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Proposal for a

**COUNCIL (Euratom) DIRECTIVE**

**Setting out basic obligations and general principles on the safety of nuclear installations**

Proposal for a

**COUNCIL DIRECTIVE (Euratom)**

**on the management of spent nuclear fuel and radioactive waste**

(presented by the Commission)

## EXPLANATORY MEMORANDUM

### **Context**

The Treaty establishing the European Atomic Energy Community (Euratom) contains provisions allowing the Community to regulate the use of nuclear energy by the Member States, in particular as regards nuclear safeguards (Chapter 7) and health protection (Chapter 3).

Pursuant to Article 2(b) of the Euratom Treaty, the Community shall, as provided in this Treaty: "*establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied.*" Chapter 3 of Title II of the Treaty, concerning health protection, contains provisions concerning basic standards with regard to protection against ionising radiation. This chapter has been used in the main with regard to radiation protection. However, health protection covers both radiation protection and nuclear safety. These two disciplines have in fact a common objective, protection against ionising radiation.

The Commission has actively intervened in connection with the harmonisation of nuclear safety practices for over 25 years, in particular under the Council resolutions of 22 July 1975<sup>1</sup> and 18 June 1992<sup>2</sup> on the technological problems of nuclear safety. Despite these efforts towards harmonisation, however, nuclear safety measures still differ considerably from one Member State to another.

Following the Chernobyl accident in 1986, which was undoubtedly the most serious accident in the history of atomic energy, and the G-7 Summit in Munich in 1992, the EU began to concern itself with the safety of nuclear installations in the Central and Eastern European countries and the Republics of the former Soviet Union.

The forthcoming enlargement, its first stages scheduled for 2004, bringing in Central and Eastern European countries, is without precedent in the history of the building of the Community. The history of these countries in the course of the 20th century and the nature of their economic development have highlighted in particular a subject which received little attention in previous enlargements, namely the nuclear sector.

The work carried out in the Community framework in order to bring nuclear installations in the candidate countries up to a high level of safety allowed a European perspective to emerge in this context. This perspective, developed for the candidate countries, is universal.

The technical standards drawn up under the aegis of the International Atomic Energy Agency make an important contribution to improving nuclear safety. They reflect an international consensus, but are not legally binding. Moreover, the Community adoption and adaptation processes are much quicker than the intergovernmental decision making mechanisms. This is a problem with which the European Community has already been confronted in the maritime and aviation spheres.

Protection from ionising radiation is also a concern after the end of the active life of a nuclear installation. In practice, final shutdown of a nuclear installation marks the start of a new phase with the objective of lifting the radiological protection restrictions imposed while it was in

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<sup>1</sup> OJ No C 185 of 14 August 1975, p. 1.

<sup>2</sup> OJ No C 172 of 18 June 1992, p. 2.

operation. These restrictions are due to the presence of large quantities of radioactive materials in the form of structural materials , equipment, operational waste and spent fuel.

It is therefore necessary to remove these materials and to subject them to the treatment appropriate to their physical characteristics and their levels of radioactivity, in accordance with safety standards in force. All activities involved in decommissioning produce large quantities of waste. It is the ultimate management and disposal of these wastes which accounts for the majority of the costs of decommissioning.

Decommissioning work therefore involves major financial resources. In order to avoid risks to human health and to the environment it is necessary to guarantee, at Community level, that financial resources will be available for the completion of decommissioning work in conformity with safety standards. To this end, specific regulations must be put in place for the creation of decommissioning funds, to which the operators of nuclear installations will have to contribute throughout the active life of the installation. These regulations must guarantee the availability and adequacy of funds at the time of decommissioning operations.

It is necessary to consider nuclear safety in a Community perspective . Only a common approach can guarantee the maintenance of a high level of safety in nuclear installations, from conception to decommissioning, in an enlarged EU. The legal basis for action of this kind, complementing the basic standards provided for in Article 30, is Chapter 3 of Title II of the Euratom Treaty.

### **The need for a global approach to nuclear safety in the enlarged EU**

Along the lines of the existing national systems, a Community approach to the safety of nuclear installations should comprise two aspects. On the one hand, a set of standards and, on the other, a mechanism for the verification of compliance with the standards.

#### **1. Common standards**

A Community approach to the safety of nuclear installations does not necessarily entail laying down detailed technical safety standards. A system of this kind should not duplicate what exists already within the Member States.

##### **a) Existing standards**

There exists a set of principles which can constitute the basis for a legally binding Community approach. These could be incorporated into a framework Council directive based in the main on elements contained in the Nuclear Safety Convention concluded under the auspices of the IAEA. This Convention does not contain detailed technical rules. However, it lays down a precise legal framework constituting the basis for a nuclear safety system. All the Member States and the majority of the candidate countries (with the exception of Estonia and Malta) are parties to the Nuclear Safety Convention

However, it should be noted that the Convention applies only to nuclear power stations. Given the development of the European nuclear industry, it would be desirable to broaden the scope to include all nuclear installations. However, the broadening of the scope will be limited to nuclear fuel cycle and research facilities. With this new approach it was not considered appropriate to include small users of radioactive materials, materials which consist essentially of sealed sources. Formalising these principles in a Community text would supplement the basic standards provided for in Article 30 of the Euratom Treaty so as to cover the safety of nuclear installations. Since the Treaty entered into force, several directives have revised the

standards, the last one dating from 13 May 1996 (Directive 96/29 Euratom)<sup>3</sup>. However, it will not be a question of revising that directive, which lays down basic standard, but of drafting a new directive to supplement them.

The European Court of Justice confirmed this analyse in its judgement dated 10 December 2002 in case C-29/99. The Court declares on the one hand that “it is not appropriate, in order to define the Community’s competencies, to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation.<sup>4</sup>” The Court confirms on the other hand the technical competence of national safety authorities to authorise the construction or operation of nuclear facilities. However the Court recognises that this technical competence does not prevent the Community from legislating in this field. The Court judgement is on this point explicit : “Even though the Euratom Treaty does not grant the Community competence to authorise the construction or operation of nuclear installations, under Articles 30 to 32 of the Euratom Treaty the Community possesses legislative competence to establish, for the purpose of health protection, an authorisation system which must be applied by the Member States. Such a legislative act constitutes a measure supplementing the basic standards referred to in that article.<sup>5</sup>” The "basic standard" concept covers both radiation protection and the safety of nuclear installations.

Clearly, such a Community approach to safety cannot, ultimately, be restricted simply to taking over the relevant provisions of the Convention on Nuclear Safety. However, the latter can provide a starting point on which there should be agreement since all the Member States have to implement them already, supplemented by other elements.

## **b) Evolving standards**

Developing common standards with regard to the safety of nuclear installations entails revising them, and therefore, in accordance with Article 32 of the Euratom Treaty, a specific procedure has to be followed. Article 31 provides that basic standards are to be worked out by the Commission after obtaining the opinion of a group of persons appointed by the Scientific and Technical Committee from among scientific experts in the Member States and after consulting the Economic and Social Committee. After consulting the European Parliament, the Council, on a proposal from the Commission, establishes the basic standards, acting by a qualified majority.

In practical terms, the development of European safety standards will take into account the results of the work of the International Atomic Energy Agency (IAEA) in the field of nuclear safety. The IAEA has been working in this area for many years. It will also be necessary to take into account in particular the results of the work of the Nuclear Regulators Working Group (NRWG), and especially the common positions adopted it, together with the work of the Western European Nuclear Regulators Association (WENRA) with regard to harmonisation. The methodology worked out by the Commission and the Council to evaluate the safety of the nuclear installations in the candidate countries will also be an important element to be taken into consideration.

As this is an area in which there are already major national provisions, it is desirable that the Commission should be able to benefit from the experience of safety experts in order to ensure that the common standards evolve in a harmonised fashion. To this end, it will rely on the

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<sup>3</sup> OJ No L 159 of 29 June 1996, p.1.

<sup>4</sup> Point 82 of the Judgement

<sup>5</sup> Point 89 of the Judgement

Committee envisaged under Article 31 of the Euratom Treaty. The Community system will be based on basic obligations and general principles. It will establish a legal framework comprising a mechanism allowing an evolution. One of the first tasks of the Article 31 Committee will therefore be to work out a corpus of operational standards, on the basis of the above mentioned studies to serve as a common reference point. On the basis of these standards, verifications can be carried out within the Member States. To avoid any difference of treatment between the current Member States and the new Member States, the legal regime will need to be operational on the date of the enlargement of the Union, i.e. 1 May 2004. That date will mark the start of the practical application of this Community approach, which will subsequently evolve.

The common standards are part of an ongoing process. The objective of the standards will be to ensure the maintenance of a high level of nuclear safety within the EU. It is therefore necessary that this system should rely on the expertise of the national safety authorities. The Community system is complementary to national systems.

### **c) Regular reports**

In accordance with the Nuclear Safety Convention and the conclusions of the Laeken European Council, the Member States will be obliged to transmit reports on the measures taken to meet their obligations and on the state of safety of installations under their supervision. These reports will be examined by Member States and the Commission in the framework of a "Peer Review" mechanism.

## **2. A system of independent verification**

Establishing a system of independent verification is an essential element for the credibility and effectiveness of a Community approach to the safety of nuclear installations. The verification system should, in the main, be based on the technical expertise of the national safety authorities. The Community system would address the way in which the safety authorities carry out their tasks. It would not be part of its purpose to verify safety conditions in nuclear installations on-site.

The Member States will be obliged to propose experts, specifying their expertise, to be called upon by the Commission for independent verifications within the Member States. Clearly, the Commission alone will be responsible for deciding what to verify and deciding on any subsequent action. To ensure the independence of the verifications, it is necessary that experts from one Member State are not allocated to verification activities in their Member State of origin.

On the basis of the reports following the verifications, the Commission will be able to make observations which may lead to the necessary measures being taken to ensure safety at installations. The Commission will also be obliged to publish, every two years, a report on the state of nuclear safety within the EU.

The Community approach is not an additional layer of control on nuclear installations. This approach, qualitative by nature, implements a cross check of safety authorities that will allow the Community to satisfy itself that the level of safety is the same in all Member States. This system will also allow the granting of a Community stamp that should strengthen the public confidence on safety of nuclear facilities. This approach, unique at this time, offers the advantage to organise verifications in a Community frame carried out by safety authorities. It is based on a Peer review principle, regarding both the cross checks, and the examination of

the regular reports under Peer reviews. The Community will in no way substitute for the safety authorities of the Member States.

## **II. Adequate financial resources**

Maintaining a high level of safety in nuclear installations, during their active life as in the decommissioning phase, requires adequate resources to be available.

