

# **Final Guidelines for MS Reports to the Waste Directive**

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**ENSREG Guidelines regarding Member States Reports as required under Article 14.1 of COUNCIL DIRECTIVE 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste**

## I Introduction

1. These Guidelines were developed by the European Nuclear Safety Regulators Group (ENSREG) to assist Member States to fulfil the requirement of Article 14.1 of *Council Directive 2011/70/Euratom* (hereinafter called the *Waste Directive*). Their purpose is to provide guidance to Member States regarding information and material that it may be useful to include in the reports required under Article 14.1 (“National Reports”), and to establish a unified structure for reporting. These Guidelines are intended to be read in conjunction with the text of the Directive.
2. In the opinion of ENSREG, the reporting requirement under Article 14.1 of the Directive should demonstrate how the Member States are addressing the objectives of the Waste Directive by fulfilling their obligations under the Directive (“implementing the Directive”) and illustrate their national approaches.
3. These Guidelines do not discuss other reporting obligations in the Directive such as reporting on the transposition of the Waste Directive, reporting on the outcomes of peer reviews or notifying national programmes to the Commission.
4. The Guidelines, by providing a common structure on reporting, are also intended to enable the Commission to meet its obligations under the requirements of Article 14.2 of the Directive to submit a report to the Council and to the European Parliament on progress made with the implementation of the Directive including in the long-term context, and an inventory of radioactive waste and spent fuel present in the Community’s territory and the future prospects.
5. These Guidelines have no legal status neither do they set out to interpret, modify or extend the obligations of the Waste Directive, the text of the Directive prevails. The use of these Guidelines is voluntary and Member States have the right to submit their National Report with the form, length and structure they believe necessary to describe how they comply with the obligations under the Directive.
6. In order to manage the resource requirements associated with the delivery of the National Reports, Article 14.1 directs Member States to take advantage of reporting under the Joint Convention on the Safety of Spent Nuclear Fuel Management and on the Safety of Radioactive Waste Management (i.e. in regards to optimising the use of resources). However, it should be noted that while the Waste Directive and Joint Convention have the same overall objective of the safe management of spent fuel and radioactive waste, they have different addressees and scopes. While the Joint Convention focuses on safety and is more descriptive, the Waste Directive is both safety and policy oriented including policy establishment and implementation through the national programme. As a result, the National Reports to the Joint Convention are more detailed and are prepared for the purpose of the Peer Review Meetings, while those under the Waste Directive are about the implementation of the Directive i.e. to demonstrate to the Council and to the European Parliament the progress made including in the long-term context.
7. A comparison of the Articles of the Waste Directive and those of the Joint Convention has been carried out and is provided in Appendix 1. This comparison demonstrates that

while there are some similarities in the obligations under the Waste Directive and Joint Convention, there are also some fundamental differences. For example, the requirements under the Directive for: an organisational framework, coordination between the relevant competent bodies (Article 5(1)); national programmes for the implementation of national policy (Article 5(1)(a)); public information and participation (Article 5(1)(g)).

## **II Overarching suggestions**

### **A Basic considerations**

8. The basic concept of the Waste Directive is for Member States to ensure the responsible and safe management of spent fuel and radioactive waste in order to: avoid imposing undue burdens on future generations; ensure the protection of workers and the general public against the dangers arising from ionising radiation; ensure the provision of public information and participation as appropriate.
9. Article 14.1 of the Directive requires Member States to report, on a three yearly cycle, on how they have implemented the obligations of the Directive including progress made on implementing their national programme. This includes reporting on changes since the last National Report while still reporting on the entirety of the obligations of the Directive.
10. Taking into account that:
  - there is a need for the Commission to prepare its own report, based on Member States' reports, which is facilitated if the National Reports are in as similar a format as possible;
  - there are related requirements of different hierarchical levels in the Directive, in particular at the levels of national policy, national framework and national programme. Therefore there is the need to ensure that information is provided in a consistent manner (e.g. in respect to the financial aspect information is required under the general principles (Art.4. 3(e)) and the national framework (Art. 5.1(h)), as well as a specific provision (Art. 9) and a mandatory element of the national programme (Art. 12.1(h and i));
  - the spent fuel and radioactive waste facilities that are addressed by both the Waste Directive and the Nuclear Safety Directive (Council Directive 2009/71/Euratom) should not be subject to disproportionate or unnecessary obligations, especially as regards reporting. Therefore, all facilities where spent fuel and radioactive waste are managed or disposed of, should be reported in the National Reports under the Waste Directive;
11. The National Report should:
  - address in due detail all aspects of the implementation of the obligations (in Articles 4 to 12 inclusive) of the Directive to enable the Commission, Council and Parliament to form a complete and comprehensive understanding of Member States' compliance;
  - be of a detail commensurate with the scale of the spent fuel and radioactive waste management challenge to a Member State i.e. apply a graded approach as specified in the Directive.
  - be both sufficiently comprehensive to permit a genuine evaluation of the extent of fulfilment of each obligation and sufficiently concise to make both writing and reviewing the National Report practicable;
  - provide comprehensive information based on the actual situation, and progress made;
  - follow an article-by-article approach;
  - provide, where appropriate, examples and/or an assessment of how the Member State is complying with a particular Article.

- clearly distinguish between the requirements stipulated in the general principles (national policy), national framework and national programmes and the status of implementation of these requirements;
- clearly distinguish between implementation at the national, regulatory and licence holder levels;
- be written in such a way as to make it comprehensible for an informed non-expert audience and assist translation; and
- contain detailed information and supporting data in annexes as appropriate.

## ***B General suggestions on the structure, format and content of the National Report***

### **Structure and Format**

12. The National Report should be a stand-alone report, rather than a report restricted to changes and updates only, to avoid the need for readers to reference and review earlier reports.
13. It is considered good practice to commence each article within the National Report with the text of that Article within the Directive to enable the reader to understand the purpose of the Article without referencing the original Directive or any subsequent modifications.
14. All information contained in the National Report should be explicitly connected to a specific Directive Article where possible or clear references should be used in case of merged information. The information should be structured in accordance with the subparagraphs within each Article, where appropriate. Detailed suggestions are contained in Section III.
15. The total number of pages of a National Report should not exceed a reasonable amount. For a Member State with nuclear installations, it is suggested that this amount may be approximately 50 pages covering both spent fuel and radioactive waste, excluding any necessary annexes. For Member States without nuclear installations or with a small nuclear power programme this amount may be considerably less.
16. The National Report should have a table of contents and, if necessary, a list of acronyms, definitions or abbreviations should be included.
17. In order to facilitate the handling of National Reports, they should be prepared in the format A4 (297mm x 210mm), and should be submitted electronically to the Commission as a single PDF format file.
18. It is recommended that the reports be made public, where there is no conflict with security and proprietary information.
19. Reports submitted to the Commission must be written in one of the official languages of the EU. To avoid translation errors it is recommended to send as well a courtesy translation in English.

