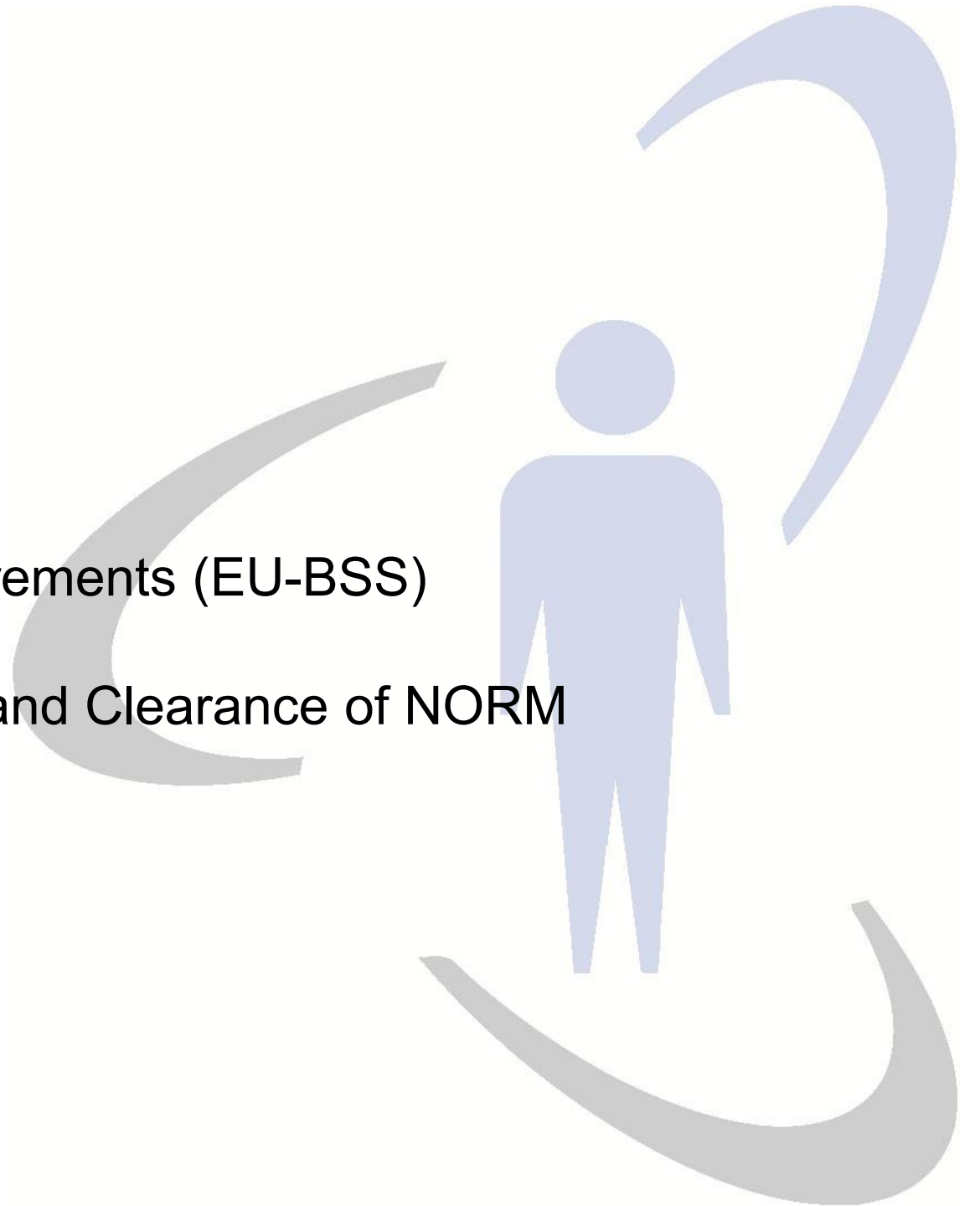


Exemption and Clearance applied to the Regulation of NORM across HERCA countries

Marta García-Talavera
on behalf of WG-NAT

1. Introduction – Basic Concepts
2. Directive 2013/59/Euratom Requirements (EU-BSS)
3. HERCA Guidance on Exemption and Clearance of NORM
4. Challenges



