



EU Regulatory framework for NORMs

Euratom Basic Safety Standards

**European Commission
Radiation Protection
Participation in EU-NORM 2012
Tallinn, 5-7 June 2012**

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CONTENT

- **BSS RECAST**
- **NORM EU REGULATORY FRAMEWORK**
- **ISSUES TO SOLVE**
- **CONCLUSION**





BSS RECAST

Several EU Directives were merged and consolidated:

- **Basic Safety Standards (workers, general public): 1996**
- **Patients/Medical Directive: 1997**
- **Informing the public on measures in the event of a radiological emergency: 1989**
- **Outside Workers: 1990**
- **High Activity Sealed Sources: 2003**





BSS RECAST

...Was a great opportunity to take on board natural radiation sources and especially:

- **Planned exposure from new sources or new pathways of exposure resulting from:**
 - ✓ *Industrial activities processing naturally occurring radioactive materials (NORM)*
 - ✓ *operation of aircraft*

- **Existing exposure:**
 - ✓ *INDOOR RADON - Recommendation 90/143/Euratom*
 - ✓ **RP 112 (1999): Radiological protection principles concerning the natural radioactivity of building materials (gamma exposure derived from ^{226}Ra , ^{232}Th and ^{40}K)**



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NORM EU REGULATORY FRAMEWORK

*BSS. Art. 24: **to identify** "practices" defined as "any activity that involves the operation or introduction of radiation sources or which alters exposure pathways and is managed as a planned exposure situation".*

