

# The European Union Basic Safety Standards on Natural Radiation Sources

E. Henrich and A. Janssens

*European Commission, DG TREN.H.4, Luxembourg*

## 1. Abstract

Title VII of the Basic Safety Standards Directive (European Directive 96/29/EURATOM) deals with 'significant increase in exposure due to natural radiation' and applies to 'work activities ... within which the presence of natural radiation sources leads to a significant increase in the exposure of workers or of members of the public, which cannot be disregarded from the radiation protection point of view'. The Member States have to identify work activities that may be of concern. In particular, work activities with exposure to radon and thoron decay products or external gamma radiation, work activities involving operations with NORM, and aircraft operation are mentioned.

The presentation summarises how this part of the BSS directive has been implemented in Member States and will shortly discuss options and possibilities that may arise in the future.

## 2. Background

On 13 May 1996, Council Directive 96/29/EURATOM laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (the 'Basic Safety Standards Directive', BSS, published in the Official Journal of the European Communities in No L 159/1-114 on 29 June 1996) came into force. Deadline for implementation in the Member States was 13 May 2000.

Title VII of this Directive, i.e. Articles 40 to 42 (literal citation see Appendix), deals with 'significant increase in exposure due to natural radiation' and applies to 'work activities ... within which the presence of natural radiation sources leads to a significant increase in the exposure of workers or of members of the public, which cannot be disregarded from the radiation protection point of view'. The Member States have to identify work activities that may be of concern. The BSS mentions in particular, work activities with exposure to radon and thoron decay products or external gamma radiation, work activities involving operations with NORM, and aircraft operation.

Thus, the BSS does not apply to exposure against radon in dwellings (for this case, Commission Recommendation 90/143/EURATOM on the protection of the public against indoor exposure to radon has been issued) and to exposure against natural radionuclides in drinking water (instead the following legislation applies: the Council Directive 98/83/EC on the quality of water intended for human consumption – the Drinking Water Directive, DWD, which probably will be supplemented by a Commission Directive in its own right as regards radionuclides – and the Commission Recommendation 2001/928/EURATOM on the protection of the public against exposure to radon in drinking water supplies).

Already before the 'new' BSS came into force several studies were dealing with NORM (mostly in the 12 Member States of then) and were published by the European Commission (EC, 1996; EC, 1997a; EC 1997b).

### **3. Situation as of now**

A report (EC, 2004) has been published by the European Commission on the Implementation of NORM related matters in the (15 'old') EU Member States as RP135 (part I and II) in the Radiation Protection Series. This report has formed the basis for two summary papers (Ryan *et al*, 2004a; Ryan *et al*, 2004b). One of the items that are mentioned in RP135 and which is still unresolved, is how to treat NORM industries with regard to radioactive effluents: A screening methodology has been designed to decide if regulatory control could be necessary (or if additional information is needed to find out) but agreement is still missing at which dose criterion to set the threshold: There was some discussion using an annual dose in the range of 10 to 300  $\mu$ Sv but at the moment no harmonised approach seems to be developed (for a summary of the methodology see Henrich *et al.*, 2004). The situation in the 'new' EU Member States seems to be rather varying from country to country (some having quite extensive legislation) and has not yet been studied in detail and summarised.

Since the adoption of the BSS and while preparing for the implementation of its provisions in national legislation, some Member States have considered that there was merit in using the concept of reporting and prior authorization and its corollaries, exemption and clearance, laid down in Title III of the Directive for practices, to work activities (i.e. with regard to natural exposures) as well. A publication, adopted by the Group of Experts established under Article 31 of the EURATOM Treaty (EU, 1957), gives guidance on how Member States could use these concepts and on which general clearance levels would be appropriate (EC, 2002).

### **4. Recent developments**

Since 2005 a network (NORMnet) is operated on behalf of the European Commission, Radiation Protection Unit. The objective of this website is to help NORM stakeholders to communicate, share knowledge, identify problems and propose solutions to numerous issues in the industry. It is interactive; and the members are encouraged to upload documents, links and anything else they feel may be of use to others. It is hosted by the European CIRCA system and can be reached via the Radiation protection web site [http://europa.eu.int/comm/energy/nuclear/radioprotection/index\\_en.htm](http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm) or directly by <http://www.normnet.eu.com>. Registration is managed by sending an appropriate e-mail to [Kathy.Hillis@nnc.co.uk](mailto:Kathy.Hillis@nnc.co.uk).

It is foreseen that the Group of Experts, which has been (newly) appointed according to Article 31 of the EURATOM Treaty (EU, 1957) will discuss any proposals for a 'new' BSS and thus also will discuss any new developments with regard to treating radiation exposure to natural sources.

It is also foreseen that Verification Visits according to Article 35 of the EURATOM Treaty (EU, 1957) will be performed in the future with a view to verify monitoring of the impact of NORM industries.

## 5. References

EC, 1996: European Commission, Directorate-General Environment, Nuclear Safety and Civil Protection: Approaches for regulating management of large volumes of waste containing natural radionuclides in enhanced concentrations. *Nuclear science and technology, EUR 16956, Luxembourg, 1996.*

EC, 1997a: European Commission, Directorate-General Environment, Nuclear Safety and Civil Protection: Current practice of dealing with natural radioactivity from oil and gas production in EU Member States. *Nuclear science and technology, EUR 17621, Luxembourg, 1997.*

EC, 1997b: European Commission, Directorate-General Environment, Nuclear Safety and Civil Protection: Materials containing natural radionuclides in enhanced concentrations. *Nuclear science and technology, EUR 17625, Luxembourg, 1997.*

EC, 2002: European Commission, Directorate-General Environment: Practical Use of the Concepts of Clearance and Exemption - Part II: Application of the Concepts of Exemption and Clearance to Natural Radiation Sources. *Radiation Protection Publication RP 122, Part II, Luxembourg, 2002.*

EC, 2004: European Commission, General Directorate Energy and Transport: Effluent and Dose Control from European Union NORM Industries – Assessment of Current Situation and Proposal for a Harmonised Community Approach. *Radiation Protection Publication RP 135, Vol. 1 and 2, Luxembourg, 2004.*

EU, 1957: Treaty Establishing the European Atomic Energy Community (EURATOM Treaty). *Rome, 1957.*

Henrich *et al.*, 2004: Henrich, E., Janssens, A., Ryan, T.P., Daroussin, J.L., Smith, K.R., Gerchikov, M.Y., Hillis, Z.K., van Weers, A.: The Rapid Identification of NORM Discharges Requiring Regulatory Control – A Possible Screening Methodology. *Proceedings NORM IV Conference, 16 – 21 May 2004, Szczyrk, PL, 2004.*

Ryan *et al.*, 2004a: Ryan, T.P., Janssens, A., Henrich, E., Daroussin, J.L., Hillis, Z.K., Meijne, E.I.M.: Industries Giving Rise to NORM Discharges in the EU – A Review. *Proceedings NORM IV Conference, 16 – 21 May 2004, Szczyrk, PL, 2004.*

Ryan *et al.*, 2004b: Ryan, T.P., Janssens, A., Henrich, E., Daroussin, J.L.: New Regulatory Developments and Guidance in the EU with regard to NORM. *Proceedings NORM IV Conference, 16 – 21 May 2004, Szczyrk, PL, 2004.*