### **Content**

20. Each National Report should contain an Introduction and Summary as described in Section III.
21. The National Report should focus on describing the specific measures the Member State is implementing to address the obligations of the Directive.
22. Duplication within the National Report should be avoided, for example, by cross-referencing.
23. If it is considered necessary to direct the reader to additional information, without undermining the stand-alone nature of the report, the National Report may make reference to other publicly available reports that have a bearing on the content of the

National Report. If feasible, any such references should be to publications available on the internet e.g. national programmes as notified to the Commission, National Reports under the Nuclear Safety Directive, the Joint Convention and the Convention on Nuclear Safety.

24. While the practice of supplementing National Reports with appropriate explanatory data in annexes is encouraged, the main body of the National Report itself should nevertheless contain all the key elements of information necessary to demonstrate how the Member State meets the obligations of the Directive.
25. Reports after the first National Report, while still being a stand-alone report, should highlight updated information on matters covered in the previous report(s), noting significant changes and progress relevant to the Directive.
26. Member States are also encouraged to address international review mission results, where applicable and appropriate, in their National Report.

### ***C Reporting on inventories***

27. While the inventories of SF and RW are the basis of the national programmes, Article 14 of the Waste Directive requires regular reporting of the inventories.
28. In order for the Commission to deliver consistent information about the inventory of radioactive waste and spent fuel to the Council and European Parliament, Member States are recommended to utilise a unified radioactive waste classification system in their National Reports.
29. It is proposed that the IAEA Classification of 2009 (IAEA Safety Guide "Classification of Radioactive Waste" GSG-1, 2009) is used as the basis for the unified system. Guidance on how to transform national classification schemes into the unified system is provided in Appendix 2.

Note: It is suggested that for the purposes of clarity that Member States provide the Commission with information on how they have translated their national classification systems into the unified system. It should be noted that for the purposes of notifying the national programme, Member States should use their national classification systems.

### ***D Member States without any activity related to nuclear fuel or with a small nuclear programme***

30. Member States without nuclear installations or with a small nuclear programme should take a graded approach when following the structure of Section III, addressing the relevant Articles of the Directive as deemed appropriate to demonstrate implementation, including in the long-term context, of the Directive.

## **III Detailed suggestions on the content of the National Report**

### ***A Introduction***

31. The Introduction in the National Report should start with an overview of the management of spent fuel (SF) and radioactive waste (RW) within the Member State (MS). The overview should include:
  - the current and potential sources of SF and RW (e.g. nuclear production, medical and industrial applications), as well as historical or legacy ones; and

- the regulatory bodies and implementing organisations involved in the responsible and safe management of SF and RW.
32. The Introduction should also outline:
- the national policy on SF and RW management;
  - the national framework;
  - the national programme for the management of SF and RW, and, after the first report, the progress made on its implementation;
  - the main SF and RW management and safety issues addressed in the National Report;
  - the last peer review and the (next) planned (if no peer review was carried out, this should be stated), and the last self-assessment carried out.;
33. The Introduction should also include explanations on the process to prepare the National Report .

## ***B Summary***

34. The Summary in the National Report should serve as a major information source on the progress made in the management of SF and RW by summarising the developments since the previous National Report. The section should focus on the achievements in implementing the national policy through the national programme and on significant changes in the national policy, framework and programme.
35. The section should address important issues relevant to the Directive that have been identified in the Member States' previous National Report or that have arisen since the previous Report, including those identified in peer reviews.

## ***C Reporting article by article***

36. The following paragraphs provide useful examples of issues that Member States might address, where appropriate, under each Article. The paragraphs are structured in accordance with the given Articles and sub-paragraphs of the Directive. These examples are not intended to exclude other issues that might also be relevant to demonstrate compliance with the obligations of the Directive. Reference is also made, where appropriate, to the associated Recital(s) which set(s) out the intention of the Article and as such provide further guidance.

**Article 4 – General principles****Article 4.1**

*Member States shall establish and maintain national policies on spent fuel and radioactive waste management. Without prejudice to Article 2(3), each Member State shall have ultimate responsibility for management of the spent fuel and radioactive waste generated.*

**Article 4.2**

*Where radioactive waste or spent fuel is shipped for processing or reprocessing to a Member State or a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste as a by-product, shall remain with the Member State or third country from which the radioactive material was shipped.*

**Article 4.3**

*National policies shall be based on all of the following principles:*

- (a) the generation of radioactive waste shall be kept to the minimum which is reasonably practicable, both in terms of activity and volume, by means of appropriate design measures and of operating and decommissioning practices, including the recycling and reuse of materials;*
- (b) the interdependencies between all steps in spent fuel and radioactive waste generation and management shall be taken into account;*
- (c) spent fuel and radioactive waste shall be safely managed, including in the long term with passive safety features;*
- (d) implementation of measures shall follow a graded approach;*
- (e) the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials;*
- (f) an evidence-based and documented decision-making process shall be applied with regard to all stages of the management of spent fuel and radioactive waste.*



**Article 4.4**

*Except for the provisions set out in Article 2(3):*

- (a) repatriation of disused sealed sources to a supplier or manufacturer;*
- (b) shipment of spent fuel of research reactors to a country where research reactor fuels are supplied or manufactured, taking into account applicable international agreements;*
- (c) the waste and spent fuel of the existing Krško nuclear power plant, when it concerns shipments between Slovenia and Croatia.*

*Radioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement, taking into account the criteria established by the Commission in accordance with Article 16(2) of Directive 2006/117/Euratom, has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them.*

*Prior to a shipment to a third country, the exporting Member State shall inform the Commission of the content of any such agreement and take reasonable measures to be assured that:*

- (a) the country of destination has concluded an agreement with the Community covering spent fuel and radioactive waste management or is a party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management ("the Joint Convention");*
- (b) the country of destination has radioactive waste management and disposal programmes with objectives representing a high level of safety equivalent to those established by this Directive; and*
- (c) the disposal facility in the country of destination is authorised for the radioactive waste to be shipped, is operating prior to the shipment, and is managed in accordance with the requirements set down in the radioactive waste management and disposal programme of that country of destination.*

37. A summary or statement on the national policy/policies that:

- the ultimate responsibility rests with the MS, including the provisions of Articles 4.2 and 4.4;
- the national policies are based on the principles as specified in 4.3;
- regarding 4.3(c), end points of all radioactive waste streams are addressed (e.g. disposal of high-level waste, separated at reprocessing, or of spent fuel regarded as waste, disused sealed sources, etc.).