Decommissioning a nuclear installation is a major industrial undertaking which can take many years. The cost of decommissioning operations can be very high. To deal with these it is necessary that financial resources should be available. These will have to be provided for by the operator during the active life of the nuclear installation. It is essential that decommissioning operations can take place in conformity with a high level of safety.

It is also essential to avoid any possibility that the decommissioning of a nuclear installation will not be able to start as planned, is not carried out according to the appropriate procedures, or is abandoned before completion due to a lack of resources.

The consequence of such a situation would be that a substantial quantity of radioactive material would not be monitored or managed in an acceptable way, with severe implications for radiological safety. Under such circumstances, one of the fundamental objectives of the Euratom Treaty would not be met. In fact, as already mentioned, the Community must, under article 2 of that Treaty, “establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied”. The Community has adopted basic standards in the field of radioprotection<sup>6</sup> for this purpose. Chapter 3 of the Euratom Treaty therefore provides the legal base for Community action in this field.

At present, operators make use either of company resources or of contributions to externally managed funds set up by various mechanisms for this purpose.

Even if reserves are set aside to enable decommissioning to be undertaken and to ensure the management of radioactive waste and of spent fuel cells, the fundamental question is to ensure the availability of these resources in the long term, several decades hence. To this end, the creation of decommissioning funds independent from the operators and specifically earmarked for the decommissioning of their nuclear installations is the best option to achieve the objective of decommissioning the installations in conformity with all the necessary safety conditions. In the case where exceptional and duly justified reasons make such a separation of funds impossible, the management of funds could continue to be undertaken by the operator, provided that the availability of assets to cover the costs of decommissioning operations is guaranteed.

On the basis of regular information from Member States, to be provided every three years, the Commission will produce a periodical report on the state of the funds and will undertake, if necessary, measures to address irregularities which could either compromise the completion of decommissioning or create distortions in the electricity market.

The creation of external funds, managed on prudential principles, enables the long term availability of funds to ensure the maintenance of a high level of nuclear safety throughout the decommissioning phase to be guaranteed.

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<sup>6</sup> COM 96/29 Euratom

The need to harmonise the methodology for estimating future decommissioning costs has already been emphasised. It is also necessary to provide for transitional measures to enable the enterprises involved, where necessary, to minimise the impact of the transfer of significant resources to external funds.

The Commission envisages a transitional period of [three years] after the entry into force of the provisions of measures undertaken by Member States as a result of the adoption by the Council of this Directive.

### **Conclusion**

On the eve of an unprecedented enlargement, at a time when there are vital nuclear safety issues at stake, it is time for the Community to clearly shoulder its responsibilities with regard to the safety of nuclear installations and adopt legally binding rules.

Enshrining the existing rules and principles in Community legislation will make it possible to reconcile efficiency and speed of implementation. Having recourse, to some extent, to experts from the national safety authorities to carry out the tasks connected with the verifications will make it possible to provide undisputed technical expertise. Interlinking the national systems and the Community system will guarantee the maintenance of a high level of safety for nuclear installations in the enlarged EU.

It is also essential to guarantee that the final phase of the nuclear cycle should be managed in accordance with radiological safety standards and on the basis of transparency in the use of financial resources. To this end, it is necessary to create a framework for national regulations. Definition of criteria for the creation and management of funds for the decommissioning of nuclear installations will enable the maintenance of a high level of nuclear safety throughout the decommissioning phase to be guaranteed. In the light of the above considerations, the Commission invites the Council to approve the proposal for a Directive attached.

Proposal for a

**COUNCIL (Euratom) DIRECTIVE**

**Setting out the basic obligations and general principles on the safety of nuclear installations**

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Articles 31, 32 and 187 thereof,

Having regard to the proposal from the Commission<sup>7</sup>, drawn up after obtaining the opinion of a group of persons appointed by the Scientific and Technical Committee from among scientific experts in the Member States, in accordance with Article 31 of the Treaty, and after obtaining the opinion of the European Economic and Social Committee<sup>8</sup>,

Having regard to the opinion of the European Parliament<sup>9</sup>,

Whereas:

- (1) Article 2(b) of the Treaty stipulates that the Community shall, as provided in this Treaty, establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied.
- (2) Article 30 of the Treaty stipulates that basic standards shall be laid down within the Community for the protection of the health of workers and the general public against the dangers arising from ionising radiations. Article 32 provides for the basic standards to be supplemented in accordance with the procedure laid down in Article 31.
- (3) Article 187 of the Treaty stipulates that the Commission may, within the limits and under the conditions laid down by the Council in accordance with the provisions of this Treaty, collect any information and carry out any checks required for the performance of the tasks entrusted to it.
- (4) Directive 96/29/Euratom of the Council<sup>10</sup> lays down basic safety standards for the protection of the health of the general public and of workers against the dangers arising from ionising radiation.
- (5) The accident at the Chernobyl nuclear power station in 1986 highlighted the need for the Community to supplement the basic standards in force at the time with provisions

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<sup>7</sup> OJ C [...], [...], p. [...].

<sup>8</sup> OJ C [...], [...], p. [...].

<sup>9</sup> OJ C [...], [...], p. [...].

<sup>10</sup> OJ L 159, 29.6.1996, p. 1.

applying in case of a radiological emergency. Accordingly, Council Decision 87/600/Euratom<sup>11</sup> established arrangements for the early exchange of information in the event of a radiological emergency while Council Directive 89/618/Euratom<sup>12</sup> imposed obligations on the Member States on informing the general public in the event of a radiological emergency.

- (6) The basic standards were further supplemented by Directive 92/3/Euratom on the supervision and control of shipments of radioactive waste between Member States and into and out of the Community<sup>13</sup> and by Council Regulation (Euratom) No 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States<sup>14</sup>.
- (7) Although the radiation protection system created by the basic standards in force ensures a high level of protection for the health of the population based on current scientific knowledge on this subject, this must be supplemented by strict application of safety standards designed to anticipate and control the risks of exposure for the population. In nuclear installations in particular, keeping up high safety standards at all stages from conception to decommissioning by maintaining effective defences against radiological risks and preventing accidents which could have radiological consequences is a *sine qua non* in order fully to attain the objectives of health protection set out in Article 2(b) of the Treaty.
- (8) Despite a degree of harmonisation, today the nuclear safety measures still vary widely from one Member State to another. This diversity becomes even greater in view of the forthcoming enlargement of the European Union. At present, this diversity of standards does not allow the Community to satisfy itself that the health protection requirements of Article 2(b) of the Treaty are always applied in the best possible way. In order for the Community to ensure that the uniform safety standards as required by this provision are applied, these basic standards for radiation protection must be supplemented by common safety standards to the extent necessary to eliminate hazards to the life and health of the public.
- (9) As well as during the active life of a nuclear installation, dangers from ionising radiation may also arise as a result of decommissioning operations. In order to deal with the risks attached to the disposal of radioactive materials, it is necessary to ensure the safe decommissioning of nuclear installations including the long-term management of radioactive waste and of spent fuel.
- (10) In order to attain the Community objectives regarding radioprotection mentioned above, it is essential as a first stage to define the basic obligations and general principles on the safety of nuclear installations.
- (11) Safe decommissioning of nuclear installations, including the long-term management of radioactive waste and spent nuclear fuel, calls for substantial financial resources. In order to avoid any danger to human health or to the environment, it is necessary to guarantee at Community level that sufficient financial resources will be available to complete decommissioning activities at nuclear installations in conformity with safety standards. To this end, specific rules must be put in place for the establishment of

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<sup>11</sup> OJ L 371, 30.12.1987, p. 76.

<sup>12</sup> OJ L 357, 7.12.1989, p. 31.

<sup>13</sup> OJ L 35, 12.2.1992, p. 24.

<sup>14</sup> OJ L 148, 19.6.1993, p. 1.

decommissioning funds to which operators of nuclear installations will have to contribute regularly throughout the productive service life of the installations. In order to guarantee the availability and the adequacy of funds for decommissioning operations it is necessary to set up, except in specific and properly justified cases, funds with their own legal personality separate from the operator of the installation.

- (12) This Directive is consistent with the logic of the regime established by the Convention on Nuclear Safety, which entered into force on 24 October 1996 and to which all the Member States are parties. By the Commission decision 1999/819 Euratom the European Atomic Energy Community acceded to the Convention on 31 January 2000<sup>15</sup>. Since the scope of this Convention is limited to nuclear power plants, this Directive extends the principles laid down therein to all nuclear installations.
- (13) In the same context, the Joint International Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management<sup>16</sup>, which entered into force on 18 June 2001, specifies in Article 26 that each contracting party shall take appropriate steps to ensure the safety of decommissioning of a nuclear facility. Such steps shall ensure that ... qualified staff and adequate financial resources are available. Article 22(ii) of the Convention calls on each Contracting Party to take the appropriate steps to ensure that adequate financial resources are available to support the safety of facilities for spent fuel and radioactive waste management during their operating lifetime and for decommissioning.
- (14) In order to monitor application of rules set up in conformity with this Directive, the Commission must be able to check the manner in which safety authorities carry out their duties and to meet their obligations under this Directive and to receive reports from the Member States indicating the measures which they have taken,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*  
*Subject matter and scope*

1. In order to ensure the protection of the general public and of workers against the dangers of ionising radiation from nuclear installations, this Directive sets out the basic obligations and general principles which allow the Community to satisfy itself by ensuring a high level of safety of nuclear installations that the basic standards laid down under Article 30 of the Treaty are applied.
2. This Directive applies to all nuclear installations, including after the end of their operation.

*Article 2*

For the purposes of this Directive:

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<sup>15</sup> OJ L 318, 11.12.1999, p. 20.

<sup>16</sup> OJ C [...], [...], p. [...].

