a complete list of licensees and associated RW inventories*
- The establishment of COMRSIN's management system allows for real-time consultation of the inventory of all RW sent to disposal.
- All licenses issued by COMRSIN for the management of radioactive waste are part of this system.
- This information is being cross-referenced with the inventory of practices held by DGS and already covers most of the users.

Action on Challenges from the last Review Meeting

Ongoing
license
applications

Issued
licenses

17:02 plataforma.comrsin.pt 90%								
ESTADO	N/PROCESSO	DATA PEDIDO	EMPRESA DETENTORA	RESÍDUOS	DATA DE VALIDADE DA LICENÇA	NO DA LICENÇA	PEDIDO	VER/EDITAR
ACEITE	LIC-A-0056/2018	2017/11/13	Hospital Escola Universidade Fernando Pessoa	125I			licenciamento	Ver Editar
ACEITE	LIC-A-0055/2018	2018/01/10	Hospital Privado de Braga Centro	125I			licenciamento	Ver Editar
ACEITE	LIC-A-0054/2018	2018/01/08	Hospital Privado de Braga Centro	125I			licenciamento	Ver Editar
ACEITE	LIC-A-0053/2018	2017/10/24	ISPA, CRL	3H			licenciamento	Ver Editar
ACEITE	LIC-A-0052/2017	2017/06/22	Instituto do Ambiente Tecnologia e Vida (Laboratório de Radioatividade Natural)	209Po			licenciamento	Ver Editar
FECHADO	LIC-A-0051/2017	2017/04/29	IMACENTRO - Clínica de Imagiologia Médica do Centro, SA	99Mo	2022/07/27	LIC-COMRSIN/2017/022	licenciamento	Ver Editar
FECHADO	LIC-A-0050/2017	2017/03/22	Cliria-Hospital Privado de Aveiro,SA	125I	2022/07/12	LIC-COMRSIN/2017/020	licenciamento	Ver Editar
FECHADO	LIC-A-0049/2017	2017/03/10	Hospital Particular do Algarve S.A.	125I	2022/06/22	LIC-COMRSIN/2017/016	licenciamento	Ver Editar
FECHADO	LIC-A-0048/2017	2016/11/24	Hospital CUF Cascais	125I	2022/07/10	LIC-COMRSIN/2017/019	licenciamento	Ver Editar
FECHADO	LIC-A-0047/2017	2017/03/06	Hospital da Luz Arrábida	125I	2022/07/05	LIC-COMRSIN/2017/018	licenciamento	Ver Editar
FECHADO	LIC-A-0046/2017	2017/01/25	SESARAM - Hospital Nélío Mendonça	99Mo	2022/11/16	LIC-COMRSIN/2017/024	licenciamento	Ver Editar
FECHADO	LIC-A-0045/2017	2017/02/08	Hospital de Loulé	125I	2022/06/22	LIC-COMRSIN/2017/015	licenciamento	Ver Editar
FECHADO	LIC-A-0044/2017	2016/11/20	Hospital Garcia de Orta	125I	2022/11/27	LIC-	licenciamento	Ver Editar

Action on Challenges from the last Review Meeting

iPad 17:07 89%

plataforma.comrsin.pt

ESTADO	PROCESS_ID:	DATA DE PEDIDO:
Fechado	LIC-A-0051/2017	Sábado, Abril 29, 2017

INFORMAÇÃO GERAL

NOME DA EMPRESA:

MORADA:

NÚMERO CONTRIBUINTE EMPRESA:

CÓDIGO DE CERTIDÃO PERMANENTE:

8010-5068-0413

ATIVIDADE DA EMPRESA:

CAE - 86220: Medicina Nuclear

Nº LICENÇA DE FUNCIONAMENTO COM MATERIAIS RADIOACTIVOS (DGS):

Licença Nº 1323/13

RENOVAÇÃO:

1º Pedido

License
for the
practice



Action on Challenges from the last Review Meeting

- *To define a decommissioning strategy for existing installations*
- Ongoing.
- Current legal provisions require that decommissioning plans must be approved by COMRSIN.
- No facilities are currently being decommissioned - the decision to proceed with the permanent shutdown of RPI was made, and that will require a decommissioning plan to be prepared in the near future.
- No specific decommissioning strategy has yet been defined for RPI or PRR.