Application of the concepts of exemption and clearance to the regulation of NORM across HERCA countries

*M. García-Talavera (CSN), J. Popic (DSA),
P. Görts (ANVS), S. Pepin (FANC), K. Jones (PHE)*

WG-NAT

Reviewers: EC, ENA, IAEA

<https://www.herca.org/new-guidance-on-norm/>



1. Introduction – IAEA Safety Glossary

Exemption: The determination by a regulatory body that **a source or practice need not be subject to some or all aspects of regulatory control** on the basis that the exposure and the potential exposure due to the source or practice are too small to warrant the application of those aspects or that this is the optimum option for protection irrespective of the actual level of the doses or risks.

Clearance: **Removal of regulatory control** by the regulatory body from radioactive material or radioactive objects **within notified or authorized facilities and activities**

2. EU-BSS – Exemption and Clearance

EU–BSS (Directive 59/2013/Euratom): **General exemption/clearance activity concentration values** for NORM in **solid materials** of any amount:

- Natural radionuclides from the U-238- and Th-232 series: **1 kBq kg⁻¹**
- K-40: **10 kBq kg⁻¹**

- Countries allowed to define either more restrictive levels or higher levels for **specific applications** or for **specific segments** of the decay chains
- **General exemption and clearance criteria:** the dose increment, allowing for the prevailing background radiation from natural radiation sources, liable to be incurred by an individual due to the exempted practice is **of the order of 1 mSv or less in a year.**

2. EU-BSS – Exemption and Clearance

Article 25.3. Notwithstanding the exemption criteria laid down in Article 26, in situations identified by Member States where there is concern that a practice identified in accordance with Article 23 may lead to the presence of naturally-occurring radionuclides in water **liable to affect the quality of drinking water supplies or affect any other exposure pathways**, so as to be of concern from a radiation protection point of view, the competent authority may require that the practice be subject to notification.



JRC. Atlas of Natural Radiation

Annex VII. 2 e). The values in Table A, Part 2, may not be used to exempt the incorporation into **building materials** of residues from industries processing naturally-occurring radioactive material. For this purpose, compliance with the provisions of Article 75 shall be verified.

3. HERCA Guidance

HERCA WG-NAT: Questionnaire

Objective: Get an overview of how the member states interpret and apply the EU-BSS with regard to exemption and clearance applied to the regulation of NORM