- (1) "Nuclear installation" means any civil facility and its land, buildings and equipment where nuclear materials, within the meaning of Article 197 of the Euratom Treaty, are produced, processed, used, handled or stored temporarily or permanently on such a scale that consideration of safety is required. This definition applies until the moment it is released from any radiological restrictions imposed upon it;
- (2) "Common safety standards" means all the rules drawn up in accordance with this Directive on the basis of the general principles set out in Title III;
- (3) "Safety authority" means, for each Member State, the competent authority, or authorities, designated by the Member State to grant licences and to monitor application of the regulations on siting, design, construction, commissioning, operation or decommissioning of nuclear installations;
- (4) "Licence" means any authorisation granted by the safety authority to the applicant to confer the responsibility for the siting, design, construction, commissioning, operation or decommissioning of nuclear installations;
- (5) "Undertaking responsible for the nuclear installation" means any natural or legal person operating a nuclear installation and legally responsible, under the national legislation, for the practices employed in relation to any such installation,
- (6) "Final shutdown (of a nuclear installation)" means the status in which a nuclear installation is no longer authorised to operate, by decision of the competent authorities;
- (7) "decommissioning" means all steps leading to the release of a nuclear facility, other than a disposal facility, from regulatory control. These steps include the processes of decontamination and dismantling;
- (8) "decommissioning fund" means financial resources intended specifically to cover the expenditure necessary for decommissioning nuclear installations, including long-term management of the radioactive waste and spent fuel, while meeting the safety standards;
- (9) "spent fuel" means nuclear fuel that has been irradiated in and permanently removed from a reactor core;
- (10) "conventional decommissioning waste" means the non-radioactive wastes produced in the course of decommissioning activities and which must be processed and disposed of in accordance with the standards in force;
- (11) "radioactive waste" means radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the member State or by a natural or legal person whose decision is accepted by the Member State, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the Member State;
- (12) "radioactive (decommissioning) waste" means the radioactive wastes produced in the course of decommissioning activities;
- (13) "Practice" means a human activity that can increase the exposure of individuals to radiation from an artificial source, or from a natural radiation source where natural

radionuclides are processed for their radioactive, fissile or fertile properties, except in the case of an emergency exposure;

(14) "reprocessing" means a process or operation, the purpose of which is to extract radioactive isotopes from spent fuel for further use;

(15) "decommissioning strategy" means the time plan for decommissioning activities, from the final shutdown of the installation;

### *Article 3*

#### *Independence of the safety authority*

Member State shall establish a safety authority. The safety authority shall be independent in its organisation, legal structure and decision-making from any other body or organisation, whether private or public, concerned with the promotion or utilisation of nuclear energy.

### *Article 4*

#### *Role of the safety authority*

The safety authority shall supervise and regulate safety in nuclear installations. It shall grant licences and monitor application of the regulations on siting, design, construction, commissioning, operation or decommissioning of nuclear installations.

### *Article 5*

#### *Safety in nuclear installations*

Member States shall take all the measures necessary :

- (a) to establish and maintain effective arrangements in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionising radiation from such installations;
- (b) to prevent accidents with radiological consequences and to mitigate such consequences should they occur;
- (c) to implement all further measures to guarantee safety in nuclear installations; and
- (d) to ensure the long term management of all materials, including radioactive waste and spent nuclear fuel , produced in the course of decommissioning, in accordance with the basis standards for the protection of the general public and of workers against dangers arising from ionising radiation.

### *Article 6*

#### *Priority to safety*

1. Member States shall take all appropriate measures to ensure that in the course of all practices directly related to nuclear installations due priority is given to nuclear safety.

2. The measures for operational protection of the population pursuant to Article 44 of Directive 96/29 Euratom take account of all aspects of the nuclear safety of installations

*Article 7*  
*Obligations of undertakings*

1. Member States shall require the undertakings responsible for the nuclear installations to operate them in accordance with the common safety standards applicable to them and with the regulations laid down by the safety authority and any measures taken by the same authority.
2. Member States shall require the undertakings responsible for the nuclear installations to establish quality assurance programmes - the content and implementation of which shall be submitted to the safety authority for verification - and to implement them with a view to providing confidence that specified requirements for all activities important to nuclear safety are satisfied throughout the life of a nuclear installations.
3. Member States shall take the necessary measures for the allocation of responsibility for the decommissioning of nuclear installations, including in those cases where the parties originally responsible are no longer able to meet their commitments.

*Article 8*  
*Inspection*

Member States shall ensure that nuclear safety inspections are carried out by the safety authority in nuclear installations, including during their decommissioning, and that the undertaking responsible for the nuclear installation submits to such inspections.

*Article 9*  
*Financial resources*

- (1) Member States shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of nuclear installations.
- (2) Member States shall ensure that financial resources sufficient to cover decommissioning costs of each nuclear installation, taking into account the length of time required, are available as decommissioning funds at the time envisaged. These funds must meet the minimum criteria set out in the annex.
- (3) In the case of nuclear installations whose main purpose is other than the sale of products or services, in particular research reactors, Member States determine the means of meeting the specific decommissioning resource requirements.

*Article 10*  
*Safety experts*

1. Member States shall take the appropriate steps to ensure that nuclear safety experts are available for all nuclear safety-related activities.

2. Member States shall ensure that appropriate curricula are established and that opportunities for continuous theoretical and practical training exist for the staff concerned.

*Article 11*  
*Operating incidents*

1. Member States shall require the establishment of procedures approved by the safety authorities to deal with operating incidents and accidents in order to reduce the possible effects on the population and the environment of any radiological emergencies resulting from operation of nuclear installations.
2. Member States shall require the undertaking responsible for the nuclear installation to notify the safety authority forthwith of any incidents significant to safety and of the corrective measures taken in response.

*Article 12*  
*Monitoring of application*

1. In order to ensure the maintenance of a high level of nuclear safety in Member States, the Commission shall carry out verifications of safety authorities. Member States shall ensure that safety authorities comply with these verifications.
2. Member States shall send the Commission a list of experts, indicating their fields of expertise, on whom the Commission shall call to carry out the verifications provided for in paragraph 1.
3. The experts shall obtain prior approval from the safety authorities in the Member State where the verification is to be carried out before they may carry out the verifications provided for in paragraph 1. Experts shall not be allocated for verifications within their Member State of origin.
4. Prior to the verification , the Commission shall inform the Member State concerned of the verification , specifying the subject-matter, the purpose of the inspection, the date on which it is to begin and the names of the approved experts.
5. The Commission shall forward the verification reports to the Member State concerned which, within three months of receipt, shall indicate the measures taken to remedy any shortcoming.
6. The Commission may submit comments to the Member States or request further information following verifications in order to clarify all or part of the reports.

*Article 13*  
*Reports*

1. Member States shall submit a report to the Commission every year from the date provided for in Article 15 paragraph 1 on the measures taken to fulfil their obligations under this Directive and on the safety situation in nuclear installations located on their territory. The Commission shall organise meetings with Member States in order to examine these reports.

2. The Commission shall submit a report to the Council and to the European Parliament every two years from the date provided for in Article 15 paragraph 1 on the application of this Directive and on the nuclear safety situation in the Community, based on the reports submitted by the Member States and the inspection reports.

*Article 14*  
*More stringent measures*

Member States may apply more stringent measures than those laid down in this Directive. In such a case they shall notify the Commission of the nature of these measures and the reasons why they were taken.

*Article 15*  
*Implementation*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before ...[before 1 May 2004]. They shall forthwith inform the Commission thereof.
2. When Member States adopt these provisions, they shall contain a reference to this Directive or shall be accompanied by such a reference on the occasion of their official publication. The Member States shall lay down the manner in which such references shall be made.
3. Member States shall communicate to the Commission the text of the main provisions of domestic law which they adopt in the field governed by this Directive.

*Article 16*  
*Entry into force*

This Directive shall enter into force the twentieth day after its publication in the Official Journal of the European Communities.

*Article 17*  
*Addressees*

This Directive is addressed to the Member States.

Done at Brussels, [...]

*For the Council*  
*The President*  
[...]

## ANNEX

The following minimum criteria shall apply to the decommissioning funds referred to in Article 9 of this Directive:

1. The funds shall be created from contributions by operators of nuclear installations during their operation, in order to reach a level of resources, at the time of the final shutdown, sufficient to cover all expenses related to decommissioning as defined in paragraph 2.
2. Contributions shall be made to the fund in line with the estimated service life of the installation and with the decommissioning strategy chosen, in such a manner as to cover, in particular, decommissioning of the installation; safe, long-term management of the conventional and radioactive wastes from decommissioning of the installation; and safe, long-term management of the spent fuel from nuclear power stations and of the wastes from reprocessing operations not already fully covered as an operational cost.
3. The assets of the funds shall be managed in a manner ensuring liquidity compatible with the timetable for the decommissioning obligations and the costs set out in paragraph 2.
4. The assets of the funds are to be used only to cover the costs set out in paragraph 2 in line with the decommissioning strategy and may not be used for other purposes. To this end the decommissioning funds shall be duly established with their own legal personality, separate from the operator of the installation. If exceptional and duly justified reasons make such legal separation impossible, the fund could continue to be managed by the operator, provided that the availability of assets to meet the costs set out in paragraph 2 is guaranteed.
5. In the case of a nuclear installation whose operation will cease before the entry into force of the legislative, regulatory and administrative provisions set out in article 17 of this Directive; or within... [period to be decided] of the entry into force of these provisions, approaches other than the creation of decommissioning funds as required by this Directive may be taken.
6. Member states shall define the method by which the necessary resources for decommissioning, already accumulated by the operator before the entry into force of measures taken to implement this Directive, shall be transferred. These transfers must take place within at least 3 years from the date envisaged in Article 15.

## LEGISLATIVE FINANCIAL STATEMENT

**Policy area(s): Energy and transport (06)**

**Activit(y/ies):**

**TITLE OF ACTION: COUNCIL (EURATOM) DIRECTIVE SETTING OUT BASIC OBLIGATIONS AND GENERAL PRINCIPLES ON THE SAFETY OF NUCLEAR INSTALLATIONS**

### **1. BUDGET LINE(S)**

The commitment will be charged to a new heading to be created when the ABB structure for DG TREN is fully defined. The question of whether to charge to an existing heading or to a heading to be created will be reviewed in the context of discussions about the APB 2004.

### **2. OVERALL FIGURES**

#### **2.1 Total allocation for action (Part B): annual expenditure**

The commitment will be charged to the heading referred to in point 1 against the 2004 financial year.

#### **2.2 Period of application**

Starting in 2004, ongoing.

#### **2.3 Overall multiannual estimate of expenditure**

- (a) Schedule of commitment appropriations/payment appropriations (financial intervention) *(see point 6.1.1)*

euros

	2004	2005	2006	2007	2008 and subs. years	Total 2004 to 2008
Commitments	39 000	52 000	52 000	52 000	52 000	247 000
Payments	39 000	52 000	52 000	52 000	52 000	247 000

- (b) Technical and administrative assistance and support expenditure *(see point 6.1.2)*

Commitments						
Payments						

<b>Subtotal a+b</b>						
Commitments	39.000	52.000	52.000	52.000	52.000	247.000
Payments	39.000	52.000	52.000	52.000	52.000	247.000

(c) Overall financial impact of human resources and other administrative expenditure  
(see points 7.2 and 7.3)

Commitments/ payments	597.500	604.000	604.000	608.800	608.800	3.023.100
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<b>TOTAL a+b+c</b>						
Commitments	636.500	656.000	656.000	660.800	660.800	3.270.100
Payments	636.500	656.000	656.000	660.800	660.800	3.270.100

#### 2.4 Compatibility with financial programming and financial perspective

New action.