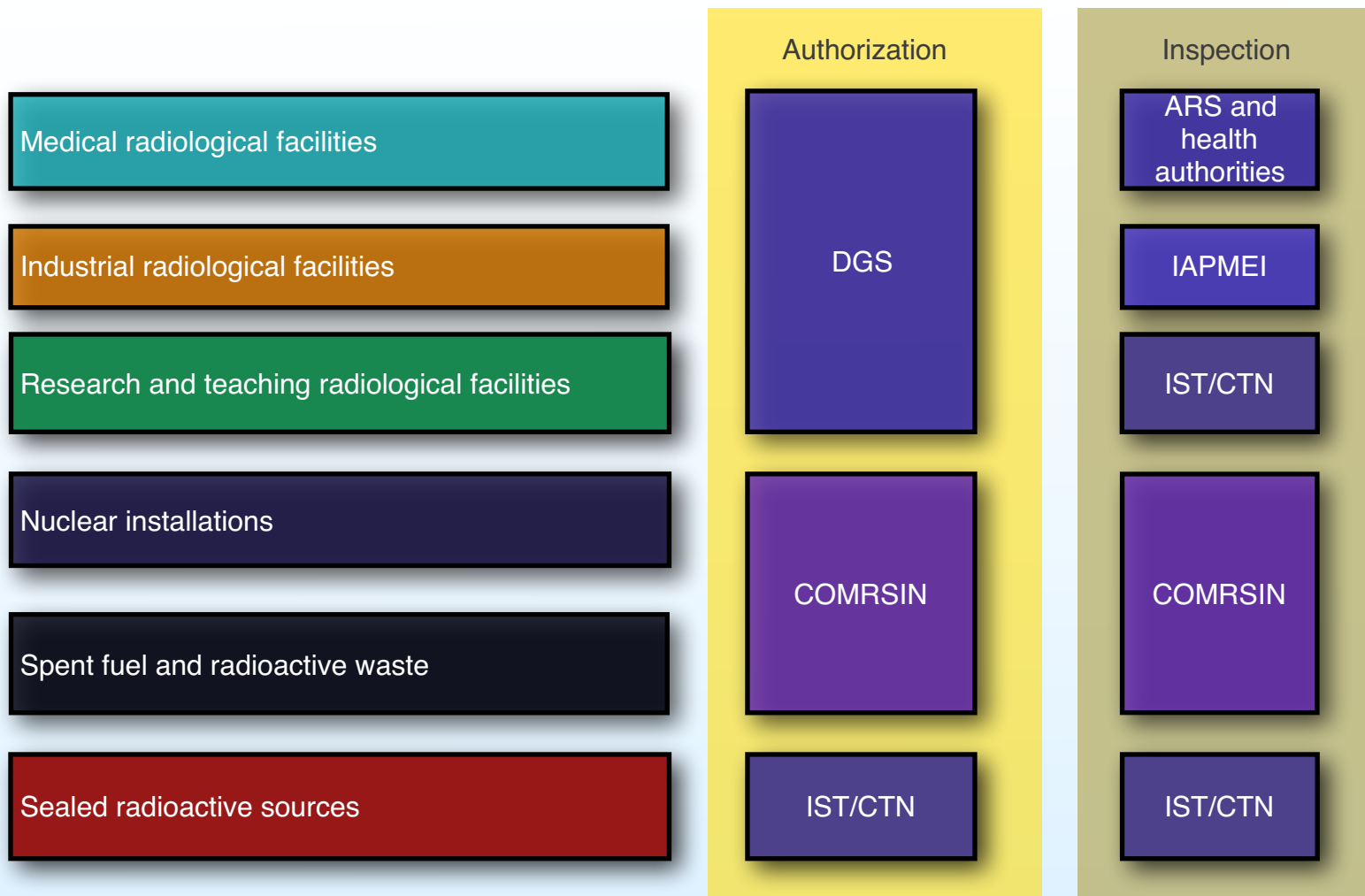
Action on Suggestions from the last Review Meeting