Disseminate the information to help in implementation and foster harmonization

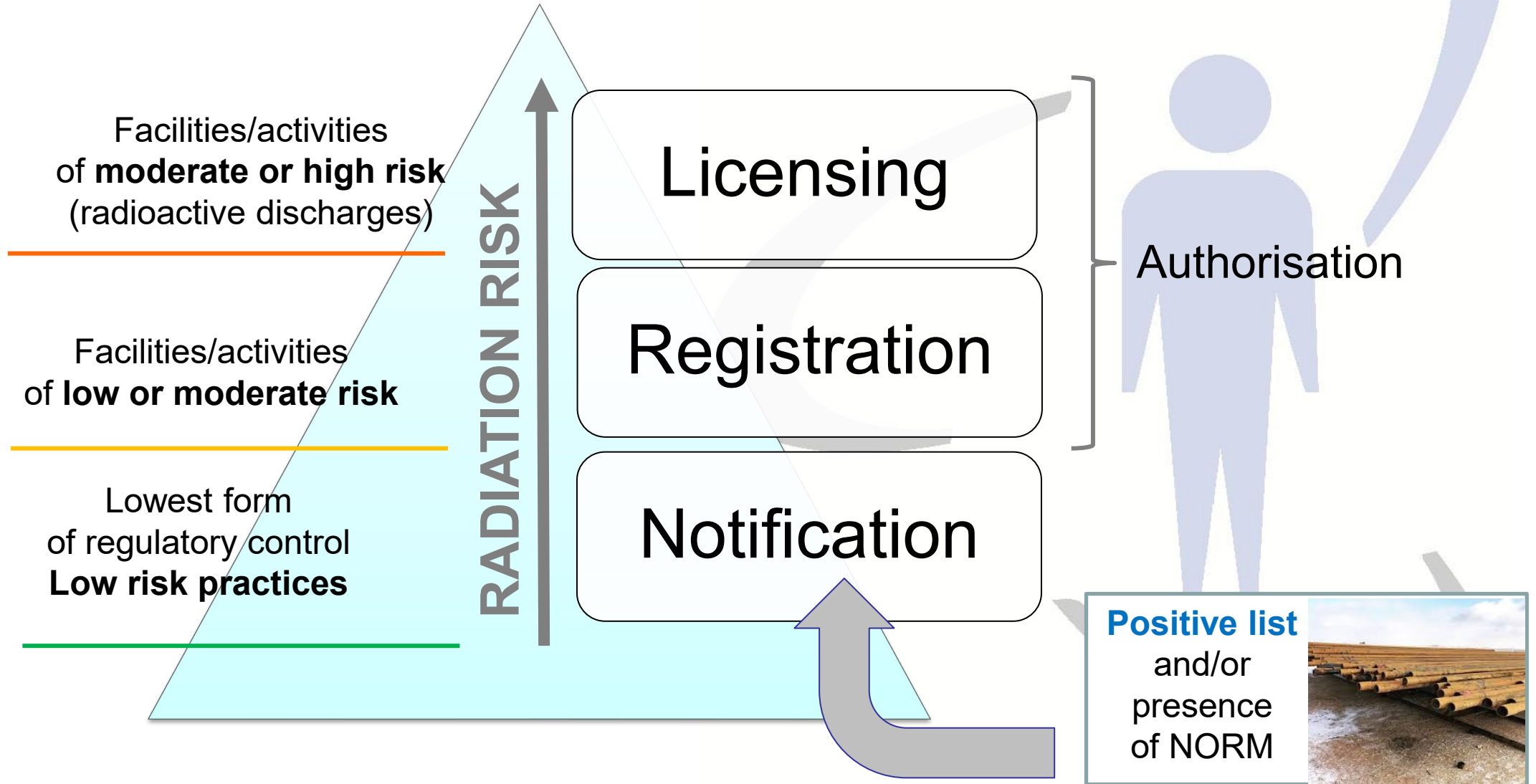
Twelve questions on:

- General exemption/clearance levels and criteria
- Use specific exemption and clearance
- Additional questions (e.g. classification of NORM waste and disposal)