#### 2.5 Financial impact on revenue<sup>17</sup>

No financial implications (involves technical aspects regarding implementation of a measure).

### 3. BUDGET CHARACTERISTICS

Type of expenditure		New	EFTA contribution	Contributions from applicant countries	Heading in financial perspective
Comp	Diff	YES	NO	NO	No 3

### 4. LEGAL BASIS

*Articles 31, 32 and 187 of the Treaty establishing the European Atomic Energy Community.*

### 5. DESCRIPTION AND GROUNDS

#### 5.1 Need for Community intervention<sup>18</sup>

##### 5.1.1 Objectives pursued

Pursuant to Article 2(b) of the Euratom Treaty, the Community shall, as provided in this Treaty: "*establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied.*" Chapter 3 of Title II of the Treaty,

<sup>17</sup> For further information, see separate explanatory note.

<sup>18</sup> For further information, see separate explanatory note.

concerning health protection, contains provisions concerning basic standards with regard to protection against ionising radiation. This chapter has been used in the main with regard to radiation protection.

The Commission has actively intervened in connection with the harmonisation of nuclear safety practices for over 25 years. Despite these efforts towards harmonisation, however, nuclear safety measures still differ considerably from one Member State to another.

It is necessary to consider nuclear safety in a Community perspective. Only a common approach can guarantee the maintenance of a high level of nuclear safety in an enlarged EU.

As this is an area in which there are already major national provisions, it is desirable that the Commission should be able to benefit from the experience of the Member States in order to ensure that the common standards evolve in a harmonised fashion. To this end, it must rely on the Committee envisaged in Article 31 of the Euratom Treaty.

Establishing a system of independent verification is an essential element for the credibility and effectiveness of a Community approach to the safety of nuclear installations. The Commission will call partly on its own staff and partly on experts designated by the safety authorities in the Member States to conduct the verifications. Verifications will be carried out by safety authorities.

Decommissioning operations may also constitute potential threats to human health and to the environment, not only now but also in the future, especially if necessary measures relating to the radiological risks of such operations are not taken in good time.

Safe decommissioning of nuclear installations, including the long term management of radioactive waste and of spent nuclear fuel, requires substantial financial resources which must be guaranteed during the active life of nuclear installations.

It is necessary to guarantee at Community level that sufficient financial resources will be available for the completion of decommissioning activity at nuclear installations in conformity with applicable safety standards.

In order to guarantee the availability of sufficient resources, specific rules must be put in place for setting up decommissioning funds with a legal personality distinct from the nuclear operator. Contributions to these funds will be made on a regular basis throughout the active life of the installation by its operator. They will be specifically earmarked for decommissioning.

#### *5.1.2 Measures taken in connection with ex ante evaluation*

*None.*

### **5.2 Actions envisaged and budget intervention arrangements**

The beneficiaries of the proposed actions will be the operators of nuclear installations and the national safety authorities. The objective of this proposal is to introduce basic obligations and general principles for the safety of nuclear installations.

### **5.3 Methods of implementation**

Direct management by the Commission using regular and outside staff.

## **6. FINANCIAL IMPACT**

### **6.1 Total financial impact on Part B (over the entire programming period)**

*(The method of calculating the total amounts set out in the table below must be explained by the breakdown in Table 6.2.)*

### 6.1.1 Financial intervention

Commitments (in €)

Breakdown	2004	2005	2006	2007	2008 and subs. years	Total
Action 1 – Inspections in the Member States	39 000	52 000	52 000	52 000	52 000	247 000
<b>TOTAL</b>	39 000	52 000	52 000	52 000	52 000	247 000
	2004	2005	2006	2007	2008 and subs. years	Total
1. Technical and administrative assistance, support expenditure and IT expenditure	-	-	-	-	-	
(a) Technical assistance offices	-	-	-	-	-	
(b) Other technical and administrative assistance:  - intra muros:  - extra muros:  <i>of which for construction and maintenance of computerised management systems:</i>	-	-	-	-	-	
Subtotal 1	-	-	-	-	-	
2. Support expenditure	-	-	-	-	-	
(a) Training	-	-	-	-	-	
(b) Meetings of experts						
(c) Information and publications	-	-	-	-	-	
Subtotal 2						
<b>TOTAL</b>						

### 6.2 Calculation of costs by measure envisaged in Part B (over the entire programming period)<sup>19</sup>

Each verification is to be conducted by two experts and to last two days (daily allowance: €600 + €2000 for travel). 15 verifications are planned in 2004 (cost: €39 000) followed by 20 verifications per year thereafter (cost: €52 000 per year).

<sup>19</sup> For further information, see separate explanatory note.

## 7. IMPACT ON STAFF AND ADMINISTRATIVE EXPENDITURE

### 7.1 Impact on human resources

Types of post		Staff to be assigned to management of the action using existing resources		Total	Description of tasks deriving from the action
		Number of permanent posts	Number of temporary posts		
Officials or temporary staff	A	1	1	2	Safety expert Administrator Secretary
	B	1		1	
	C	1			
Other human resources				1	Seconded national safety expert
Total		3	1	4	

### 7.2 Overall financial impact of human resources

Type of human resources	Amount (€ per year)	Method of calculation *
Officials Temporary staff	432 000	Average cost of Commission officials, including overheads – from D4 BUDG
Other human resources (specify budget line)	43 000	Seconded national expert
Total	475 000	

The amounts are total expenditure for twelve months.

### 7.3 Other administrative expenditure deriving from the action

Budget line (number and heading)	Amount (€)			Method of calculation
	2004	2005 and 2006 (per year)	2007 and subs. years	
<b>Overall allocation (Title A7)</b>				
A0701 – Missions	32 500	39 000	39 000	+/- 10 missions/year + +/- 20 verifications (+/- 15 in 2004) 2 meetings per year of the Article 31 Committee <sup>20</sup>
A07030 – Meetings	40 000	40 000	44 800	
A07031 – Compulsory committees			50 000	
A07032 – Non-compulsory committees				
A07040 – Conferences				
A0705 – Studies and consultations	50.000	50.000		Decommissioning studies.
Other expenditure (specify)				
<b>Information systems (A-5001/A-4300)</b>				
<b>Other expenditure – Part A (specify)</b>				
Total	122.500	129.000	133.800	

The amounts are total expenditure for 12 months.

<sup>20</sup> On the basis of 800 Euro per person, two participants per Member State and two meetings per year.

I.	Annual total (7.2 + 7.3)	€597 500 in 2004 €604 000 in 2005 & 2006 €608.800 in 2007 & subsequent years
II.	Duration of action	Indefinite
III.	Total cost of action (I x II)	

Human and administrative requirements will be covered within DG TREN's total allowance in the annual allocation procedure.

## **8. FOLLOW-UP AND EVALUATION**

### **8.1 Follow-up arrangements**

Follow-up audits will be conducted.

### **8.2 Arrangements and schedule for evaluation**

The Commission will seek the cooperation of the national authorities to remedy deficiencies.

Annual reports by Member states. Meetings with Member states to review these reports. Evaluation report from the Commission to the Council and to the European Parliament every two years.

## **9. ANTI-FRAUD MEASURES**

Normal Commission audit system.

## **IMPACT ASSESSMENT FORM**

### **THE IMPACT OF THE PROPOSAL ON BUSINESS WITH SPECIAL REFERENCE TO SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs)**

#### **TITLE OF PROPOSAL**

Council Directive on the introduction of common safety standards for nuclear installations

#### **REFERENCE NO**

#### **THE PROPOSAL**

1. Taking account of the principle of subsidiarity, why is Community legislation necessary in this area and what are its main aims?

The objective of the proposed directive is to introduce common safety standards for nuclear installations. Although a start has been made on harmonisation of safety practices, they still vary widely from one Member State to another. Action by the Community is therefore necessary. The prospect of enlargement has further heightened the need for such action.

#### **THE IMPACT ON BUSINESS**

2. Who will be affected by the proposal?

- Which sectors of business?

The whole of the nuclear industry will be affected by the proposal, plus the safety authorities in the Member States.

- Which sizes of business (what is the concentration of small and medium-sized firms)?

The directive should apply only to large undertakings, not to small and medium-sized firms.

- Are there particular geographical areas of the Community where these businesses are found?

Not every Member State has nuclear installations on its territory. However, enlargement will add to the number of Member States using nuclear energy. By 2004 a total of 13 of the 25 Member States are expected to have nuclear power stations. They are not sited in any particular geographical area but are located in Belgium, the Czech Republic, Finland, France, Germany, Hungary, Lithuania, the Netherlands, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

3. What will business have to do to comply with the proposal?

To develop and apply procedures.

4. What economic effects is the proposal likely to have?

– on employment

None

– on investment and the creation of new businesses

None

– on the competitive position of businesses

None, since all businesses will be subject to the same measures.

5. Does the proposal contain measures to take account of the specific situation of small and medium-sized firms (reduced or different requirements, etc.)?

No

#### **CONSULTATION**

6. List the organisations which have been consulted about the proposal and outline their main views.

None

**Proposal for a**  
**COUNCIL DIRECTIVE (Euratom)**  
**on the management of spent nuclear fuel and radioactive waste**

## **EXPLANATORY MEMORANDUM**

### **1. FOREWORD**

The use of nuclear energy to generate electricity results in the production of spent (i.e. irradiated) nuclear fuel and radioactive waste. The most hazardous and radiologically toxic forms of this material are presently held in temporary storage facilities. None has yet been disposed of, and there are no immediate plans for disposal in any Member State. In the meantime, accumulations of this material continue to grow.

In the Commission's recent Green Paper<sup>21</sup> on the future security of energy supply in the European Union (EU), the need to find acceptable solutions to the management of radioactive waste was identified as the principle concern affecting the nuclear option. Also highlighted was the need for maximum transparency in the identification of solutions and that further research was an essential ingredient in resolving the outstanding technical issues and also in raising the level of public and political confidence in the solutions. A recent EU-wide public opinion survey<sup>22</sup> has confirmed the importance of the radioactive waste issue in the eyes of the public.

Irrespective of future strategies regarding energy production, the waste that exists now must be dealt with in a way that respects the basic principles of protection of human health and the environment. Action must be taken very soon to ensure that the responsibility and burden of managing the growing quantities of spent fuel and waste held in temporary storage are not passed on to future generations.