- *Explore available opportunities to get further support from national and international organizations and programmes to sustain COMRSIN effectiveness and independency*
- Ongoing.
- The current Country Framework Programme for TC was recently reoriented according to the new national priorities.
- Among other topics, participation in IAEA projects that assist in implementation of regulatory infrastructure are considered, and will be taken advantage of as soon as the legal framework is revised.

Action on Suggestions from the last Review Meeting

- *Attention be brought to the need to identify, maintain and train adequate human resources to support operations and oversight of both RPI and PRR.*
- Ongoing.
- The revision of the legal framework that is in progress will address the need for additional human resources.
- It is a legal requirement that any operator of a SF or RW management facility must have enough workers, with adequate qualifications and training to pursue such activities.
- Operators must also develop an R&D programme that conforms to the objectives of the National Programme and adopt a systematic and duly documented HR policy, with long term goals.

Current Practices

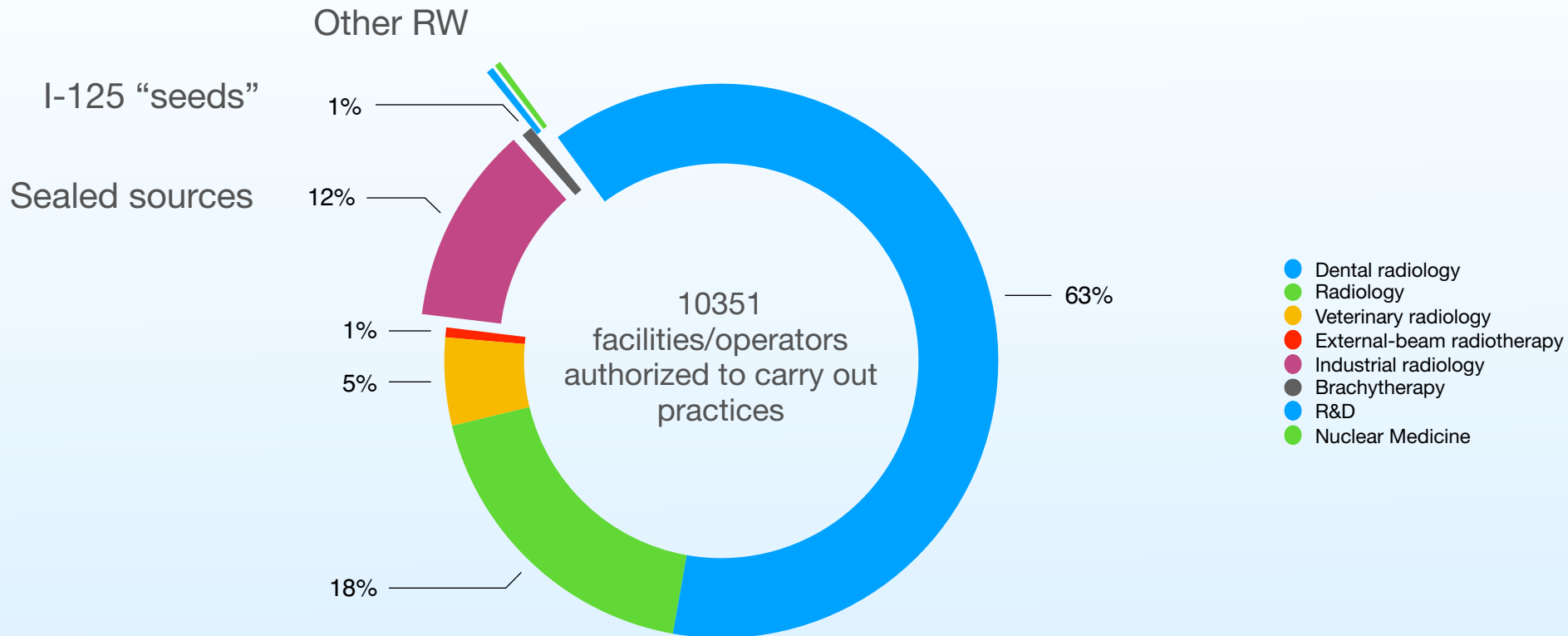


Current Practices

- *Spent Fuel*
- In the past, all spent fuel from the operation of the RPI was stored in the reactor's pool until the shipment to the USA.
- IST in September 2017 decided to propose to the Government the permanent shutdown of the RPI.
- The current LEU fuel is eligible for return to the USA before May 12th, 2019, as its irradiation was stopped prior to May 12th, 2016.
- The operator will keep the current fuel in the pool until it is shipped to the USA or to another country for reprocessing.
- Provisions for shipping the LEU fuel to the USA are being undertaken by the Operator.
- No other storage facility is foreseen for spent fuel.