*NORM industries to be identified taking into account the **annex V***

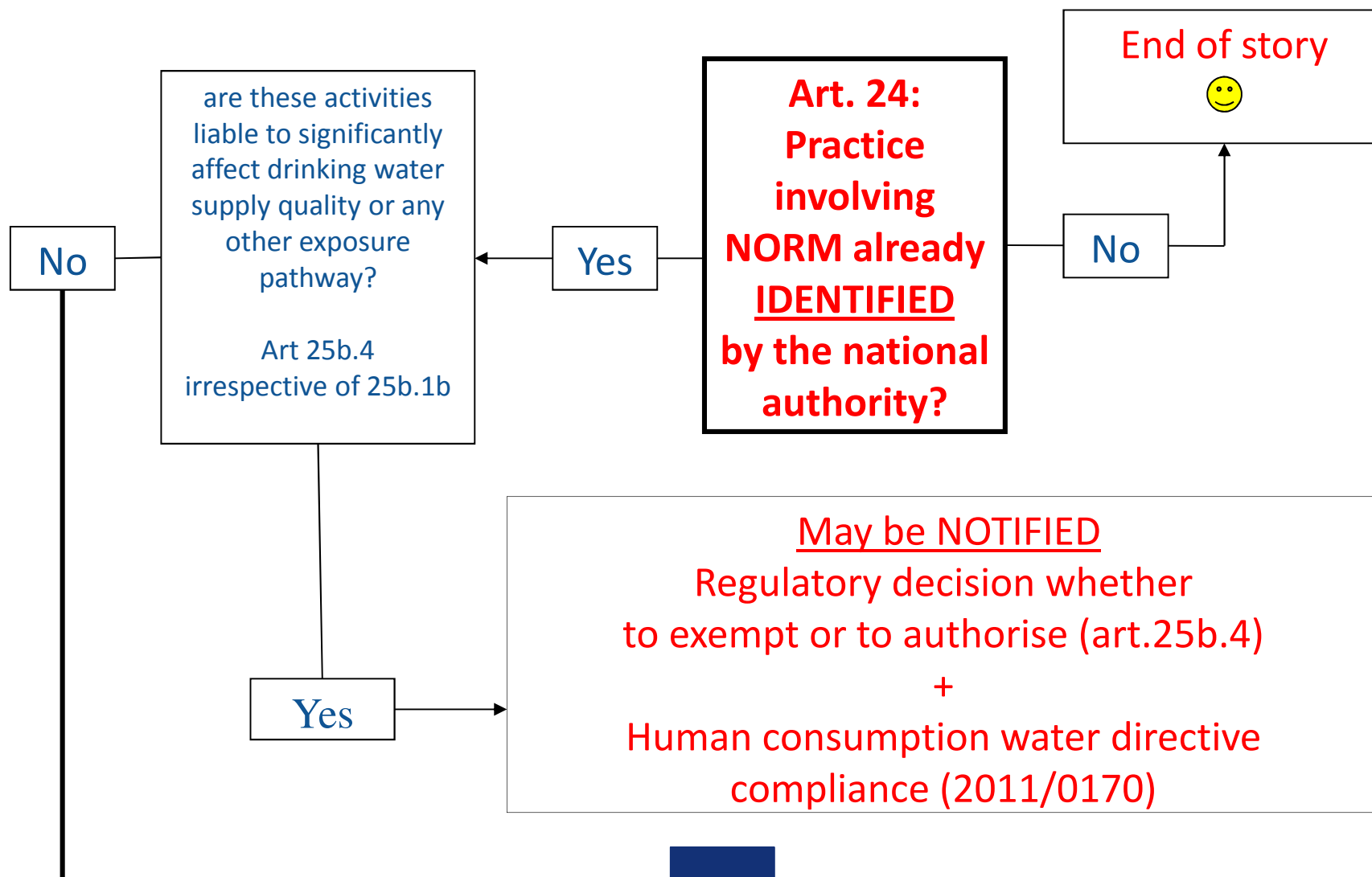




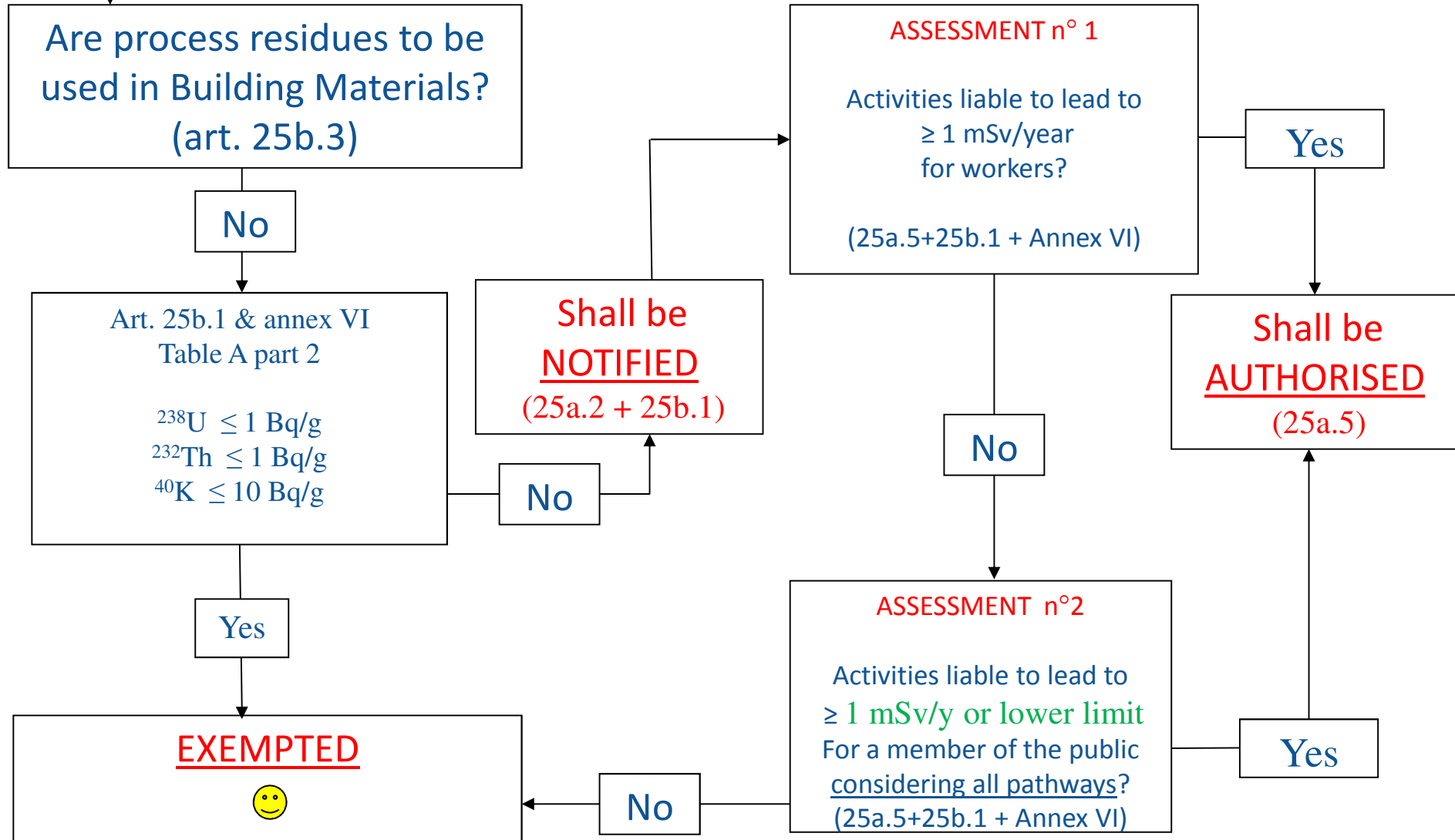
extraction of rare earths from monazite;
production of thorium compounds and manufacture of thorium-containing products;
processing of niobium/tantalum ore;
oil and gas production;
geothermal energy production;
TiO₂ pigment production;
thermal phosphorus production;
zircon and zirconium industry;
production of phosphate fertilisers;
cement production, maintenance of clinker ovens;
coal-fired power plants, maintenance of boilers;
phosphoric acid production;
primary iron production;
tin/lead/copper smelting;
ground water filtration facilities;
mining of ores other than uranium ore.

