



# Revision of the European Basic Safety Standards with regard to NORM

Åsa Wiklund  
European Commission  
DG Energy and Transport  
Radiation Protection Unit



# Overview

- **Present EU BSS and EC guidance**
- **Revision of EU BSS with regard to NORM**



# Present EU BSS

- **The Council Directive 96/29/Euratom sets up a framework for the control of exposure of workers and members of the public to ionising radiation.**
- **Natural radiation sources are for the first time addressed explicitly (Title VII).**
- **Exposure to radon in dwellings or to the natural level of radiation are not included in the scope.**



## **EU BSS Title VII. Significant increase in exposure to natural radiation sources**

**Articles 40 and 41 establish a stepwise system in which the Member States are required:**

- to identify work activities which may be of concern**
- to set up appropriate means for monitoring exposure in these work activities**
- (as necessary) to implement corrective measures to reduce exposure**
- (as necessary) to apply radiation protection as prescribed in the rest of the BSS**



# EC Guidance Reports

- **Implementation of Title VII (RP 88)**
- **Reference levels for workplaces (RP 95)**
- **Principles for building materials (RP 112)**
- **Exemption and clearance (RP 122 part II)**
- **Effluents and dose control from EU NORM industries (RP 135)**
  
- <http://ec.europa.eu/energy/nuclear/radioprotection>



## EC RP 88. Recommendations for implementation of Title VII

- Identifies industrial processes which may give rise to exposures and therefore may be of concern
- Points out industries where exposures above 1 mSv to workers or public are likely or possible
- Sets a framework for the control of exposure of workers (1 and 6 mSv)
- Points out that article 47 of the EU BSS should also apply to work activities involving natural radiation (protection of the environment and the population)



# EC RP 95. Reference levels for workplaces

- **Offers a technique for screening and categorising relevant NORM industries based on dose criteria**
- **Introduces a graded approach:**
  - Below 1 mSv/year no regulation necessary
  - 1-6 mSv/year low level of regulation
  - 6-20 mSv/year high level of regulation
  - Above 20 mSv/year a full individual dose assessment is needed but the process is likely not be allowed to continue
- **Converts doses to activity concentrations using different pathways and exposure situations**



## **EC RP 112. Radiation protection principles for building materials**

- **Gamma dose criterion for control is 0.3 – 1 mSv / year (in excess of outdoor gamma dose)**
- **Higher doses than 1 mSv / year should only be accepted in exceptional cases where materials are used locally.**
- **Exemption level: Building materials should be exempted if the gamma radiation increases the annual dose by 0.3 mSv at the most.**
- **Suggests an activity concentration index for identifying materials of concern**





## **EC RP 122 Part II. Application of the concepts of exemption and clearance**

- **Exemplifies industries which may be of concern**
- **Indicates dominant radionuclides and typical activity concentrations**
- **Proposes a criteria for exemption and clearance at an annual effective dose increment of 0.3 mSv/y**



## **EC RP 135. Effluent and dose control from EU NORM industries**

- **Proposes screening levels in GBq/y for NORM discharges to the sea, air or river**
- **Screening levels correspond to dose criteria 10, 100 and 300  $\mu$ Sv**
- **Study of the regulatory framework in MS with regard to NORM**



# Implementation of Title VII

- **Directive 96/29/Euratom was issued 1996, implemented in Member States by 2000.**
- **Large degree of flexibility: Member States identify which work activities are of concern**
- **Leaves considerable room for Member State interpretation**
- **Latest survey of implementation in Member States (RP 135) showed:**
  - Different approaches in different countries
  - Benchmark exercise got different responses



# Revision of EU BSS / NORM

## More binding requirements on:

- Natural radiation sources
- Criteria for clearance
- **Review of regulatory control system**
  - Graded approach to regulatory control
- **Allow for ICRP/IAEA**
- **Build on material in EC guidance reports**
- **Article 31 Group of Experts Working Parties**
  - WP Natural Sources (NORM / Radon)



# Work activities

- **List of work activities which will require regulatory consideration, e.g.:**
  - Oil and gas production
  - Zircon and zirconia industry
  - Extraction of rare earths from monacite
  - Coal-fire power plants
  - Primary iron production
  - Ground water treatment
- **Member States should be able to add activities which may require regulatory attention**



# Graded Approach

- **NORM industries are regarded as planned exposure situations**
- **WP Graded Approach**
  - NORM as well
  - Exemption, notification, registration and licensing
- **Gives regulators a possibility to adjust the regulatory control according to risks**



# Values and levels

- **Activity concentrations above 1 Bq/g (10 Bq/g for K-40)**
  - Higher values for segments of decay chain (0.3 mSv)  
(not including drinking water and radon pathways RP 122 part II)
  - Exclude recycling in building materials (0.2-0.5 Bq/g)  
(include RP 112)
  - Lower values where appropriated in specific cases
- **Assessment of doses to workers**
  - 1-6 mSv: keep under review / ALARA
  - > 6mSv: controlled areas



# Public exposure from discharges and disposal of wastes and residues

- **Assessment of effluents and disposal of waste**
  - Constraint of 0.3 mSv
  - Recycling rather than radioactive disposal
  - Dilution strategy mentioned





# Revision of EU BSS: Conclusion

- **Important programme of work**
  - Allow for ICRP
  - Contribute to IAEA BSS
- **End-point:**
  - More rigor/uniformity
  - More flexibility: graded approach
- **Time horizon: 2009**
  - Council 2011; national 2015?