20 (100%!) responses received from WG-NAT members

3. HERCA Guidance

Graded approach for NORM involving activities



3. HERCA Guidance

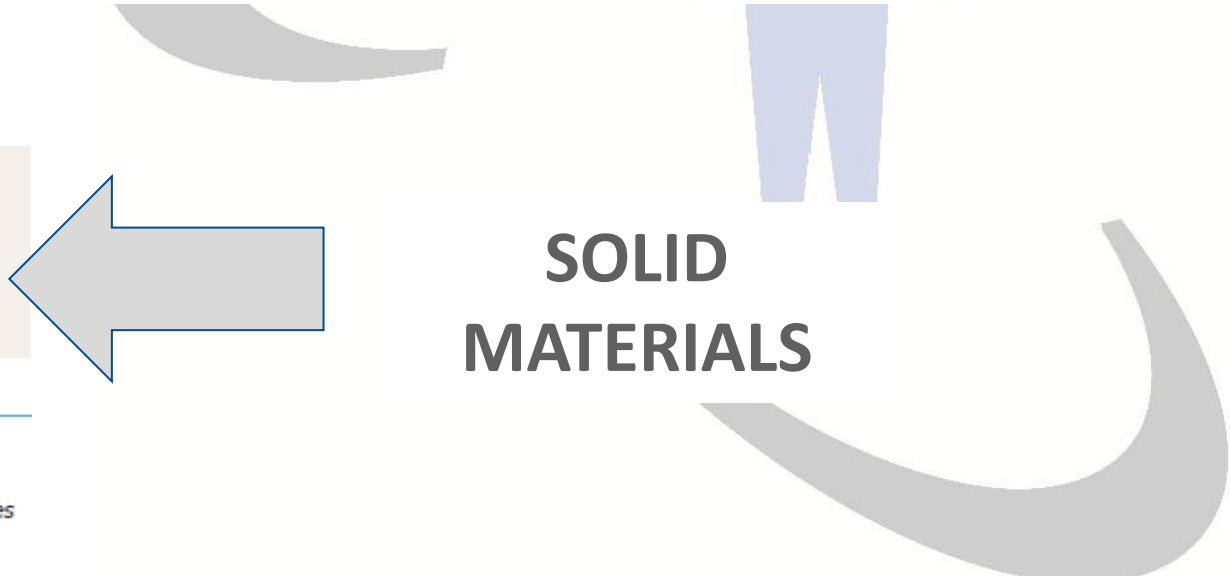
Table 1 General exemption/clearance levels for ²³⁸U- and ²³²Th-series radionuclides and ⁴⁰K in HERCA member countries

List of countries in alphabetical order	Generic exemption/clearance levels
Austria, Czech Republic, Finland, France, Hungary, Ireland, Lithuania, Luxembourg, the Netherlands, Poland, Romania, Slovenia, Sweden, Switzerland	1 kBq kg ⁻¹ for ²³⁸ U series radionuclides*; 1 kBq kg ⁻¹ for ²³² Th series radionuclides*; 10 kBq kg ⁻¹ for ⁴⁰ K
Denmark Norway	1 kBq kg ⁻¹ for ²³⁸ U series radionuclides**; 1 kBq kg ⁻¹ for ²³² Th series radionuclides**; 10 kBq kg ⁻¹ for ⁴⁰ K
Germany	1 kBq kg ⁻¹ for ²³⁸ U series radionuclides+; 1 kBq kg ⁻¹ for ²³² Th series radionuclides+;
Italy	1 kBq kg ⁻¹ for ²³⁸ U series radionuclides; except for ²¹⁰ Pb+, ²¹⁰ Pb: 5 kBq kg ⁻¹ ; 1 kBq kg ⁻¹ for ²³² Th series radionuclides; 10 kBq kg ⁻¹ for ⁴⁰ K;
UK	1 kBq kg ⁻¹ for ²³⁸ U _{sec} ⁺ , ²²⁶ Ra ⁺ , ²³² Th _{sec} ⁺ , ²²⁸ Ra ⁺ , ²²⁸ Th ⁺ , ²³⁵ U _{sec} ⁺ , ²²⁷ Ac ⁺ ** 5 kBq kg ⁻¹ for ²³⁸ U ⁺ , ²³⁴ U, ²¹⁰ Pb ⁺ , ²¹⁰ Pb, ²³² Th; ²³⁵ U ⁺ , ²³¹ Pa;** 10 kBq kg ⁻¹ for ²³⁰ Th;**
Belgium, Spain	RP 122, part II exemption/clearance levels

Table 2 Dose criteria for public exposure used by HERCA countries for exempting notified practices from authorisation

Austria, Belgium, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Lithuania, Poland, Romania, Slovenia	1 mSv a ⁻¹
Italy*, the Netherlands (on-site), Spain, UK	0.3 mSv a ⁻¹
Finland	0.1 mSv a ⁻¹
Luxembourg, the Netherlands (off-site)	0.01 – 0.03 mSv a ⁻¹
Norway, Sweden	All NORM involving practices subject to authorisation

* 0.1 mSv a⁻¹ if the drinking water pathway is affected.