Current policy in most Member States and candidate countries does not adequately address these issues.

### **2. SITUATION IN THE EU MEMBER STATES AND CANDIDATE COUNTRIES**

All Member States and candidate countries produce radioactive waste. The principal activities giving rise to this waste are:

- nuclear electricity generation, including back-end nuclear fuel-cycle activities and decommissioning of nuclear facilities;
- the operation of research reactors;
- the use of radiation and radioactive materials in medicine, agriculture, industry and research;

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<sup>21</sup> COM(2000)769, 29 November 2000; "Towards a European strategy for the security of energy supply", Office for Official Publications of the European Communities, 2001, ISBN 92-894-0319-5

<sup>22</sup> Eurobarometer no. 56, 2001 – Europeans and Radioactive Waste ([http://europa.eu.int/comm/energy/nuclear/pdf/eb56\\_radwaste\\_en.pdf](http://europa.eu.int/comm/energy/nuclear/pdf/eb56_radwaste_en.pdf))

- processing of material containing naturally-occurring radioactivity.

### ***Situation in the European Union***

In total, about 40,000 m<sup>3</sup> of radioactive waste are produced per year in the EU as a whole<sup>23</sup>, the majority originating from activities associated with nuclear electricity generation.

Though disposal of the less hazardous category of waste<sup>24</sup> is now well established, it is currently only practised in five Member States with active nuclear power programmes (Finland, France, Spain, Sweden and UK). In Germany, disposal operations have taken place in the past, but neither Belgium nor the Netherlands has developed any disposal capabilities for this category of waste and both countries are currently storing their accumulations in centralised national depots. Indefinite interim storage is also practised in Member States without nuclear power programmes.

In the case of the more hazardous waste<sup>25</sup>, all accumulations are being stored in surface or near-surface facilities pending the availability of a more permanent solution. No country in the world has yet implemented disposal of these wastes, and the degree of progress towards this permanent solution varies considerably from country to country. In the EU, Finland and Sweden are perhaps the most advanced, with long-established programmes for the development of deep disposal. Some Member States are reassessing all their options as well as the associated decision-making processes. Others, however, are following a policy of “wait and see”.

### ***Situation in the candidate countries***

In those candidate countries operating Russian-designed nuclear power plants and research reactors, spent fuel management has become a crucial issue in the last decade because shipments back to Russia for reprocessing or storage are no longer possible. As a matter of urgency, these countries had to construct temporary storage facilities for their spent fuel. Little, if any, progress has been made regarding implementation of programmes for longer-term management and ultimate disposal of this spent fuel.

Regarding the less hazardous operational waste from nuclear power plants, only the Czech Republic and Slovakia have operational disposal sites. Several countries have

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<sup>23</sup> See reference in footnote 11 for more detailed information on waste arisings in the EU

<sup>24</sup> Refer to Commission Recommendation of 15 September 1999 on a classification system for solid radioactive waste (SEC(1999) 1302 final, 1999/669/EC, Euratom). The less hazardous category of waste is usually classified as short-lived low- and intermediate-level radioactive waste. This can usually be disposed of in regulated disposal sites either at or near the surface. After closure of the site, regulatory (or institutional) control would normally be maintained for about 300 years to prevent human activities from disturbing the waste while a radiological hazard persists.

<sup>25</sup> See also reference in footnote 4. The more hazardous wastes are classified as high-level and long-lived radioactive wastes. Spent nuclear fuel can be processed to remove waste materials, allowing the unused uranium and plutonium to be recycled in the manufacture of fresh nuclear fuel. This process is known as “reprocessing”. The highly active waste materials are usually fused into glass - “vitrification” - to leave them in a form suitable for prolonged storage and, ultimately, disposal. This vitrified waste, or the spent fuel itself if reprocessing is not practised, is regarded as high-level radioactive waste. This type of waste remains hazardous for thousands of years.

Russian-style repositories for institutional (i.e. non-fuel cycle) radioactive waste. However, these facilities often do not meet current safety standards. In some cases, waste may have to be retrieved and disposed of elsewhere.

### 3. CURRENT COMMUNITY AND INTERNATIONAL ACTIONS

The overriding principles in the management of any hazardous waste consist of maintaining high levels of public and worker safety and environmental protection. In the case of spent nuclear fuel and radioactive waste, these management principles must ensure that individuals, society and the environment are protected from the harmful effects of ionising radiation.

In recent years, these principles have also been the focus of action at Community and international level, involving research, legislative and policy initiatives.

Underpinning the harmonising of these fundamental principles are the Basic Safety Standards for the protection of health of the general public and workers against the dangers of ionising radiation, which provide a common and internationally approved level of radiological protection throughout the EU. The most recent revision of the Basic Safety Standards dates from 1996<sup>26</sup>, with implementation in national law by 13 May 2000. Also under Chapter 3 of Title II of the Euratom Treaty there is an established Community system of supervision and control of international shipments of radioactive waste<sup>27</sup>. Under the environment chapter of the EC Treaty, the environmental impact assessment Directive and amendment<sup>28,29</sup> is also of considerable relevance in the radioactive waste sector.

The approach adopted in the Community Plan of Action<sup>30</sup> and the associated strategy has been to encourage harmonisation and co-operation amongst Member States to ensure an equivalent and acceptable level of safety throughout the EU. The most recent report on the situation regarding radioactive waste management in the EU was published in 1999<sup>31</sup>. A similar report on the candidate countries has also recently been published by the Commission<sup>32</sup>.

Within the Community's Euratom Framework Programmes, the subject of radioactive waste management has been and remains one of the principal topics of research. A key aspect is the support for research carried out in underground research facilities, which provides knowledge of processes and data necessary to confirm the feasibility of future deep repositories. Advanced techniques for the chemical and

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<sup>26</sup> Council Directive 96/29/EURATOM of 13 May 1996

<sup>27</sup> Council Directive 92/3/EURATOM of 3 February 1992

<sup>28</sup> Council Directive 85/337/EEC of 27 June 1985

<sup>29</sup> Council Directive 97/11/EEC of 3 March 1997

<sup>30</sup> Council Resolution (92/C 158/02) of 15 June 1992 on the renewal of the Community Plan of Action in the field of radioactive waste.

<sup>31</sup> Communications from the Commission to the Council "Communication and fourth report on present situation and prospects for radioactive waste management in the European Union", COM(98)799 of 11/01/1999.

<sup>32</sup> "Radioactive Waste Management in the Central and East European Countries", EUR19154, European Commission report, July 1999, ISBN 92-828-7760-4

nuclear separation and minimisation of long-lived waste (usually collectively referred to as “partitioning and transmutation”) are also important areas of research.

In addition, there are a number of international conventions that have a major role to play in establishing common practice and levels of safety in the international arena. The most important is the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management<sup>33</sup> (referred to hereinafter as the Joint Convention), opened for signature by the International Atomic Energy Agency (IAEA) on 29<sup>th</sup> September 1997 and which entered into force on 18<sup>th</sup> June 2001. The adhesion by both the European and Euratom Communities to this Convention is currently the subject of a proposal by the Commission<sup>34</sup>. In addition, the IAEA is in the process of completing a series of safety documentation on radioactive waste management, including recommendations regarding safe disposal of all categories of radioactive waste.

#### 4. NEED FOR FURTHER ACTION

Even though significant quantities<sup>35</sup> (almost 2,000,000 m<sup>3</sup>) of the less hazardous categories of radioactive waste have been disposed of in the EU in the past, not all countries have access to disposal sites. These wastes, which account for significantly larger accumulations by volume than the more hazardous categories, present no major technical challenges regarding their disposal but nonetheless require close supervision while in temporary storage.

In the case of the more hazardous waste, there is a broad international consensus amongst technical experts that disposal by isolation deep in stable geological formations is the most suitable management option. Through a system of multiple containment barriers and a careful choice of host rock formation<sup>36</sup>, these wastes can be isolated for extremely long periods of time, thus ensuring that any residual radioactivity escapes only after many thousands of years and at concentrations insignificant compared with natural background levels. Numerous studies have confirmed that the concepts being considered today can, when realised, provide the required isolation of the waste over these very long time-scales. Such a strategy of deep disposal greatly reduces the risk of accidental human intrusion and is essentially passive and permanent, with no requirement for further human intervention or institutional control.

However, the delay being experienced in a number of Member States in the identification and authorising of suitable disposal sites, in particular for deep geological disposal, is cause for concern. In the meantime, the quantities of spent nuclear fuel and waste held in interim storage at or near the surface continue to grow. These surface facilities require active measures such as monitoring and maintenance to ensure a high level of safety and environmental protection. This represents an unacceptable burden to pass on to future generations that will reap no benefit from

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<sup>33</sup> Text available from IAEA – INFCIRC/546 (24 December 1997)

<sup>34</sup> COM(2001) 520 final, 15 October 2001

<sup>35</sup> See reference in footnote 11 for more detailed information on waste arisings in the EU

<sup>36</sup> Suitable host rock formations may include crystalline and volcanic rocks, clays and salt formations.

the electricity generated by the reactors that produced the waste. Furthermore, following the events of September 11<sup>th</sup> 2001, the possible vulnerability of such surface facilities to terrorist attack has also highlighted the need to act now.

Essential research and technological development (RTD) must continue in order to investigate fully individual sites and to understand the relevant geological, geochemical, and hydrogeological processes and the long-term performance of the engineered containment barriers in the actual repository environment.

Disposal in deep geological formations can isolate radioactive wastes from man and his environment for the very long periods required and will be needed for a number of waste forms that already exist and others that will be generated in future. It is the best available option for long term management of many of the more hazardous forms of waste. However, it is important that the bringing into operation of geological repositories must not be seen as the end of the road for radioactive waste management. Therefore, progress towards disposal in deep geological formations must not lead to a reduction in the level of RTD in other areas of radioactive waste management, such as new technologies for minimising the quantities of such waste, from which new options might conceivably emerge in the future.

The financial commitment must be sustained, indeed increased in some Member States, and more effective co-operation between these individual programmes is needed, in recognition of the importance to the Union as a whole of progress in this field. By providing a framework for improved co-operation and co-ordination in this field, the overall cost-effectiveness will be improved together with the all-important credibility and public acceptability of the RTD as a whole.

While the Community's Framework Programme will continue to play an important role in promoting research in these fields, on its own it is unlikely to be sufficient to guarantee success. Several Member States do have their own RTD programmes funded either from national budgets or by the nuclear sector. However, at the present time, the adequacy of these individual national programmes in addressing all the outstanding issues is not clear. It is likely that the financial commitment will have to be significantly increased. The Commission will continue to encourage co-operation between the Member States in common areas of research and technological development. In addition, the Commission intends to propose to the Council the setting-up of a Joint Undertaking under Chapter 5 of Title II of the Euratom Treaty to manage the funds and organise the research. Industry and Member States would participate on a voluntary basis in this Joint Undertaking, which would bring together funding from the Joint Research Centre, Member States and industry.