Current Practices

- Radioactive waste*



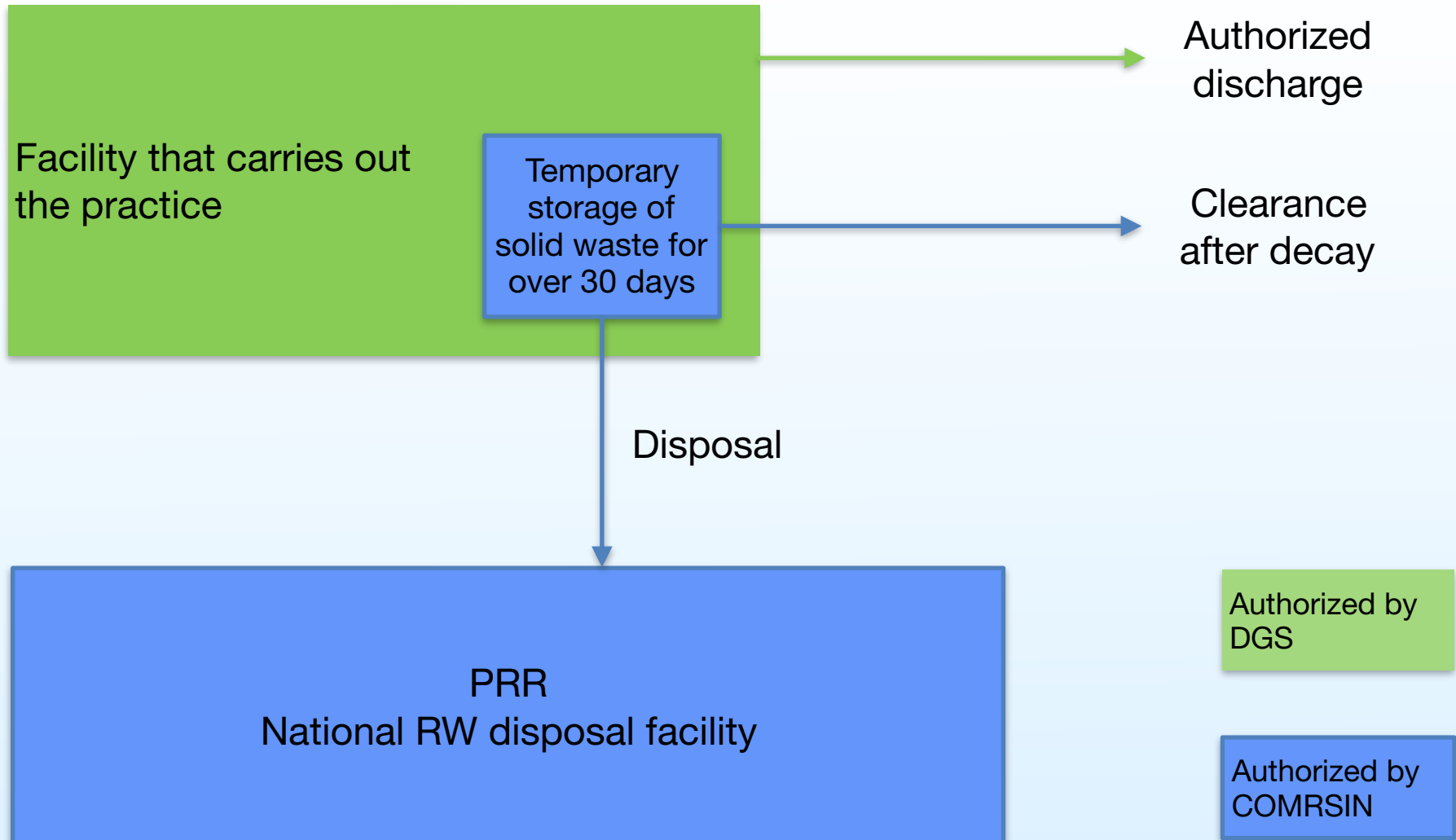
Current Practices

- *Radioactive Waste*
- In Portugal, radioactive waste originates mainly from medicine, industry and research activities. Only low level and intermediate level radioactive waste is produced from activities in these sectors.
- Under Decree-Law 156/2013, the activity associated with the management of radioactive waste and the associated installations for storage needs to be licensed by COMRSIN, unless the waste is stored for the purpose of authorized discharge or otherwise stored for less than 30 days before disposal.
- COMRSIN has licensed 48 radioactive waste management and storage facilities of this type (e.g. hospitals/clinics, research centers and similar facilities), and some more applications are ongoing.

Current Practices

- *Radioactive Waste*
- Radioactive liquid effluents generated in hospitals that perform nuclear medicine with internment or that are classified as higher risk (based on isotope and annual activity) are sent to retention tanks, where the radioactive liquid is maintained during the decay process and then undergoes authorized discharge when concentrations reach discharge levels set in law.
- Technetium-99m generators are allowed to be returned to the manufacturer for recycling after decaying for 13 weeks on sites that are licensed by COMRSIN.