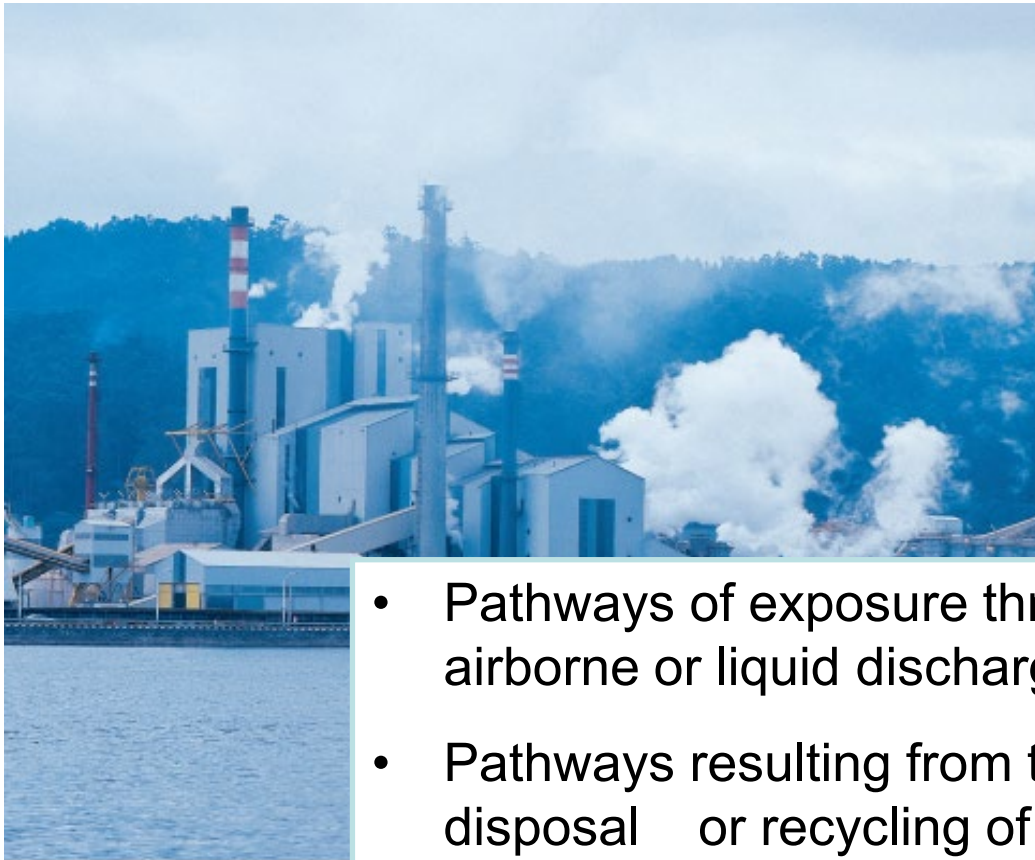
* Apply to individual isotopes.

** A summation rule applies (see formula 4.2) for mixtures of radionuclides.

+ A summation rules applies (see formula 4.1) for the U and Th decay series; Currently, there are no industries with relevant ⁴⁰K exposures identified in Germany, hence the exemption level for ⁴⁰K does not apply

3. HERCA Guidance

About half of the countries have specific provisions on their regulation to grant **specific exemption and specific/conditional clearance**