A short description of the political decisions (legal provisions or agreements) taken in matters covered by Article 4, forming the basis of national policies should also be provided.

MS may refer to the Introduction of the Report, to the National Programme according to Articles 11 - 13 or to any other attachment to the report.

## Article 5 – National framework

### Article 5.1

*Member States shall establish and maintain a national legislative, regulatory and organisational framework ('national framework') for spent fuel and radioactive waste management that allocates responsibility and provides for coordination between relevant competent bodies. The national framework shall provide for all of the following:*

- (a) a national programme for the implementation of spent fuel and radioactive waste management policy;*
- (b) national arrangements for the safety of spent fuel and radioactive waste management. The determination of how those arrangements are to be adopted and through which instrument they are to be applied rests within the competence of the Member States;*
- (c) a system of licensing of spent fuel and radioactive waste management activities, facilities or both, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a spent fuel or radioactive waste management facility without a licence or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;*
- (d) a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste and spent fuel management activities, facilities or both, including appropriate measures for the post-closure periods of disposal facilities;*
- (e) enforcement actions, including the suspension of activities and the modification, expiration or revocation of a licence together with requirements, if appropriate, for alternative solutions that lead to improved safety;*
- (f) the allocation of responsibility to the bodies involved in the different steps of spent fuel and radioactive waste management; in particular, the national framework shall give primary responsibility for the spent fuel and radioactive waste to their generators or, under specific circumstances, to a licence holder to whom this responsibility has been entrusted by competent bodies;*
- (g) national requirements for public information and participation;*
- (h) the financing scheme(s) for spent fuel and radioactive waste management in accordance with Article 9.*

38. Member States may wish to address all sub-articles of Article 5.1 in a single section to describe their National Framework.

39. A summary statement providing:

- an overview of the national legislative, regulatory and organisational framework for spent fuel and radioactive waste management;
- information concerning the ratification of relevant international conventions and legal instruments related to the scope of the Directive, e.g.: Joint Convention and Convention on Nuclear Safety;
- a description of how the national framework allocates responsibilities to:
  - the Government
  - the regulatory body;
  - other organizations with responsibilities for spent fuel and radioactive waste management within the Member State as applicable;
- information, if appropriate, on where these responsibilities vary for different types of spent fuel and radioactive waste management facilities and/or activities;
- information on how the national framework provides for coordination between the relevant competent bodies;
- Member States are encouraged to use diagrams to minimise detailed narrative.

Note: whereas Article 6 refers to the regulator and Article 7 to the licence holder, Article 5 requires that the interdependencies between all elements of the national framework (i.e. the coordination between government, waste generators, regulators and licence holders) are described.

Article 5.1 (a)  
A national programme for the implementation of spent fuel and radioactive waste management policy;

40. Information on the provisions in the legal framework governing the implementation of the national policies through a national programme (see Recital 28) should be provided.

Note: This should not include a description of the national programme nor should it include information on the implementation, regular review and update of the national programme as this should be addressed at Article 11(1) and (2).

Article 5.1 (b)  
national arrangements for the safety of spent fuel and radioactive waste management. The determination of how those arrangements are to be adopted and through which instrument they are to be applied rests within the competence of the Member States;

41. Member States should provide an overview of:

- the process for establishing and revising the national arrangements (e.g. legislation) for the safety of spent fuel and radioactive waste management, including the responsibilities of the relevant competent bodies and the involvement of interested parties;
- the different types of instruments (e.g. legislation, regulations, guides) to implement these arrangements.

Note: For Articles 5.1(b) and 5.1(c) below, it is suggested that as Member States have already transposed the Directive detailed information on national arrangements (legislation, regulations) and licensing process is not required in the main body of the report. However, it should be noted that the Transposition Tables are not made public and therefore cannot be referred to here. Member States are therefore advised to summarise their national arrangements and details of the licensing process under this section, and provide supporting Annexes where necessary.

Article 5.1(c)  
a system of licensing of spent fuel and radioactive waste management activities, facilities or both, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a spent fuel or radioactive waste management facility without a licence or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;

42. An overview of:

- the licensing process and system (e.g. responsibility for issuing, need for consent by other entities, etc.), together with the types of licensed activities and facilities;
- the process and system for relicensing/licence renewal;
- the legal provisions to:

- prevent spent fuel or radioactive waste management activities and/or the operation of a spent fuel or radioactive waste management facility without a valid licence.
- to prescribe conditions for further management if considered appropriate

Article 5.1(d)

a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste and spent fuel management activities, facilities or both, including appropriate measures for the post-closure periods of disposal facilities

43. An overview of how the national framework provides for (including during the post-closure period of disposal facilities):

- the system of appropriate control of licensed activities or facilities, including regulatory inspections;
- documentation and reporting obligations of the licensees;
- the system of management for radioactive waste and spent fuel management activities and facilities at the national level that ensures that interdependencies are taken into account (see Recital 30).
- the coordination among these bodies to take these interdependencies into account.