ANNEX V





New BSS





New BSS

Are process residues to be used in Building Materials?
(art. 25b.3)

Yes

Art. 29.4
Residue Dilution
TO BE AUTHORISED

Yes

Index to be calculated (TG31) :
$$I = C_{226Ra} / 300 + C_{232Th} / 200 + C_{40K} / 3000$$

(C in Bq/kg)

Index ≤ 1 for Bulk mat.
Index ≤ 6 for Superficial mat.

art.25b.3 + Annex VII

Identified Building Materials?
(art. 74.1a)
Annex XI

Yes

TO INFORM USERS (art. 25b.3)

- Of residues,
- And activity concentration

NOTIFICATION (art. 25b.3 & 74):

- Radionuclide concentrations

DOSE MODELING (art. 74 & TG32)
CLASSIFICATION & INDEX TO BE AVAILABLE

Dose < 1 mSv/y?

Yes

No

Building material to be AUTHORISED with conditions (74.6)

No

Yes

Building material to be **EXEMPTED** (Art 74.4) 😊

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To provide for guidance (1/3)

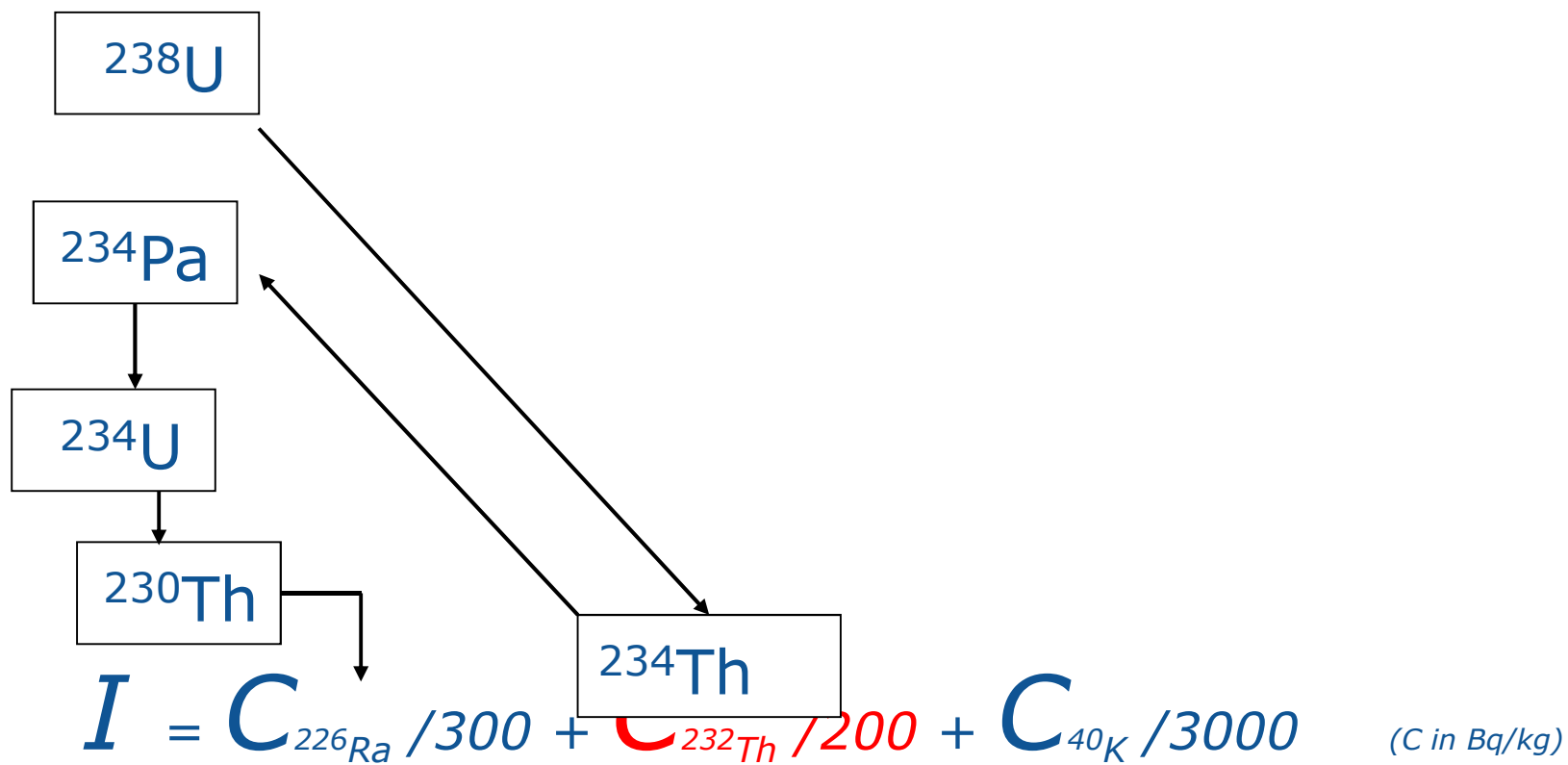
$$I = C_{^{226}\text{Ra}} / 300 + C_{^{232}\text{Th}} / 200 + C_{^{40}\text{K}} / 3000 \quad (\text{C in Bq/kg})$$