## **5. CONCLUSIONS**

Further delays in decisions on the development of repositories for the disposal of radioactive waste cannot be justified. On the contrary, there is a sound basis on ethical, environmental and nuclear safety grounds for the rapid development of these facilities. Any delays that could be interpreted as passing on to future generations the responsibility for disposing of our wastes should be avoided, especially since such delays, particularly in the case of the more hazardous wastes, may also increase the potential risk of accidents and terrorist attacks.

Consequently, Member States should develop appropriate strategies and prepare detailed programmes for the long-term management of all the waste types under their jurisdiction. Though the Community as a whole should maintain the capacity to store its wastes, the emphasis of these programmes should be on the development of repositories for the disposal of radioactive waste. Open and comprehensive public information and involvement together with respect for the “polluter pays” principle are crucial aspects of these programmes.

Member States should ensure that the necessary RTD is carried out to enable the deadlines for implementing their programmes to be met. For the further extended use of nuclear energy it might also be beneficial to explore alternative technologies that would produce less waste for possible application in the future.

While Member States should certainly aim to be self-sufficient in the management of their own radioactive waste, there should be greater collaboration between Member States, especially where this would help guarantee or reinforce the necessary high level of nuclear safety and environmental protection. An approach involving two or more countries could also offer advantages especially to countries that have no or limited nuclear programmes, insofar as it would provide a safe and less costly solution for all parties involved. However, no Member State should be obliged to accept imports of radioactive waste from other Member States.

## **6. PROVISIONS OF THE PRESENT PROPOSAL**

### **Preamble**

The Euratom Treaty, in particular Articles 31 and 32, provides the legal basis for the present proposal.

Article 2b of the Euratom Treaty sets out that the Community shall “establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied”. Article 31 of the Euratom Treaty lays down the procedure for establishing the standards or for supplementing them as provided for by Article 32.

The validity of this legal basis is endorsed by the recent judgement of the Court of Justice (case C-29/99, delivered on 10 December 2002) regarding Community competence in the field of nuclear safety, which states that “it is not appropriate, in order to define the Community's competences, to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation”. Within the context of the present proposal, such sources would include all radioactive waste and spent nuclear fuel.

### **Purpose and Scope (Article 1)**

The purpose of the Directive is to contribute to the establishing of best practice in the management of spent nuclear fuel and radioactive waste in the Member States that reflect the fundamental principles of:

- protection of human health and the environment both now and in the future (point 1(a));

- nuclear safety and environmental protection through application of precautionary and preventive measures (point 1(b));
- public information, dialogue and, where appropriate, participation in the decision-making process as an essential aspect of the application of governance in the radioactive waste sector (point 1(c)).

The specific nature of the general requirements is elaborated in Article 3. More specific requirements regarding radioactive waste in particular are presented in Articles 4 and 5.

Member States and candidate countries have different policies regarding spent nuclear fuel. Some regard it as waste, others regard it as a resource from which valuable quantities of fissile and fertile material can be extracted, while a third group have not yet defined their policy. In recognition of these differences, this Directive does not refer to all spent nuclear fuel as waste. However, the provisions of this Directive apply to material declared as waste as well as all spent nuclear fuel produced within the EU Member States. Irrespective of the policy adopted by Member States regarding spent nuclear fuel, this material must be subjected to an equivalent level of control and supervision throughout the Member States.

In accordance with the Joint Convention, the present proposal defines radioactive waste as material in solid, liquid or gaseous form. The programme for radioactive waste management as defined under Article 4 of this proposal therefore also covers the practice of environmental discharges. However, in a departure from the definition in the Joint Convention, the term disposal as defined in the present proposal refers only to the practice of emplacing solid or solidified waste, including in the form of spent nuclear fuel, in a suitable repository.

Also in line with the provisions of the Joint Convention, waste that contains only naturally occurring radioactive materials is excluded from the scope unless such waste also originates from the nuclear fuel cycle. This means that waste from the mining and milling of uranium ore is covered by the provisions of this Directive, whereas waste from, for example, oil extraction is excluded unless it is declared as radioactive waste by the Member States in line with Title VII Article 40 of the Basic Safety Standards (Directive 96/29/Euratom).

### **Definitions (Article 2)**

Terminology used in this Directive has, where possible, been standardised with that in the Joint Convention (though note reference to disposal in section 6.2 above).

### **General requirements for the management of spent nuclear fuel and radioactive waste (Article 3)**

The list of general requirements specifies measures to be taken by Member States in order to achieve the stated purpose in Article 1 of the Directive. These measures can be considered as constituting established international best practice in the field of spent nuclear fuel and radioactive waste management, and cover such aspects as public health, environmental protection, nuclear safety, financing and governance. Such measures are a part of current policy in many Member States.

#### **Programme for the management of radioactive waste (Article 4)**

This programme addresses the root of the outstanding problems in the EU associated with the management of present and future stocks of radioactive waste, including spent nuclear fuel if reprocessing is not foreseen. All Member States will be obliged to define a long-term management programme for this material that respects the fundamental and internationally agreed principles of waste management. In line with the reasoning given in Section 4 above, this programme should be oriented towards disposal of waste wherever possible. Long-term indefinite storage at or near the surface for the most hazardous waste, in facilities requiring permanent active measures such as regular maintenance and continuous monitoring and surveillance, is in the long run unsustainable and passes on an unacceptable burden to future generations. The Article prescribes dates by which authorisation, by the respective national regulatory authorities, should be given both for the development of any new disposal sites and the eventual start of operation of these facilities. In recognition of the much greater time required for site studies in the case of deep disposal, the date for start of operation of geological repositories is later than that for surface facilities. The dates proposed in this Article have been determined on the basis of the present situation in the Member States but also taking into account the need for action. All dates are subject to review and revision by the Council on a proposal by the Commission. The Annex to the Directive provides additional information on the typical steps required during development of new disposal facilities.

In some countries, repositories for the disposal of spent fuel and radioactive waste are being designed in such a way that the emplacement could be more easily reversed and the material recovered for further processing if this were to prove feasible and beneficial. One of the advantages of the “concentrate and confine” method of disposal over that of “dilute and disperse” is that the waste remains isolated for very long periods of time during which the emplacement of the waste packages could be reversed, even though the economic costs of doing so would undoubtedly be high.

The provisions of this Article together with those for reporting under Article 7 also address the other concerns identified in the Commission’s Green Paper related to the need for greater transparency in dealing with these issues.

Export of waste is also specifically mentioned in the Article. It is recognised that for certain Member States with very limited accumulations of waste, export to other countries probably represents the most viable option from the environmental, safety and economic points of views. However, these transfers can only be sanctioned providing the very strict conditions listed in the Article are respected. These conditions include the limitations and criteria concerning export of radioactive waste to third countries included in Euratom Directive 92/3. The proposal does not seek to limit a country’s right to be self sufficient in all matters of management of its waste, but does seek to encourage the sharing of facilities and services wherever possible.

#### **Research and technological development in radioactive waste management (Article 5)**

Specialised and in-depth research and technological development (RTD) is required both to carry out in a timely fashion the programme for the management of radioactive waste and to achieve the general objectives of the proposed legislation. It is the responsibility of Member States to ensure an adequate level of RTD funding.

In full respect of the “polluter pays” principle, this money may be raised through a levy on nuclear electricity production, thus ensuring that the funding is proportional to the amount of nuclear electricity produced. In view of the current levels of funding in the Member States, the likely adequacy of this funding and the degree of progress in the respective radioactive waste management sectors, it is estimated that €0.5M per terawatt-hour of nuclear electricity generated is sufficient to cover the necessary RTD. However, this level of research funding is likely to diminish in the future as countries begin to implement actual disposal options. In view of the fundamental importance of these RTD activities and in order to achieve the highest possible level of co-operation and co-ordination between activities in Member States, the Commission will encourage co-operation between the Member States in common areas of research and technological development in line with the provisions of Chapter 1 of Title II of the Treaty. To this end specific tasks may be entrusted to one or more Joint Undertakings to be established under Chapter 5 of Title II of the Treaty. Such Joint Undertakings would be responsible for performing RTD in areas of common interest.

### **Investments (Article 6)**

The provisions laid down in Chapter 4 of Title II of the Euratom Treaty will be fully applied to the situation regarding investments in the management of radioactive waste. In this context, it is clear that further development in the nuclear sector should only be supported if there has been significant progress towards the implementation of a programme of long-term management of all spent nuclear fuel and radioactive waste.

### **Reporting (Article 7)**

The reporting provisions will replace those that existed under point 1 of the Community Plan of Action and will take fully into account the discussions under the Joint Convention. Information on RTD activities constitutes an important aspect of this reporting. Article 5 of the Euratom Treaty already provides a basis for the Member States to communicate to the Commission the information on relevant research.

### **Implementation (Article 8)**

In view of the need to make rapid progress in this area, the implementation should take place as soon as possible. A date of 1 May 2004 could be proposed.

Proposal for a  
**COUNCIL DIRECTIVE (Euratom)**  
**on the management of spent nuclear fuel and radioactive waste**

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Articles 31 and 32 thereof,

Having regard to the proposal from the Commission<sup>37</sup>, drawn up after obtaining the opinion of a group of persons appointed by the Scientific and Technical Committee from among scientific experts in the Member States, in accordance with Article 31 of the Treaty, and after obtaining the opinion of the European Economic and Social Committee<sup>38</sup>,

Having regard to the opinion of the European Parliament<sup>39</sup>,

Whereas:

- (1) Article 30 of the Treaty requires basic standards to be laid down within the Community for the protection of the health of workers and the general public against the dangers arising from ionising radiation.
- (2) Council Directive 96/29/Euratom<sup>40</sup> lays down basic safety standards for the protection of health of the general public and workers against the dangers of ionising radiation.
- (3) Council Directive 92/3/Euratom<sup>41</sup> already sets up a supervision and control system of shipments of radioactive waste between Member States and into and out of Community, including a compulsory and common notification procedure for shipments of such waste, and very strict limitations and criteria regarding the third countries to which radioactive waste may be exported.
- (4) Council Directive 85/337/EEC<sup>42</sup> on the assessment of the effects of certain public and private projects on the environment, including those involving disposal and long-term storage of radioactive waste, requests Member States to adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment, by virtue, inter alia, of their nature, size or location are made subject to a requirement for assessment with regard to their effects.
- (5) Existing community legislation does not provide for specific rules ensuring that at all time spent nuclear fuel and radioactive waste is safely managed in an effective and consistent

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<sup>37</sup> OJ C [...], [...], p. [...]