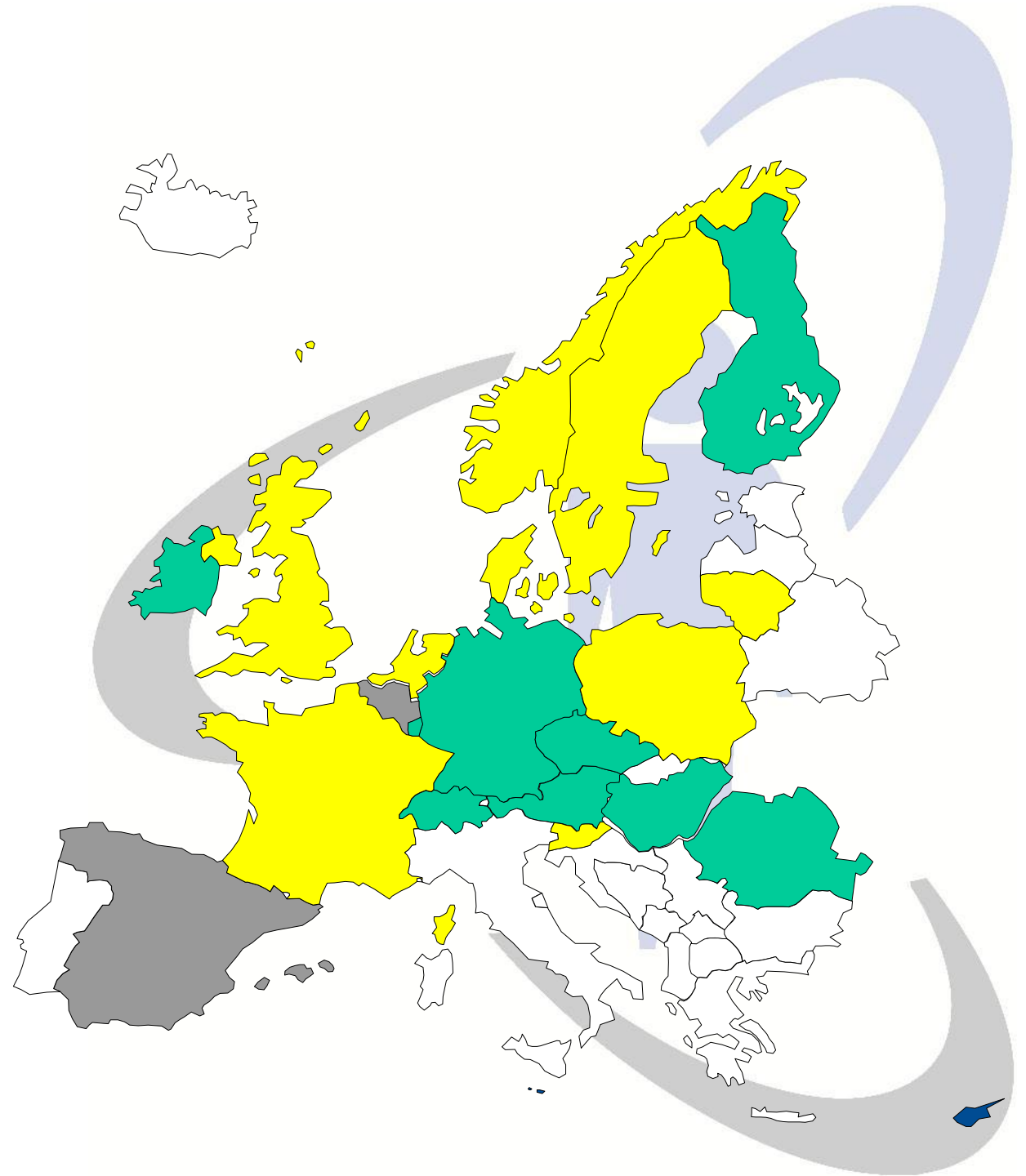
- Pathways of exposure through airborne or liquid discharges
- Pathways resulting from the disposal or recycling of residues

- Although the general exemption/clearance levels do not apply to liquid or airborne discharges, requirements on **discharge authorization**, including monitoring of public and environmental exposure, should be applied for liquid NORM discharges.
- Based on studies from Germany, Spain and UK: NORM discharges to air are likely of no concern

3. HERCA Guidance

RW vs. non RW

-  NORM waste = RW
-  NORM waste ≠ RW
-  Some NORM waste = RW
(based on dose criteria)



4. Current challenges

- **Fostering harmonization and facilitating industries' application of the system:**

Exemption/clearance activity concentration levels for

- Liquid waste and discharges
- Small quantities of NORM

- **Knowledge sharing:** Exchange of insights on the implementation of national positive lists





Thank you for your attention!

Contact: Marta García-Talavera

Head of the Natural Radiation Unit
Nuclear Safety Council (CSN)

mgtm@csn.es