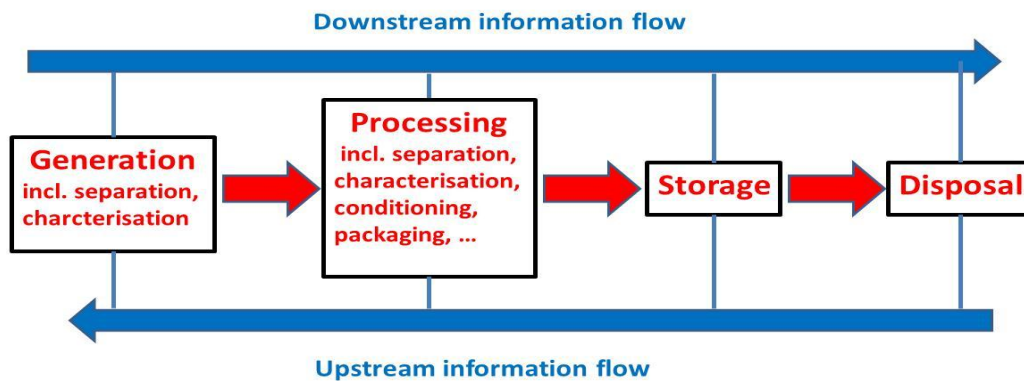
Note: Article 5.1(d) requires the role of regulators to be described in the context of interdependencies between all management steps and in the context of the coordination with the other organisations with responsibilities for radioactive waste and spent fuel management, that make up the 'management system' described therein.

Member States may wish to demonstrate diagrammatically the concept of interdependencies in relation to "material and information flows" in the national framework (see schematic diagram below). While "material flows" are in principle downstream, i.e. from the waste generation step until disposal, both upstream and downstream flows have to be managed to effectively deal with the interdependencies of all radioactive waste management steps. Downstream "information flows" can inform e.g. the development of disposal solutions for existing waste streams and for a prospective waste inventory. Upstream "information flows" can inform e.g. the waste characterisation and processing programmes in accordance with waste disposal requirements.

ENSREG understands these interdependencies to be at different levels, such as:

- the technical level (e.g. adequate waste characterisation and waste processing for storage and disposal);
- the financial level (e.g. assessment and generation of the financial means required for all subsequent management steps); and,
- the legal level (e.g. definition of responsibilities and accountabilities of various actors at subsequent management steps, with possible transfer of responsibilities between parties).

Figure 1: Schematic diagram showing Downstream and Upstream Information Flow



Article 5.1(e)  
enforcement actions, including the suspension of activities and the modification, expiration or revocation of a licence together with requirements, if appropriate, for alternative solutions that lead to improved safety;

44. An overview of:

- the system of enforcement for the safety of radioactive waste and spent fuel management activities, facilities or both;
- the enforcement measures available and, if appropriate, requirements for alternative solutions that lead to improved safety;
- the legal powers/responsibilities for implementing enforcement measures.

Article 5.1(f)  
(f) the allocation of responsibility to the bodies involved in the different steps of spent fuel and radioactive waste management; in particular, the national framework shall give primary responsibility for the spent fuel and radioactive waste to their generators or, under specific circumstances, to a licence holder to whom this responsibility has been entrusted by competent bodies;

45. An overview of provisions for:

- allocating responsibilities to the bodies involved in the different steps of spent fuel and radioactive waste management from their generation to disposal, including the post-closure period during which appropriate institutional controls are retained;
- assigning the primary responsibility for the safety of spent fuel and radioactive waste to their generators or if relevant, transferring this responsibility to another licence holder. Member States may include a reference to Article 7.1 (which describes obligations for the licence holder).

Article 5.1(g)  
national requirements for public information and participation;

46. An overview of the provisions for the national requirements for public information and participation, including responsibilities and mechanisms for implementation (taking into account Recital 31).

Note: This overview should not include the description of the Member State's and regulatory authority's communication strategies as this is required for Article 10.

Article 5.1(h)  
the financing scheme(s) for spent fuel and radioactive waste management in accordance with Article 9.

47. An overview of the provisions for establishing schemes for financing of the implementation of the national policy/policies for the responsible and safe management of spent fuel and radioactive waste.

Note: This overview should only describe the legislative framework and not include a description of the identification or availability of adequate financial resources as this is required for Article 9.

Article 5.2

*Member States shall ensure that the national framework is improved where appropriate, taking into account operating experience, insights gained from the decision-making process referred to in Article 4(3)(f), and the development of relevant technology and research.*

48. An overview of how the following elements are used to improve the national framework:

- operating experience (national, international);
- insights gained from the evidence-based and documented decision-making process (see Recital 34);
- development of technology and results of relevant research (including international developments).
- the outcomes of a self-assessment or peer review which may trigger the introduction of improvements in the national framework.

Note: Article 5.2 concerns the improvement of the national legislative, regulatory and organisational framework, whereas Article 7.2 concerns the requirement in national framework for the license holder to continuously improve the safety of the RW and SF management facility or activity.

## Article 6 - Competent regulatory authority

### Article 6.1

*Each Member State shall establish and maintain a competent regulatory authority in the field of safety of spent fuel and radioactive waste management.*

### Article 6.2

*Member States shall ensure that the competent regulatory authority is functionally separate from any other body or organisation concerned with the promotion or utilisation of nuclear energy or radioactive material, including electricity production and radioisotope applications, or with the management of spent fuel and radioactive waste, in order to ensure effective independence from undue influence on its regulatory function.*

### Article 6.3

*Member States shall ensure that the competent regulatory authority is given the legal powers and human and financial resources necessary to fulfil its obligations in connection with the national framework as described in Article 5(1) (b), (c), (d) and (e).*

49. An overview of the regulatory authority or authorities and their responsibilities (if there is a “system of authorities”). Member States may wish to reference their narrative under Article 5.1(b) to minimise duplication.
50. An overview of the position of the regulatory authority within the Member State’s organisational structure / legal system. Member States may wish to refer to the narrative under Article 5.1(d) which describes the role of the competent authority in the national framework and associated interdependencies.
51. Member States will need to show how the regulatory authority is functionally separate from the bodies responsible for the promotion or utilisation of nuclear energy or radioactive material, including electricity production and radioisotope applications, or with the management of spent fuel and radioactive waste. It is further advised that Member States describe:
- how effective independence of the regulatory authority from undue influence is ensured (also from other bodies, not just those promoting nuclear energy or managing spent fuel and radioactive waste);
  - how effective independence for regulatory decision making is ensured.

Member States may wish to consider the guidance provided in IAEA Safety Requirement GS-R-1.