<sup>38</sup> OJ C [...], [...], p. [...]

<sup>39</sup> OJ C [...], [...], p. [...]

<sup>40</sup> OJ L 159, 29/06/1996, p. 1

<sup>41</sup> OJ L 035, 12/02/1992, p. 24

<sup>42</sup> OJ L 175, 05/07/1985, p. 40, as amended by Council Directive 97/11/EC, OJ L 073, 14/03/1997, p. 5

manner throughout the European Union, and existing Community rules should therefore be supplemented.

- (6) The Commission Green Paper “Towards a European Strategy for the security of energy supply”<sup>43</sup> stresses that a satisfactory solution has to be found for the radioactive waste issue with maximum transparency.
- (7) The Commission’s final report on the Green Paper<sup>44</sup> stresses that rapid progress towards lasting solutions to the management of radioactive waste can be assured by fixing precise deadlines at Community level for the introduction of more effective radioactive waste disposal systems at national level.
- (8) The International Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, which entered into force on June 18 2001, aims at achieving and maintaining a high level of safety world-wide in spent fuel and radioactive waste management through the enhancement of national measures and international co-operation.
- (9) The production of nuclear energy generates spent nuclear fuel and radioactive wastes.
- (10) Radioactive waste is generated also in the use of radionuclides in medicine, research and industry.
- (11) Releases of radionuclides from spent fuel and radioactive waste may have consequences beyond national borders.
- (12) Each Member State remains responsible for the management of all spent nuclear fuel and radioactive waste under its jurisdiction.
- (13) The safe management of spent nuclear fuel and radioactive waste would be enhanced by greater co-operation and co-ordination between Member States.
- (14) The Council Resolution of 15 June 1992<sup>45</sup> invited the Commission to develop a common approach and to work with Member States towards harmonisation at Community level of radioactive waste management strategies and practices wherever possible.
- (15) There is a very broad international consensus amongst technical experts that, on the basis of present knowledge, geological disposal is the most suitable method for long-term management of the most hazardous forms of solid and solidified radioactive waste.
- (16) The setting of deadlines at Community level for the implementation of appropriate disposal systems will ensure that undue burdens are not imposed on future generations while at the same time respecting, both now and in the future, the basic principles of radiation protection laid down in Chapter 1 of Directive 96/29/Euratom.
- (17) In the field of research and technological development in the various fields of radioactive waste, including minimisation, there are common issues facing many

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<sup>43</sup> COM(2000)769

<sup>44</sup> COM(2002)321 final

<sup>45</sup> OJ C 158, 25/06/1992, p. 3

Members States that can be beneficially treated at Community level in a way that complements the research and development co-ordinated through the Community Framework Programmes.

- (18) To facilitate the necessary research and technological development in the field of radioactive waste management, the Commission should encourage joint financing by the Member States and, to that end, it is appropriate to make provision for the possibility of entrusting research and development in the areas of common interest to Joint Undertakings.
- (19) The application of this Directive should be reviewed by means of regular reports from the Member States,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*  
**Purpose and Scope**

1. This Directive establishes requirements for the safe management of spent nuclear fuel and radioactive waste, so as:
  - (a) to ensure that all spent nuclear fuel and radioactive waste is safely managed so that workers, the general public and the environment are adequately protected from harmful effects of ionising radiation, both now and in the future;
  - (b) to achieve and maintain a high level of safety in the management of spent nuclear fuel and radioactive waste in order to protect human health and the environment by taking all necessary precautionary and preventive measures, and with a view to ensuring adequate levels of protection are achieved throughout the Community in a consistent and effective manner;
  - (c) to enhance effective public information and, where appropriate, participation in order to ensure the required transparency in the relevant decision-making processes.
2. This Directive shall apply to all stages of spent nuclear fuel and radioactive waste management.

The Directive does not apply to waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, unless it is declared as radioactive waste for the purposes of the present Directive by a Member State.

*Article 2*  
**Definitions**

For the purpose of this Directive:

- (1) “*decommissioning*” means all steps leading to the release of a nuclear facility, other than a disposal facility, from regulatory control. These steps include the processes of decontamination and dismantling;
- (2) “*discharges*” means planned and controlled releases directly into the environment, as a legitimate practice, within limits authorised by the regulatory body, of liquid or gaseous radioactive wastes that originate from regulated nuclear facilities during normal operation;
- (3) “*disposal*” means the emplacement of solid or solidified radioactive waste, including spent fuel, in an appropriate facility without the intention of retrieval;
- (4) “*geological disposal*” means disposal in a geological repository;
- (5) “*geological repository*” means a disposal facility constructed in a geologically stable rock stratum and at a depth such that, during the period over which the waste remains a radiological hazard, the erosion of the site through such natural processes as weathering and glaciations can be ignored and the probability of human intrusion into the repository is minimised even if institutional control over the site is lost;
- (6) “*ionising radiation*” means the transfer of energy in the form of particles or electromagnetic waves of a wavelength of 100 nanometer or less or a frequency of  $3 \times 10^{15}$  Hertz or more capable of producing ions directly or indirectly;
- (7) “*nuclear facility*” means a facility and its associated land, buildings and equipment where radioactive materials are produced, processed, used, handled, stored or disposed of on such a scale that consideration of safety is required;
- (8) “*nuclear fuel cycle*” means all stages in the cycle of production, use and treatment of the fuel used in nuclear reactors, including such steps as mineral extraction, conversion, enrichment, fuel fabrication, energy production, interim storage of spent fuel and/or reprocessing followed by recycling of fissile and fertile material and interim storage of vitrified and other radioactive wastes, conditioning and encapsulation of spent fuel and/or other radioactive wastes and, ultimately, disposal;
- (9) “*radioactive waste*” means radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the Member State or by a natural or legal person whose decision is accepted by the Member State, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the Member State. The different reporting categories of solid radioactive waste are explained in Commission Recommendation of 15 September

1999 on a classification system for solid radioactive waste, SEC(1999) 1302 final, 1999/669/EC, Euratom<sup>46</sup>;

- (10) “*radioactive waste management*” means all activities, including decommissioning activities, that relate to the handling, pre-treatment, treatment, conditioning, storage, or disposal of radioactive waste, excluding off-site transportation. It may also involve discharges;
- (11) “*regulatory body*” means any body or bodies given the legal authority by the Member State to regulate any aspect of the management of spent fuel or radioactive waste including the granting of licences;
- (12) “*reprocessing*” means a process or operation, the purpose of which is to extract nuclear material from spent fuel for further use;
- (13) “*shipment*” means all of the operations involved in moving radioactive waste from the place of origin to the place of destination, including transport, loading and unloading for disposal or storage;
- (14) “*spent (nuclear) fuel*” means nuclear fuel that has been irradiated in and permanently removed from a reactor core;
- (15) “*storage*” means the holding of radioactive waste or spent nuclear fuel in a facility that provides for its containment, with the intention of retrieval.

### *Article 3*

#### **General requirements for the management of spent nuclear fuel and radioactive waste**

1. Member States shall take all necessary measures to ensure that spent nuclear fuel and radioactive waste are managed in such a way that individuals, society and the environment are adequately protected against radiological hazards.
2. Member States shall ensure that the production of radioactive waste is kept to the minimum practicable.
3. Member States shall take all the necessary legislative, regulatory and administrative measures and other steps required to ensure the safe management of spent nuclear fuel and radioactive waste.
4. Member States shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.
5. Member States shall ensure that adequate financial resources are available to support the safe management of spent nuclear fuel and radioactive waste, including that from decommissioning activities, and that financing schemes respect the “polluter pays” principle.

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<sup>46</sup> OJ L 265, 13/10/1999, p. 37

6. Member States shall ensure that there will be effective public information and, where appropriate, participation in order to achieve a high level of transparency on issues related to the management of spent nuclear fuel and radioactive waste under their jurisdiction.

#### *Article 4*

#### **Programme for the management of radioactive waste**

1. Each Member State shall establish a clearly defined programme for radioactive waste management that includes all radioactive waste under its jurisdiction and covers all stages of management. In the context of this programme, radioactive waste shall also include all spent nuclear fuel that is not subject to reprocessing contracts or, in the case of research reactor fuel, take-back agreements.
2. The programme shall cover, in particular, all aspects of the long-term management and, in the case of solid or solidified radioactive waste, disposal with a definite timetable for each step of the process.
3. Where there is no suitable alternative to disposal, and where such a disposal option is not yet available, Member States shall integrate the following decision points into their programmes:
  - (a) authorisation for development of appropriate disposal site(s) to be granted no later than 2008. In the case of geological disposal of high-level and long-lived radioactive waste, this authorisation may be conditional upon a further period of detailed underground study;
  - (b) in the case of short-lived low and intermediate-level radioactive waste, if this is to be disposed of separately from high-level and long-lived radioactive waste, authorisation for operation of the disposal facility to be granted no later than 2013;
  - (c) in the case of high-level and long-lived radioactive waste, to be disposed of in a geological repository, authorisation for operation of the disposal facility to be granted no later than 2018.
4. Based on the regular reports by Member States and the Commission required under Article 7, the Council may decide, on a proposal by the Commission, to modify the dates referred to in paragraph 3 in the interest of enhanced nuclear safety within the European Union.
5. The programme shall pay special attention to the general requirements listed in Article 3 and take into account the different steps in the disposal process described in the Annex. In this context, indefinite surface or near-surface storage of spent nuclear fuel that is not to be reprocessed is not considered a suitable or sustainable alternative to disposal.
6. The programme may include shipments of radioactive waste or spent fuel to another Member State or third country if such shipments are fully in compliance with existing EU legislation, principally Directive 92/3/Euratom, and International commitments, are covered by firm contracts and only take place to States with

appropriate facilities that meet accepted norms and standards of the Member State of origin and, in the case of material within the meaning of Article 197 of the Treaty, are under adequate safeguards.

#### *Article 5*

### **Research and technological development in radioactive waste management**

1. The programme for the management of radioactive waste within the meaning of Article 4 of this Directive shall take due account of the research and technological development in the field of radioactive waste.
2. Based on the regular reports by Member States required under Article 7 of this Directive, the Commission shall identify common areas of research and technological development that could be co-ordinated at the Community level, taking fully into account the activities under the research and training programmes adopted pursuant to Article 7 of the Treaty.
3. The Commission shall encourage co-operation between the Member States in common areas of research and technological development in line with the provisions of Chapter 1 of Title II of the Treaty. To this end specific tasks may be entrusted to one or more Joint Undertakings to be established under Chapter 5 of Title II of the Treaty.