- All radioactive waste resulting from medical applications must be registered before disposal or discharge and this registry must be kept for 10 years.

Current Practices



Current Practices

- *Radioactive Waste*
- Concerning I-125 sources (“seeds”) that are leftovers from brachytherapy procedures, two pathways have been established:
 - local storage subsequent disposal at the PRR facility with COMRSIN’s authorization;
 - local storage for 215 weeks at a location licensed by COMRSIN, after which they are cleared from regulatory control and may be disposed as nonradioactive waste.

Current Practices

- *Radioactive Waste*
- Smoke detectors (containing ^{226}Ra and ^{241}Am sources).
- Radioactive lightning rods.
- Other contaminated material collected in scrap yards.
- Sealed sources from industrial and medical applications, as well as from research labs and academia (that have not been returned to the supplier).

Current Practices

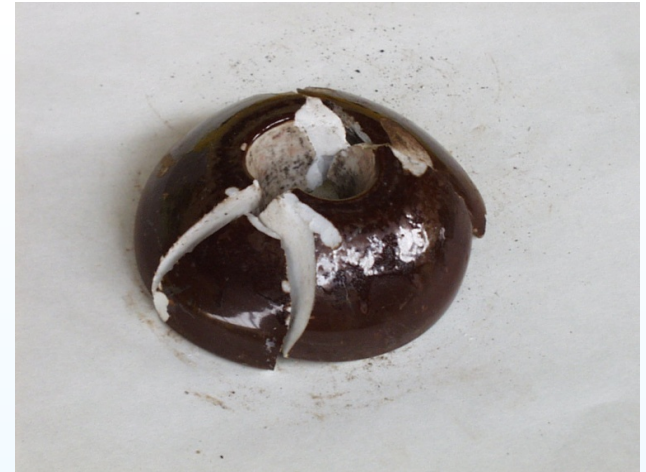
- *Spent/Disused Sealed Sources*
- Decree-Law 38/2007, of February 19th, which transposes the Directive 2003/122/EURATOM, establishes that for the use of radioactive sealed sources a license from IST must first be obtained;
- The licensee must pay a deposit for each radioactive sealed source;
- Once the licensee considers that the source is no longer to be used for the practice for which the authorization was granted, the licensee must arrange for return to the manufacturer or request a classification as RW for sending it for disposal at the PRR.