52. An overview of:
- the legal powers and human and financial resources of the regulatory authority, including identification of the legislation in which the required legal powers are conferred;
  - the processes in place to ensure the adequacy of human resources in the regulatory authority (including the technical support organisations, where relevant) with regard to the availability of qualified human resources, including an explanation on whether this resource is considered sufficient. This should consider all the duties of the regulatory authority, as required by the applicable national legal framework, which address the obligations of Article 6(3) of the Directive, including the obligations of Article 5(1).

- the arrangements in place for the regulatory authority with regard to meeting its financial needs (fees, taxes, etc.), and an explanation on whether these financial resources are considered sufficient.

## Article 7 - Licence holders

### Article 7.1

*Member States shall ensure that the prime responsibility for the safety of spent fuel and radioactive waste management facilities and/or activities rest with the licence holder. That responsibility cannot be delegated.*

### Article 7.2

*Member States shall ensure that the national framework in place require licence holders, under the regulatory control of the competent regulatory authority, to regularly assess, verify and continuously improve, as far as is reasonably achievable, the safety of the radioactive waste and spent fuel management facility or activity in a systematic and verifiable manner. This shall be achieved through an appropriate safety assessment, other arguments and evidence.*

### Article 7.3

*As part of the licensing of a facility or activity the safety demonstration shall cover the development and operation of an activity and the development, operation and decommissioning of a facility or closure of a disposal facility as well as the post- closure phase of a disposal facility. The extent of the safety demonstration shall be commensurate with the complexity of the operation and the magnitude of the hazards associated with the radioactive waste and spent fuel, and the facility or activity. The licensing process shall contribute to safety in the facility or activity during normal operating conditions, anticipated operational occurrences and design basis accidents It shall provide the required assurance of safety in the facility or activity. Measures shall be in place to prevent accidents and mitigate the consequences of accidents, including verification of physical barriers and the licence holder's administrative protection procedures that would have to fail before workers and the general public would be significantly affected by ionising radiation. That approach shall identify and reduce uncertainties*

### Article 7.4

*Member States shall ensure that the national framework require licence holders to establish and implement integrated management systems, including quality assurance, which give due priority to safety and are regularly verified by the competent regulatory authority.*

### Article 7.5

*Member States shall ensure that the national framework require licence holders to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to the safety of spent fuel and radioactive waste management as laid down in paragraphs 1 to 4.*

53. Member States should provide, for Article 7.1, a description of the legislation which assigns the responsibility for the safety of spent fuel and radioactive waste management facilities and/or activities and which stipulates that this responsibility cannot be delegated.
54. Member States should refer, under Article 7.2, to the requirements of Article 5.1(b) to minimise duplication of narrative. The main focus of reporting under this Article is to



demonstrate how Member States ensure that the regulatory requirements require licence holders to conduct systematic safety assessment, and to continuously improve.

55. Reporting under Article 7.2 need not provide a complete description of the implementation of the requirements for all licence holders. Due consideration should be given to safety in the long term (see Recital 21). Some examples could be presented to illustrate the actual practices. A graded approach on the extent of the regulatory requirements should be used (see Recital 34), commensurate with the level of risk and hazard posed by spent fuel and waste inventories.
56. Member States should provide, under Article 7.3, examples by which the safety demonstration identifies and reduces uncertainties. A graded approach should be adopted when conducting safety demonstrations commensurate with the level of risk, age of facility and remaining operational lifetime. Member States may wish to consult relevant IAEA guidance on Defence-in-Depth.
57. For the closure of a disposal facility and the post-closure phase, the safety demonstration should, over time, improve understanding of those aspects influencing the safety of the disposal system and reduce uncertainties related to the expected development of the disposal system over time (see Recital 34).
58. For Article 7.4, Member States should provide a description of the arrangements that establish the requirements for the licence holders to have (an) integrated management system(s) that give due priority to safety, and that take into account the interdependencies between all steps in spent fuel and radioactive waste management (see Recital 30 and IAEA GS-R-3).

Note: This description should include examples of the main features of the integrated management system, including quality assurance, implemented by licence holders.

59. For Article 7.5 Member States should provide a description of the arrangements that establish the requirements for the licence holder to demonstrate to the appropriate national authorities that it has adequate financial resources available when needed for all stages of spent fuel and radioactive waste management facilities or activities under its responsibility. This is distinguished from the requirements of Article 9 which places requirements on Member States to have adequate financial provisions in place for implementing national programmes.
60. Member States should also, under Article 7.5, provide a description of the mechanism which is in place to ensure that the licence holders provide for and maintain adequate human resources in order to assure the safety of the spent fuel and radioactive waste management activities or facilities throughout their lifetimes. The description should include the process for confirming the adequacy of licence holders' human resources.

## Article 8 – Expertise and skills

### Article 8

*Member States shall ensure that the national framework require all parties to make arrangements for education and training for their staff, as well as research and development activities to cover the needs of the national programme for spent fuel and radioactive waste management in order to obtain, maintain and to further develop necessary expertise and skills.*

61. A description of the national framework requirements concerning education, training and retraining the staff of parties having responsibilities for the safety of spent fuel and radioactive waste management, as well as research and development activities to cover the needs of the national programme.

Note: It is recommended that Member States include examples on the research and development activities that are undertaken in regards to the needs of the national programme.

62. A description of the system established to implement the requirements of Article 8. For example, this may include the:

- methods used for the analysis of competence requirements and training needs for all safety related activities in spent fuel and radioactive waste management;
- arrangements for initial training and retraining of staff, as appropriate;
- arrangements for research and development activities to cover the needs of the national programme.

## Article 9 – Financial resources

### Article 9

*Member States shall ensure that the national framework require that adequate financial resources be available when needed for the implementation of national programmes referred to in Article 11, especially for the management of spent fuel and radioactive waste, taking due account of the responsibility of spent fuel and radioactive waste generators.*

63. An overview of the system ensuring that:

- the financial resources required are identified, sufficient and available when needed within the national framework taking due account of the responsibility of spent fuel and radioactive waste generators;
- adequate financial resources are made available to ensure the safety of spent fuel and radioactive waste management during operational lifetimes and for decommissioning;
- adequate financial provision is made which will enable the appropriate institutional controls and monitoring arrangements to be continued for the period deemed necessary following the closure of a disposal facility;
- financial resources are available also in cases such as
  - premature closure of facilities
  - radioactive waste, the generator of which does not exist anymore.