#### *Article 6*

### **Investments**

When exercising its responsibilities under the Treaty and in particular those defined under Chapter 4 of Title II, the Commission shall take into consideration the progress made by Member States towards meeting the targets set out in Article 4 for authorisation of a disposal facility or disposal facilities for the different forms of radioactive waste.

#### *Article 7*

### **Reporting**

1. Every three years, and for the first time one year following the date referred to in Article 8 paragraph 1, each Member State shall submit a report to the Commission on the status of management of spent nuclear fuel and radioactive waste under its jurisdiction and the progress towards application of this Directive, including the information referred to in the Annex if appropriate.
2. Pursuant to Article 5 of the Treaty, the report shall also describe all research and technological development in the field of radioactive waste management that is being carried out or is planned within the Member State, including information regarding costs, sources of financing and expected duration and dates of completion.
3. The Commission shall integrate the information contained in these reports into a status report on the management of spent nuclear fuel and radioactive waste in the European Union to be published every three years.

*Article 8*  
**Implementation**

1. Member States shall bring into force the laws, regulations, and administrative provisions necessary to comply with this Directive before ...[before 1 May 2004]. They shall forthwith inform the Commission thereof.
2. When Member States adopt these provisions, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.
3. Member States shall communicate to the Commission the text of the main laws, regulations or administrative provisions that they adopt in the field governed by this Directive.

*Article 9*

This Directive shall enter into force on the 20<sup>th</sup> day following its publication in the Official Journal of the European Communities.

*Article 10*

This Directive is addressed to the Member States.

Done at Brussels, [...]

*For the Council*  
*The President*  
[...]

## ANNEX

### **Disposal of Radioactive Waste**

It is envisaged that a step-wise approach to the development, technical demonstration and implementation of a radioactive waste disposal system will be both necessary and unavoidable.

Recent experience has shown that ultimate success will depend on the decision-making processes being as transparent and open as possible. Therefore, all the steps to be taken should be identified as clearly as possible right at the outset. In addition, there needs to be a well-developed timetable with specific milestones.

A key element in the process is the siting of a repository. This is a complex and controversial issue that requires very detailed technical work and extensive discussions and consultations with a wide variety of stakeholders, in particular local communities.

Important stages and milestones in the process would normally include:

- selection of disposal principles and repository concept;
- design evaluation (e.g. of alternative barrier materials, rock types etc.);
- definition of system design and safety criteria for selected barriers;
- adaptation of system to possible sites, design optimisation;
- detailed site investigations at one or more possible sites;
- authorisation for development of the chosen site (in the case of geological disposal, authorisation will probably be conditional on a further period of more detailed underground investigation, entailing the prior construction and operation of an underground laboratory)
- construction of repository;
- authorisation for operation of repository (possibly initially as a pilot facility in the case of geological disposal).

Depending on national legislation and regulations, there may be other identifiable intermediate steps in the process. Particularly important will be the involvement of the local communities in the region around potential and selected sites and sufficient time must be allowed for full consultation and stakeholder interaction in the decision-making process. In addition, selection of a site for high-level and long-lived radioactive waste will normally take longer than for low and intermediate level short-lived radioactive waste because a wider range of geological factors and engineered barriers needs to be investigated.

For this reason, there is clearly no optimum time for the completion of the above process. However, Member States shall set realistic and well-defined target dates for each stage in the process.

Key milestones in the process are those concerning authorisation for development of a site and for operation of a facility. In this regard, Member States shall ensure that their schedules for management of radioactive waste and spent fuel not covered by reprocessing contracts respect the deadlines defined in Article 4 of this Directive.

## LEGISLATIVE FINANCIAL STATEMENT

**Policy area(s): Nuclear safety**

**Activity(ies): Management of spent nuclear fuel and radioactive waste**

**TITLE OF ACTION: COUNCIL DIRECTIVE ON THE MANAGEMENT OF SPENT NUCLEAR FUEL AND RADIOACTIVE WASTE**

**1. BUDGET LINE(S) + HEADING(S)**

**2. OVERALL FIGURES**

**2.1. Total allocation for action (Part B): € million for commitment**

**2.2. Period of application:**

**2.3. Overall multiannual estimate on expenditure**

a) Schedule of commitment appropriations/payment appropriations (financial intervention)

€ million (to 3rd decimal place)

	Year n	n + 1	n + 2	n + 3	n + 4	n + 5 and subs. years	Total
Commitments							
Payments							

b) Technical and administrative assistance and support expenditure(see point 6.1.2)

Commitments							
Payments							

<b>Subtotal a+b</b>							
Commitments							
Payments							

c) Overall financial impact of human resources and other administrative expenditure

Commitments/ payments	0.072	0.072	0.072	0.072	0.072	0.072	
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TOTAL a+b+c							
Commitments							
Payments							

**2.4. Compatibility with the financial programming and the financial perspective**

- Proposal compatible with the existing financial programming
- This proposal will entail reprogramming of the relevant heading in the financial perspective
- This may entail application of the provisions of the Interinstitutional Agreement.

**2.5. Financial impact on revenue:**

No financial implications (involves technical aspects regarding implementation of a measure)

OR

Financial impact – the effect on revenue is as follows:

Note: All details and observations pertaining to the method of calculating the effect on revenue should be included in a separate annex.

€ million (to 1 decimal place)

		Prior to action (Year n-1)	Situation following action					
Budget line	Revenue		Year n	n+1	n+2	N+3	n+4	n+5
	<i>a) Revenue in absolute terms</i>							
	<i>b) Change in Revenue</i>	$\Delta$						

*(Please state each budget line involved, adding the appropriate number of rows to the table if there is an effect on more than one budget line)*

**3. BUDGET CHARACTERISTICS**

Type of expenditure		New	EFTA participation	Participation applicant countries	Heading Financial Perspective
Comp/ Non-comp	Diff/ Non-diff	YES/ NO	YES/NO	YES/NO	No

#### 4. LEGAL BASIS

Euratom Treaty, in particular Articles 31 and 32.

#### 5. DESCRIPTION AND GROUNDS

##### 5.1. Need for Community intervention

Action is needed at the Community level to help avoid further delays regarding the implementation of programmes for the safe long-term management of radioactive waste and spent nuclear fuel in the Member States of the European Union.

##### 5.2. Actions envisaged and arrangements for budget intervention

##### 5.3. Methods of implementation

#### 6. FINANCIAL IMPACT

NONE

##### 6.1. Total financial impact on Part B - (over the entire programming period)

*(The method of calculating the total amounts set out in the table below must be explained by the breakdown in Table 6.2. )*

###### 6.1.1. Financial intervention

Commitments in € million (to the 3rd decimal place)

Breakdown	Year N	N + 1	N + 2	N + 3	N + 4	N + 5 and subs. years	Total
Action 1							
Action 2							
Etc.							
<b>TOTAL</b>							

###### 6.1.2. Technical and administrative assistance, support expenditure and IT expenditure (Commitment appropriations)

	Year N	N + 1	N + 2	N + 3	N + 4	N + 5 and subs. Years	Total
1) Technical and administrative assistance							
a) Technical assistance offices							

b) Other technical and administrative assistance: - intra muros : - extra muros :  <i>of which for construction and maintenance of computerised management systems</i>							
Subtotal 1							
2) Support expenditure							
a) Studies							
b) Meetings of experts							
c) Information and publications							
Subtotal 2							
<b>TOTAL</b>							

## 6.2. Calculation of costs by measure envisaged in Part B (over the entire programming period)<sup>47</sup>

(Where there is more than one action, give sufficient detail of the specific measures to be taken for each one to allow the volume and costs of the outputs to be estimated).

Commitments in € million (to the 3rd decimal place)

Breakdown	Type of outputs (projects, files )	Number of outputs (total for years 1...n)	Average unit cost	Total cost (total for years 1...n)
	1	2	3	4=(2X3)
<u>Action 1</u> - Measure 1 - Measure 2				
<u>Action 2</u> - Measure 1 - Measure 2 - Measure 3				
<i>Etc.</i>				

<sup>47</sup> For further information, see separate explanatory note

TOTAL COST				
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*If necessary explain the method of calculation*

## 7. IMPACT ON STAFF AND ADMINISTRATIVE EXPENDITURE

### 7.1. Impact on human resources

Types of post		Staff to be assigned to management of the action using existing and/or additional resources		Total	Description of tasks deriving from the action
		Number of permanent posts	Number of temporary posts		
Permanent officials or Temporary staff	A	0.3		0.3	<i>If necessary, a fuller description of the tasks may be annexed.</i>
	B				
	C				
Other human resources					
Total		0.3		0.3	

### 7.2. Overall financial impact of human resources

Type of human resources	Amount €	Method of calculation *
Officials Temporary staff	32,400	0.3 m/y x 108,000 (unit. Cost) Headings A1, A2, A4, A5 and A7
Other human resources  (give budget line)		
Total	32,400	

The amounts are total expenditure for twelve months.

### 7.3. Other administrative expenditure deriving from the action

Budget line (number and heading)	Amount €	Method of calculation
<b>Overall allocation (Title A7)</b>		
A0701 – Missions	5,000	c. 10-15 man-days of missions per year (NEA, IAEA, Member States)  2 meetings in Brussels per year of group of experts from Member States (NB. meetings will be instead of those currently being held)
A07030 – Meetings	20,000	
A07031 – Compulsory committees <sup>(1)</sup>		
A07032 – Non-compulsory committees <sup>(1)</sup>		
A07040 – Conferences		
A0705 – Studies and consultations		
Other expenditure (state which)		
- publishing of Community situation report in the field of radioactive waste	15,000	one such report is foreseen every 3 years, at a cost per report of c. €45,000
<b>Information systems (A-5001/A-4300)</b>		
<b>Other expenditure – Part A (state which)</b>		
Total	40,000	

The amounts are total expenditure for twelve months.

<sup>(1)</sup> Specify the type of committee and the group to which it belongs.

	€
I. Annual total (7.2 + 7.3) 72,400	Years
II. Duration of action indefinite	72400
III. Total cost of action (I x II)	per annum€

Human and administrative requirements will be covered within DG TREN's total allowance in the annual allocation procedure.

## 8. FOLLOW-UP AND EVALUATION

### 8.1. Follow-up arrangements

### 8.2. Arrangements and schedule for the planned evaluation

## 9. ANTI-FRAUD MEASURES