Current Practices

- *Spent/Disused Sealed Sources*
- The deposit is returned to the licensee, after proof that the source was returned back to the manufacturer, or reverts to the management fee charged by IST for its disposal at the PRR.
- This mechanism continues to present some advantages:
 - The licensee is encouraged to return the source to the supplier;
 - The licensee is encouraged to notify the authority once the source is no longer in use;
 - Portugal is able to effectively control the licensing of spent and disused sealed sources, contributing to the prevention of the occurrence of orphan sealed sources.

Current Practices

Portal detectors are in place at main ports, scrap yards, (non-radioactive) waste management sites and steel mills

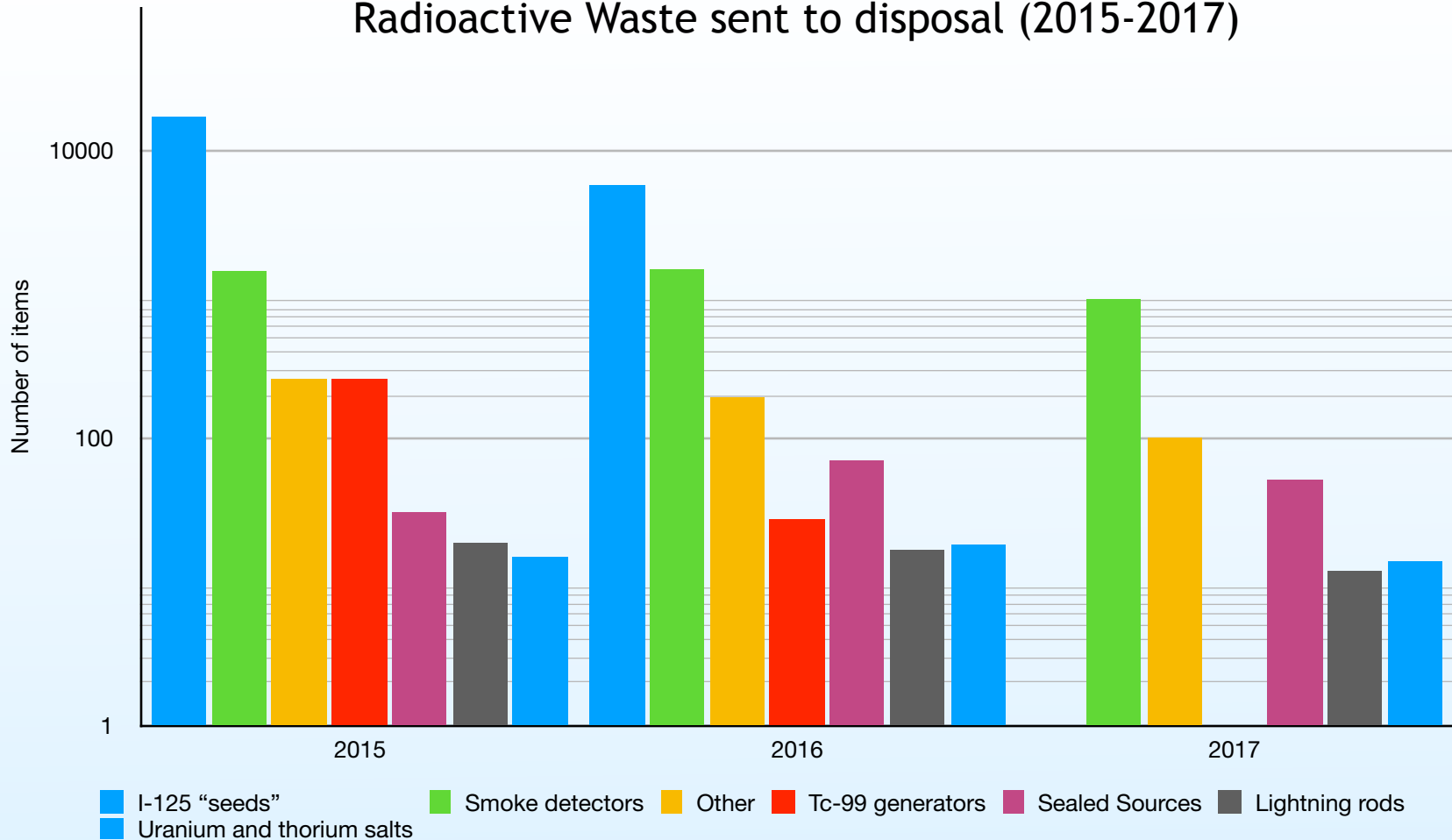


Current Practices

- *Storage and disposal*
- All the solid radioactive waste received from private and public entities from across the country is stored at the PRR disposal facility, after appropriate segregation and conditioning is carried out.
- Categorization of RW is set in the National Programme.

Current Practices

Radioactive Waste sent to disposal (2015-2017)



Current Practices

Radioactive Waste sent to disposal (2015-2017)

	2015	2016	2017
I-125 “seeds”	17469	5877	0
Smoke detectors	1469	1525	938
Other	265	193	101
Tc-99 generators	263	27	0
Sealed Sources	31	70	51
Lightning rods	19	17	12
Uranium and thorium salts	15	18	14

Current Practices