Note: It is recommended that Member States provide an assessment of the adequacy of the financial provisions for the implementation of their national programme and how the financial

provisions are made available when needed. However, these assessments should not include a detailed assessment of the national programme costs, which is a mandatory element of the national programme

## Article 10: Transparency

### Article 10.1

*Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority inform the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, recognised in national legislation or international obligations.*

### Article 10.2

*Member States shall ensure that the public be given the necessary opportunities to participate effectively in the decision-making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations.*

64. A description of the legal arrangements that establish the requirements for:

- making information available to the public and workers on the management of spent fuel and radioactive waste, including:
  - enabling effective public participation in the decision-making process regarding spent fuel and radioactive waste management;

65. An overview of the regulatory authority's communication strategy, including descriptions of:

- how the regulatory authority provides information and communicates in its fields of competence to the general public and to workers (e.g. via website, reports, workshops, conferences, interaction with the media, etc)
- the type of information provided and the languages used (e.g. translation into English);
- the frequency of information provision including arrangements for ensuring that the information provided is up to date and easily accessible;
- particular arrangements for providing information in emergency situations;
- the categories of information that are not being provided and the legal basis that is limiting the access to information and appeal mechanisms

66. An overview of public participation in the decision-making process, including

- opportunities for the public to participate effectively in accordance with national legislation and international obligations (e.g. consultations, hearings)
- how the views of the public are taken into account.

Note: This should not include a description of the transparency policy or process as this is a mandatory element of the national programme specified in Article 12.1(j).

## Articles 11 and 12– National programmes

### Article 11.1

*Each Member State shall ensure the implementation of its national programme for the management of spent fuel and radioactive waste ('national programme'), covering all types of spent fuel and radioactive waste under its jurisdiction and all stages of spent fuel and radioactive waste management from generation to disposal.*

### Article 11.2

*Each Member State shall regularly review and update its national programme, taking into account technical and scientific progress as appropriate as well as recommendations, lessons learned and good practices from peer reviews.*

### Article 12.1

*The national programmes shall set out how the Member States intend to implement their national policies referred to in Article 4 for the responsible and safe management of spent fuel and radioactive waste to secure the aims of this Directive, and shall include all of the following:*

..

*(c) an inventory of all spent fuel and radioactive waste and estimates for future quantities, including those from decommissioning, clearly indicating the location and amount of the radioactive waste and spent fuel in accordance with appropriate classification of the radioactive waste*

### Article 12(2)

*The national programme together with the national policy may be contained in a single document or in a number of documents.*

67. For Article 11.1, Member States should:

- include a link to the national programme as submitted to the Commission;
- include a link to the information reported under Article 5.1(a);
- present the progress made in the implementation of the national programme (e.g. work in progress, delays, etc) in respect to the mandatory elements specified in Article 12.1(a), (b), (d) – (k).

68. Under Article 11.2, Member States should:

- refer to the information reported under Article 5.1(a);
- describe the processes for reviewing and updating the national programme, including how progress in scientific and technical development, as well as recommendations, lessons learned and good practices from peer reviews are taken into account;
- report changes in the national programme (including those that are significant and that have been notified to the Commission, see Article 13).

69. The reporting under Article 12 should only include:

- the Member States' inventory as described in Section II C to this Guidance; and,
- a record of the documentation associated with the national programme and the national policy and the linkages between them.

Note: Member States may wish to merge the reporting under Articles 11 and 12 into one section. It should also be noted that while there is a requirement under Article 12(c) to include details of the national inventory in the national programme, there is also a requirement to provide information to the Commission on the national inventory within the National Reports. The objective of this requirement is to meet the Commission's obligation under Article 14(2) in regards to reporting to the Council and the European Parliament

## Appendix 1

### Relevant Articles of the Joint Convention

EU Member States (MS) have reporting obligations under both the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC or 'Joint Convention') and Council Directive 2011/70/Euratom, establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste ('the Waste Directive').

The objective of this Appendix is to assist MS developing their National Report in compliance with Article 14.1 of the 'the Waste Directive', by providing a comparison of the Articles and Obligations of the Directive with the Articles of the Joint Convention.

The Appendix identifies which aspects of the national reports under the JC could be used for the National Reports under the Waste Directive and where MS may need to provide information in addition to that currently required by the Convention obligations.

#### General

National reports under the JC are prepared for the triennial Review meetings. While the JC requires reporting on SF and RW management policies, it has no provisions for establishing and implementing policies for SF and RW management in the long term (from generation to disposal). Therefore the reports under the JC are in general technical reports focused on the existing situation.

Member States' National Reports under the Waste Directive are about the implementation of the Directive, including implementation of the national programme for the management of spent fuel and radioactive waste from generation to disposal. On the basis of these reports, the Commission will report to the European Parliament and the Council on:

- the progress made with the implementation of the Directive; and
- the SF and RW inventory in the EU and future prospects.

Therefore the reports under the Directive will be more 'political' and more focused on spent fuel and radioactive waste management in the long-term perspective.

While the Joint Convention represents an incentive instrument which aims at achieving and maintaining a high level of safety worldwide in spent fuel and radioactive waste management through the enhancement of national measures and international cooperation, the Waste Directive is legally binding and enforceable at the EU level.

The JC specifies provisions for the stages of the lifetime of SF and RW management facilities. However, the Waste Directive's concept is different:

- the Directive structure is hierarchical
- the Directive addresses both facilities and activities

The Waste Directive clearly indicates disposal as the endpoint of SF and RW management and the need for MS' policies and programmes to include disposal options. In this respect the JC is not so prescriptive.

The following article-by-article analysis is based on the articles of the Waste Directive.

## Article 2 Scope

Both the Waste Directive and the Joint Convention apply to spent fuel and radioactive waste management from civilian activities with the following differences:

- the Waste Directive excludes authorised releases (as they are covered by the BSS Directive), while under the JC this topic can be included;
- while the JC covers NORM waste from the nuclear fuel cycle, such as uranium mining and milling waste, and other waste containing NORM, e.g. disused sealed sources, the Waste Directive excludes these types of waste. On the contrary, the Directive covers all NORM wastes which are not covered by Directive 2006/21/EC, such as from water treatment;
- the JC covers SF and RW from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes. The Directive does not cover spent fuel or radioactive waste coming from military or defences activities;
- reprocessing is covered by the JC on a voluntary basis only, while the Directive applies to all stages of SF management, including reprocessing.