EC mandated CEN under Council dir. 89/106/EEC of Dec. 1988 to help standardize and harmonize activity concentration measurement and test standards.

"TG 31"



DIFFICULTIES?

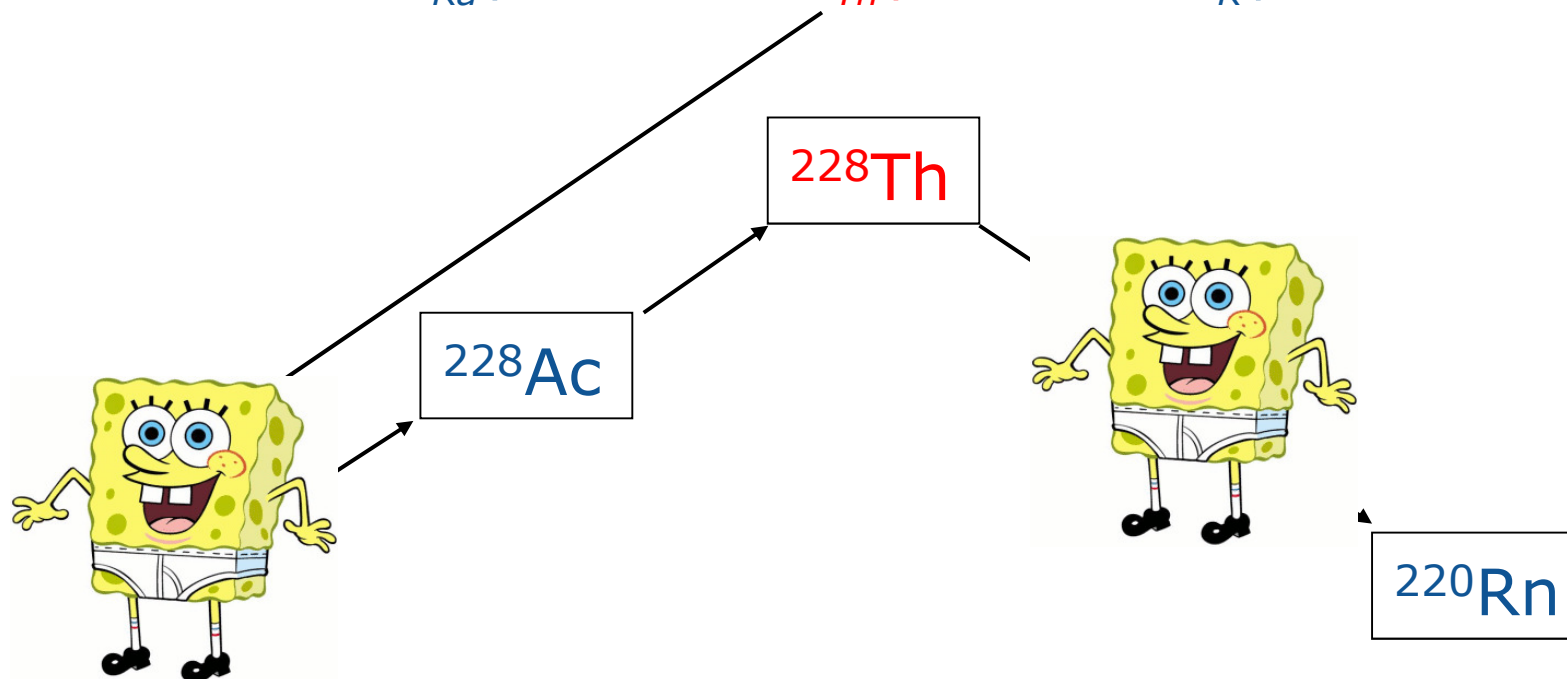




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Commission

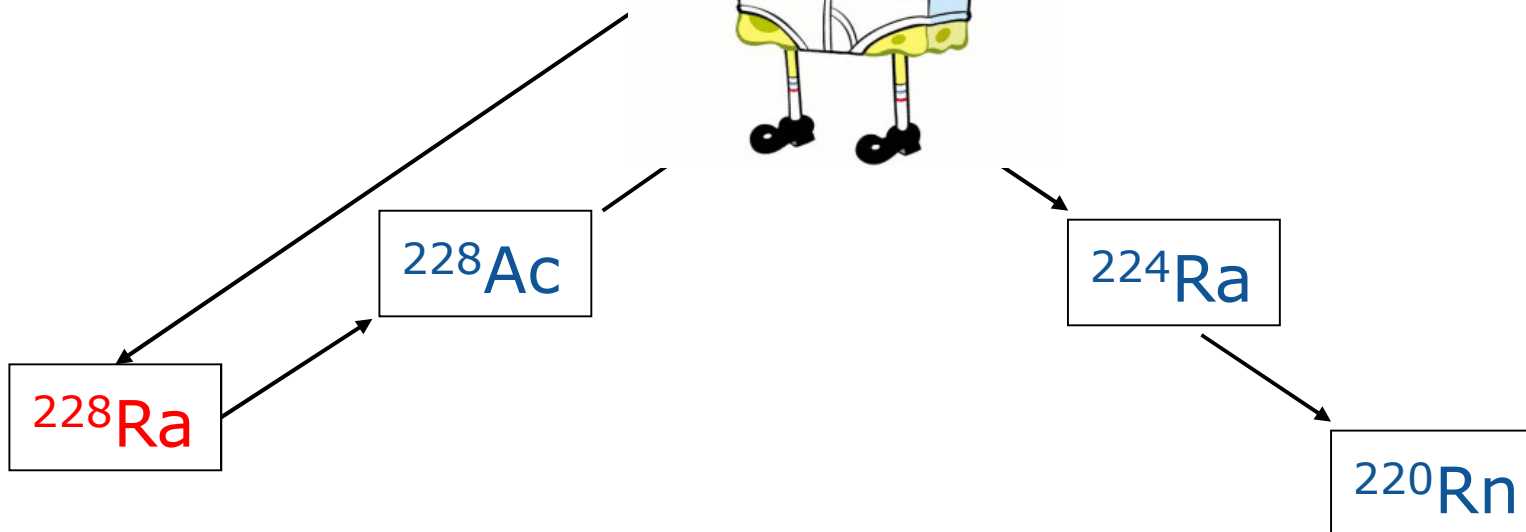
DIFFICULTIES?

$$I = C_{^{226}\text{Ra}} / 300 + \boxed{?} + C_{^{40}\text{K}} / 3000 \quad (C \text{ in Bq/kg})$$



DIFFICULTIES?

$$I = C_{226\text{Ra}} / 300 + C_{40\text{K}} / 3000 \quad (C \text{ in Bq/kg})$$



To provide for guidance (2/3)

Use	Categories	
	$A \leq 1\text{mSv}$	$B > 1\text{mSv}$
Bulk materials (1)	$I \leq 1$ Type A1	$I > 1$ Type B1
Superficial materials with restricted uses (2)	$I \leq 6$ Type A2	$I > 6$ Type B2

75.3 *"The competent authority shall ensure that identified types of building materials are classified in accordance with available **CEN standards**, on the basis of their intended use and activity concentration index as laid down in Annex VII."*

DIFFICULTIES?