- All operators that manage and store radioactive waste or spent fuel have to provide COMRSIN with yearly inventories of radioactive waste they produced in the previous year.

iPad 18:05 81%
plataforma.comrsin.pt

2017

LISTA DE DECLARAÇÕES ANUAIS

EMPRESA	LINK
Universidade Nova de Lisboa	Ver Editar
Sindicato dos Bancários do Sul e Ilhas	Ver Editar
SGHL Sociedade Gestora do Hospital de Loures S.A.	Ver Editar
Quadrantes - Clínica Médica e Diagnóstico, Sociedade Unipessoal, Lda	Ver Editar
Nuclearmed – Instituto de Medicina Nuclear, S.A.	Ver Editar
Lusiadas, S.A.	Ver Editar
Instituto Português de Oncologia de Francisco Gentil, EPE	Ver Editar
Instituto Português de Oncologia de Coimbra, Francisco Gentil, EPE	Ver Editar
Instituto Nacional de Saúde, Dr. Ricardo Jorge	Ver Editar
Imaclear, Imagem Médica Nuclear	Ver Editar
Hospital Garcia de Orta, E.P.E.	Ver Editar
Hospital Escola Universidade Fernando Pessoa	Ver Editar
Hospital de Santa Maria - Porto	Ver Editar
Hospital das Forças Armadas	Ver Editar

Current Practices

iPad 18:09 80%
plataforma.comrsin.pt

DECLARAÇÃO ANUAL DE RESÍDUOS RADIOATIVOS

ANO:

2017

NOME DA EMPRESA:

RESÍDUOS SÓLIDOS:

PESO (TONELADAS):

0.64

RADIONUCLIDO(S):

TODOS

ATIVIDADE:

8.5×10^4 Bq

RESÍDUOS LÍQUIDOS:

VOLUME (METROS CÚBICOS):

0.45

RADIONUCLIDO(S):

TODOS

ATIVIDADE:

6.0×10^4 Bq

NÚM. GERADORES MO99 EM ARMAZÉM:

11

NÚM. GERADORES GE68 EM ARMAZÉM:

(sem dados)

NÚM. SEMENTES I125 EM ARMAZÉM:

232

NÚM GERADORES MO99 ENTREGUES AO FORNECEDOR:

(sem dados)

NÚM. GERADORES GE68 ENTREGUES AO FORNECEDOR:

(sem dados)

NÚM SEMENTES I125 LIBERADAS:

(sem dados)

LISTA GERADORES MO99 EM ARMAZÉM:

 [Registo_geradores_31_dez_2017.xlsx](#)

LISTA GERADORES GE68 EM ARMAZÉM:

(sem dados)

LISTA SEMENTES I125 EM ARMAZÉM:

 [Hospital](#)

LISTA GERADORES MO99 ENTREGUES AO FORNECEDOR:

(sem dados)

LISTA GERADORES GE68 ENTREGUES AO FORNECEDOR:

(sem dados)

LISTA SEMENTES I125 LIBERADAS:

(sem dados)

LIABILITY MATRIX

Overview matrix chart of Spent Fuel and Radioactive Waste Management

Type of Liability	Long-Term Management Policy	Funding of Liabilities	Current Practice/ Facilities	Planned Facilities
Spent Fuel	Return to supplier	State funds	- Operating pool	None
Nuclear Fuel Cycle Waste	N.A.	N.A.	N.A.	N.A.
Application Wastes	National disposal facility at PRR	State funds and fees collected from waste producers	On-site temporary storage Waste sorting and conditioning Waste minimization policy under the National Programme	None
Decommissioning Liabilities	Under discussion	State funds	Under discussion	Under discussion
Disused Sealed Sources	Return to supplier as disused source Classification as radioactive waste, followed by disposal at PRR facility	State funds	Return to supplier as disused source Classification as radioactive waste, followed by disposal at PRR facility	None

Planned Measures to Improve safety

- The National Programme for spent fuel and radioactive waste management, which has already been approved by the Government includes a set of measures aimed at improving the safety of these activities.
- The legal framework is being revised, aiming at consolidating regulatory competences in a new regulatory authority with assigned resources.
- The decision was made to request the IAEA for an IRRS mission, with the request being sent on 18/05/2018.
- The request for an ARTEMIS mission is being considered, but a decision will be made under the new regulatory framework.
- IST, as the Operator of the PRR is continuing to implement improvements in a schedule agreed with COMRSIN.
- Efforts are under way to ship the current LEU fuel at the RPI to the USA.

Current and future Challenges

- The legal framework is currently under revision, aimed at consolidating regulatory competences.
- Many regulations for technical matters will have to be created and/or updated in the near future, placing a heavy burden on the new regulatory body.
- Much of the expertise in nuclear sciences and technology in Portugal resides at the campus of IST where the RPI and the PRR are located.
- Staffing for the regulatory body that remains independent from the operator, will remain a difficult matter and will require actions.

Good Practices and Efforts

- The national policy for the licensing of sealed sources may be considered a good practice for some CP, given that users have to register the source and pay a deposit before they can purchase it.
- This deposit is returned to the licensee once the source becomes disused and is returned to the manufacturer or reverts as payment for the management fee charged by IST for its disposal in PRR.

Questions Raised about the 3rd National Report by Portugal

- During the Q&A period of the present review meeting 8 countries posted 23 questions.
- These Countries were France, Poland, Germany, USA, Canada, Slovakia, Switzerland and Spain.
- Questions were placed concerning the PRR facility, the regulatory body, the national programme/policy, the future of the present LEU fuel at the RPI, the decommissioning plans of the RPI itself or PRR.
- These questions were answered in a timely and, hopefully, straightforward manner.

Conclusions

- In the past few years Portugal was able to improve its compliance with EU Directives and both the Convention on Nuclear Safety and the Joint Convention, by setting up the legal framework for a regulatory body for the safety of nuclear installations, and the safe management, transportation and storage of SF and RW.
- These efforts are being continued through a revision and consolidation of the legal framework expected to be completed during the present year.



Thank you for your attention

Country Group 1 Presentation by Portugal

www.comrsin.pt

Report available at:

<http://www.comrsin.pt/en/joint-convention-on-the-safety-of-spent-fuel-management-and-radioactive-waste-management>

Pedro Rosário

pedro.rosario@comrsin.pt