## Article 3 Definitions

In general, the Directive's definitions are consistent with the definitions of the JC.

## Article 4 General Principles

### **Policies and Principles**

The JC asks for reporting SF and RW management policies in Article 32. The Directive requires that MS establish and maintain policies based on the principles given in Paragraph 4.3, whereas the JC in Articles 4 and 11 requires appropriate steps only to be taken for ensuring compliance with its principles.

### **Export of radioactive waste for disposal**

The Waste Directive specifies very strict conditions for export of SF and RW for disposal, while the JC reaffirms that radioactive waste should, as far as is compatible with the safety of the management of such material, be disposed of in the State in which it was generated in its preamble.

The JC Article 27 deals with transboundary movement, which is not in general covered by the Waste Directive, but Council Directive 2006/117/Euratom.

## Article 5 National Framework

The provisions are similar to JC provisions found in Article 19. Some aspects are not part of the framework in the JC but found in other Articles. The aspect of financing is found in JC Article 22, provisions for the post-closure period in Article 17 and the primary responsibility for safety in Article 21. The Waste Directive goes beyond the JC with respect to requirements for:

- organisational framework, coordination between the relevant competent bodies (paragraph 5.1);
  - national programmes for implementation of the policy (paragraph 5.1a);
  - public information and participation (paragraph 5.1g);
  - enforcement of alternative solutions that lead to improved safety (paragraph 5.1e);
- and

- the improvement of the national framework where appropriate, taking into account operational experience, insights gained from the decision-making process and the development of relevant technology and research (paragraph 5.2).

#### Article 6 Competent regulatory authority

The JC Article 20 asks for appropriate steps to ensure effective independence. Under the Directive MS shall ensure that the competent regulatory authority is functionally separate in order to ensure effective independence of the regulatory functions.

#### Article 7 Licence holder

##### Paragraphs 7.2 and 7.3

The Directive requires demonstration of the safety through an appropriate safety assessment, other arguments and evidence (introduces the safety case concept). In the JC the safety assessment is referred to in JC Articles 5 – 17 during the lifetime of facilities. Accident prevention and mitigation aspects are mentioned in JC Articles 25 and 26. Requirements for the Licensee are in JC Article 21.

With respect to the safety assessment the Directive goes beyond the JC in the following points. The Directive requires the licensee of a facility or activity to:

- regularly assess, verify and continuously improve, as far as reasonable achievable, the safety of the RW and SF management facility or activity in a systematic and verifiable manner;
- apply a graded approach when it comes to safety demonstration as part of the licensing;
- identify and reduce uncertainties.

Paragraph 7.4 is more specific than JC Article 23 by requiring integrated management systems which give due priority to safety and are regularly verified by the competent regulatory authority.

Paragraph 7.5 of the Waste Directive is similar to JC Article 22 (i) and (ii).

#### Article 8 Expertise and skills

Comparable to JC Article 22 (i), but does also include research and development activities. The JC only asks for appropriate steps.

#### Article 9 Financial resources

Similar to JC Article 22 (ii) & (iii), but the JC asks for appropriate steps only.

#### Article 10 Transparency

Public information and participation is outside the scope of the Joint Convention.

#### Article 11 and 12 National programmes

The JC has no similar provisions, although it requires reporting on some similar elements (Article 32), e.g. inventories, policy and practices.





## Appendix 2

### Reporting of inventories under the Waste Directive

#### 1 Context and aim of the document

This document proposes a unified waste classification system for communication purposes in the EU in the frame of Council Directive 2011/70/EURATOM. It is developed on the basis of the IAEA system<sup>1</sup>, and provides guidance on how to transform national classification systems into the unified system.

#### 2 Main considerations

All EU Member States (MS) have a national radioactive waste classification system as a central element of the national waste management system. The definition and application of a national waste classification system is a national responsibility. Thus, the proposed unified classification system is complementary to the existing national waste classification schemes.

In the national waste classification of radioactive waste the boundaries between waste classes are determined on the basis of qualitative and/or quantitative factors that are directly related to specific (operational or planned) disposal facilities (design, safety assessment, site characteristics, ...) or to more generic disposal concepts (engineered surface or near-surface disposal, subsurface disposal at greater depth, deep geological disposal, ...). A consequence of the differences of these determining factors is that the specificities of the main waste classification categories for the long-term management will differ to various extents between MS.

Therefore, it will be necessary to focus the inventory reporting on the main waste categories in direct relationship with long-term management by or towards disposal, and to clearly indicate in the inventory reporting the relationship between the main waste categories and the disposal routes.

Inventory reporting by MS should also be based on common rules such as units and reference dates, in order to obtain homogeneous and easily comparable and interpretable information.

#### 3 Unified classification system

In order to ensure a coherent and transparent use of this unified classification scheme two elements have to be precisely determined:

1. the relationship between the 1999 EC Recommendations on Radioactive Waste Classification and the 2009 IAEA Classification;
2. the long-term management routes in terms of possible disposal types that can be considered, developed and implemented for each waste category, pointing to the elements of flexibility on the level of national policy and management.

In the reporting on the radioactive waste and spent fuel inventory MS should clearly indicate for each of the main waste categories the considered, planned or operational disposal routes. Such an approach will facilitate also the reporting of the implementation of the whole

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<sup>1</sup> IAEA Classification of 2009 (IAEA Safety Guide "Classification of Radioactive Waste", GSG-1, 2009)

of Article 12 of the Directive, including the milestones and timeframes, concepts or plans and technical solutions, RD&D etc.

Member States have also national policy and management flexibility in terms of separate disposal facilities for each waste category or combined disposal facilities for more than one waste category. A MS might plan to develop one single disposal facility for all its radioactive waste. If radioactive waste from two or more waste categories is (or is planned to be) co-disposed in one disposal system, this should be indicated in the reporting either by providing a waste volume for the two or more combined categories (e.g. LLW + ILW or ILW + HLW) linked to one disposal system or by providing waste volume estimations for each of the waste categories that are or will be routed to the same disposal system. Such estimations may require expert judgement.

**The table below presents all the elements of a proposed unified waste classification scheme.**

As “exempt waste” has not the regulatory status of radioactive waste, it is excluded from the Waste Directive. In addition, for very short lived waste – VSLW – no inventory reporting is required, given the temporary radioactive character of the waste.