Bulk
materials

Vs

Superficial
materials with
restricted
uses



To provide for guidance (3/3)

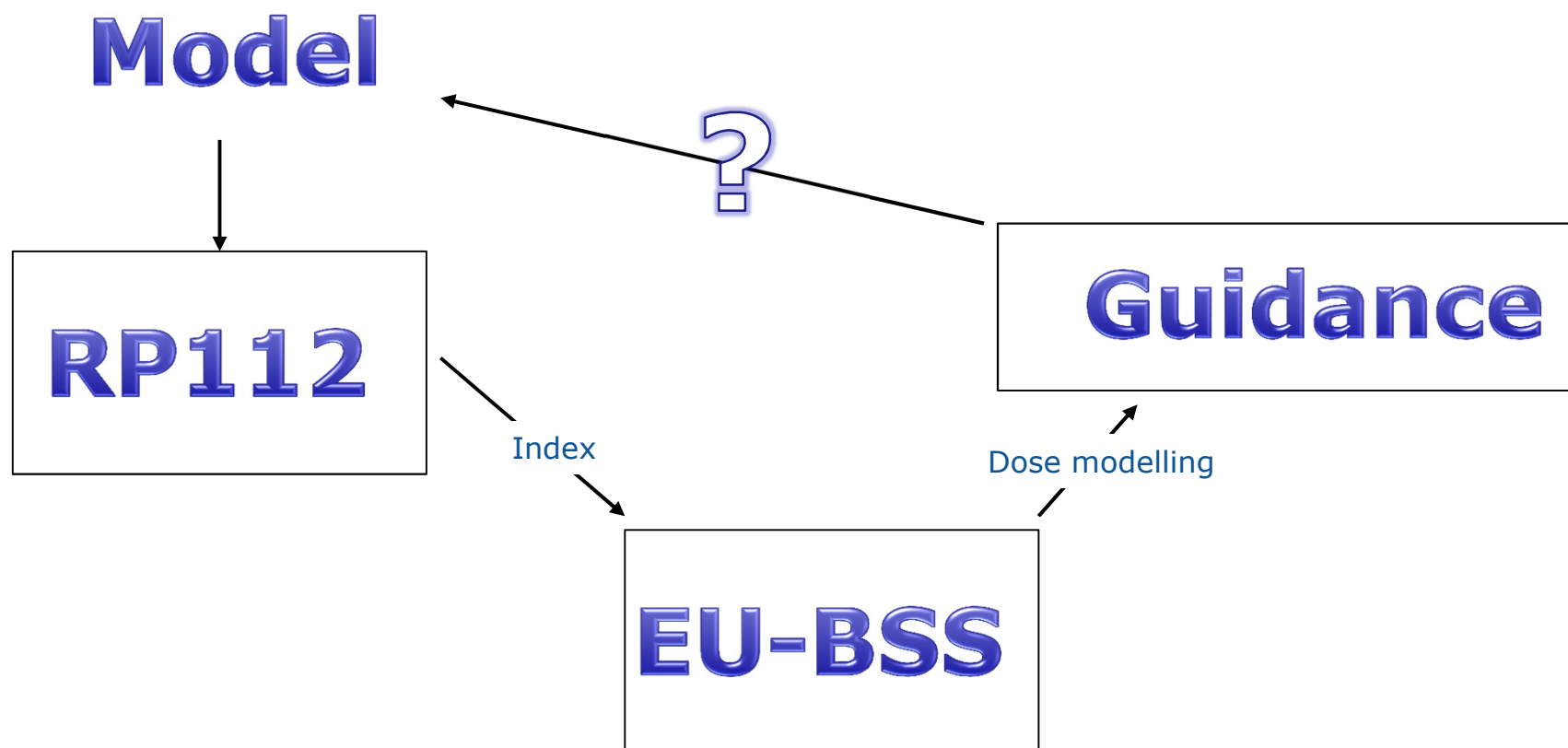
75.4 "The competent authority shall define, in accordance with available CEN standards, protocols for the assessment of expected doses from indoor external exposure from specific types of building materials, in excess of prevailing outdoor external exposure"

CEN is also mandated by the EC to work on this issue:

"TG 32"



DIFFICULTIES?



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CONCLUSION

- **NORM will be taken on board by the new EU-BSS for:**
 - Identified practices
 - Building materials

- **Related pieces of guidance are to be drafted:**
 - Activity concentration measurements (index)
 - Building material typology $I \leq 1$ or $I \leq 6$ ("bulk" or "superficial")
 - Dose modelling harmonisation for building materials



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