Waste inventories are reported as rounded value waste volumes (m<sup>3</sup>) for each of the waste categories VLLW, LLW, ILW and HLW.

The proposed reference date for the first reporting is December 31, 2013. Subsequent dates are at 3-yearly intervals. If this is not possible individual MS should take a consistent approach in the compilation of inventory to allow long-term comparison over several reports (e.g. 3-year reporting period).

In the inventory reporting a distinction should be made between current inventories of radioactive waste and spent fuel and future prospects.

## **A. Current inventories**

### **A.1 Radioactive waste**

The following information should be provided:

- Waste volumes (m<sup>3</sup>) by category disposed of in (an) operational or closed disposal facility(y)(ies). For operational disposal facilities the existing total capacity (m<sup>3</sup>) should also be given.

Member States which have exported waste for disposal should indicate the quantities concerned (volumes in m<sup>3</sup> by category) and countries of destination, and refer to the export agreement(s).

- Waste volumes (m<sup>3</sup>) of conditioned waste by category stored in storage facilities. For unconditioned waste in storage, if possible, some indication of the final conditioned volume should be provided.

This should include waste currently stored abroad, subject to return, e.g. HLW from reprocessing.

MS holding foreign waste for return should indicate quantities and destinations (EU or non-EU countries).

## A.2 Spent Fuel

The following information should be provided:

- Quantities of spent fuel disposed of (tHM, number of assemblies and type - BWR, PWR, CANDU, MOX, spent fuel from research reactor, ...);  
If shipped to another MS or outside EU for disposal (or reprocessing without return of waste): quantities in tHM, number of assemblies and type, countr(y)(ies) of destination, and reference to the export agreement(s).
- Quantities of spent fuel in storage (tHM, number of assemblies and type (BWR, PWR, CANDU, MOX, spent fuel from research reactor, ...) by store type (dry cask, vault, pond) and locations (number of locations could be acceptable if this is seen as sensitive).  
For spent fuel from research reactors the quantities of fuel subject to a "return" agreement should be indicated.

MS should indicate separately the quantities and location of spent fuel stored abroad awaiting reprocessing. Correspondingly MS holding foreign fuel should indicate the quantities stored from EU and non-EU countries.

## B. Future prospects

### B.1 Radioactive waste

The following information should be provided:

Total expected waste volumes from currently operational and historical facilities: volume m<sup>3</sup> (conditioned if possible) by category for relevant time horizons (e.g. 2020, 2030, 2040, ...)

To the extent possible and when applicable MS should:

- provide the expected waste volumes for both operational waste in lifetime and for post-operation / decommissioning waste (lifetime and decommissioning assumptions to be given, e.g. 30, 40 or 60 years etc.);
- indicate expected HLW volumes or other type of waste from reprocessing;

For MS with no nuclear installations the expected annual total of waste (e.g. from hospitals, industry, research, etc.) should be given by category.

### B.2 Spent Fuel

The following information should be provided:

Total expected quantities of spent fuel from reactors under operation and construction (lifetime and decommissioning assumptions to be given, e.g. 30, 40 or 60 years etc.) for relevant time horizons.

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Radioactive waste categories - IAEA Safety Guide GSG-1	IAEA description - IAEA Safety Guide GSG-1	Origin (examples)	Long-term Management (activities and facilities)	Equivalent EC Recommendation 1999 categories
<b>Very low level waste (VLLW)</b>	<i>Waste that does not necessarily meet the criteria of EW, but that does not need a high level of containment and isolation and, therefore, is suitable for disposal in near surface landfill type facilities with limited regulatory control. Such landfill type facilities may also contain other hazardous waste. Typical waste in this class includes soil and rubble with low levels of activity concentration. Concentrations of longer lived radionuclides in VLLW are generally very limited.</i>	Mainly from decommissioning but also from other activities	disposal as hazardous chemical waste (with a very limited radioactive contamination) or as radioactive waste in landfill type facilities (low engineered surface or subsurface facility)	<b>Very low level waste (VLLW)</b>
<b>Low level waste (LLW)</b>	<i>Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste. LLW may include short lived radionuclides at higher levels of activity concentration, and also long lived radionuclides, but only at relatively low levels of activity concentration.</i>	Nuclear industry (operational and decommissioning waste) and other nuclear non-power activities (including disused sealed sources)	(1) Engineered surface or near-surface (a few meters below surface) disposal facilities (2) co-disposal with ILW (and possibly with HLW) in an engineered repository at greater depth is an alternative long-term management option (with the main requirements of the disposal system being determined by the highest waste category)	<b>Low and Intermediate short-lived waste</b>
<b>Intermediate level waste (ILW)</b>	<i>Waste that, because of its content, particularly of long lived radionuclides, requires a greater degree of containment and isolation than that provided by near surface disposal. However, ILW needs no provision, or only limited provision, for heat dissipation during its storage and disposal. ILW may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon. Therefore, waste in this class requires disposal at greater depths, of the order of tens of metres to a few hundred metres.</i>	Nuclear industry (operational and decommissioning waste) and other non-power nuclear activities (including disused sealed sources)	Radioactive waste containing too high activities of long-lived radionuclides, excluding it from disposal at or near the surface with LLW. (1) Disposal in an engineered facility at greater depths than in the case of (near) surface disposal is required. (2) Specially engineered and purpose drilled boreholes can be an alternative option in specific cases (waste types and amount, e.g. disused	<b>Low and Intermediate long-lived waste</b>

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			sealed sources) (3) Co-disposal with HLW in one deep geological disposal facility is an option (with the main requirements of the disposal system being determined by the highest waste category)	
<b>High-level waste (HLW)</b>	<i>Waste with levels of activity concentration high enough to generate significant quantities of heat by the radioactive decay process or waste with large amounts of long lived radionuclides that need to be considered in the design of a disposal facility for such waste. Disposal in deep, stable geological formations usually several hundred metres or more below the surface is the generally recognized option for disposal of HLW.</i>	Vitrified waste from SF reprocessing  Spent fuel considered as waste	Deep geological disposal in an engineered repository at depths of a few hundred meters or more - the heat output of the waste is a factor for facility design, operation and safety assessment.	<b>High-level waste</b>