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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE
COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE**

**on Member States implementation of the Council Directive 2006/117/EURATOM on the
supervision and control of shipments of radioactive waste and spent fuel
Fourth Report**

{SWD(2023) 43 final}

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1. INTRODUCTION

Council Directive 2006/117/Euratom¹ (hereinafter referred to as “the Directive”) lays down a Community system of supervision and control of transboundary shipments of radioactive waste and spent fuel, so as to guarantee an adequate protection of the population. It ensures that concerned Member States are informed about shipments of radioactive waste and spent fuel to or via their territory, with the obligation to give either their consent or reasoned refusal to the shipments.

All Member States transposed the Directive and have been reporting to the Commission about its implementation every third year as of 25 December 2011, in accordance with Article 20. In the most recent reporting cycle, Member States submitted their latest national reports covering the period 2018-2020². In accordance with Article 20 and on the basis of these reports, the Commission has established this summary report³ for the European Parliament, the Council and the European Economic and Social Committee, taking into account the opinion of an Advisory Committee⁴ paying particular attention to reshipment related to non-authorised shipments and undeclared radioactive waste⁵.

The report follows up the third report⁶ of the Commission, covering the period 2015-2017, and provides an overview of authorisations and shipments of spent fuel and radioactive waste in the Community. Detailed data and information, upon which the conclusions of the present report are based, are provided in the accompanying Staff Working Document.

1.1. Context

All Member States in the EU produce radioactive waste, generated either by facilities, such as nuclear power plants and research reactors, or by activities, such as radioisotope applications in medicine, industry, agriculture, research and education.

¹ Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel, OJ L 337, 5.12.2006, pp. 21 – 32.

² More precisely, the reports cover the period from 26.12.2017 to 25.12.2020 (authorisations). This was the fourth reporting cycle for all Member States but Croatia, while it was the third one for Croatia as they joined the EU on 1 July 2013. This will be the last reporting cycle including a report from the United Kingdom.

³ Article 20(2) of the Directive requires the Commission to establish a summary report in accordance with the procedure laid down in Article 21 of the Directive.

⁴ The Advisory Committee was established in 2007 as required by Article 21 of the Directive.

⁵ Article 4 of the Directive.

⁶ COM(2019) 633 final, Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee on Member States implementation of Council Directive 2006/117 Euratom on the supervision and control of shipments of radioactive waste and spent fuel, Third Report, 17.12.2019 and SWD(2019) 437 final.

Operations of nuclear reactors also generate spent fuel, i.e. nuclear fuel that has been irradiated in and permanently removed from a reactor core. It may either be kept as a resource subject to reprocessing or be discarded as radioactive waste for final disposal with no further use foreseen.

In 2020 (end of the reporting period), nuclear energy accounted for 24.6% of the production⁷ of electricity in the 27 EU Member States, with thirteen Member States⁸ operating just over hundred nuclear power reactors.

When spent fuel and radioactive waste are generated, they are safely stored prior to possible (re)processing and disposal. Safe management of such materials may require their movement, also referred to as shipment, from the sites where they were generated or managed. These are practices that occur in the majority of Member States, regardless of the scale of their nuclear programmes. Shipments are mainly by road, rail or sea and in limited cases by air.

Import, export and transit of radioactive waste and spent fuel through Member State(s) are regular practices in the EU.

2. LEGAL FRAMEWORK AND ITS IMPLEMENTATION

Safe and responsible management of radioactive waste and spent fuel, including safe shipment of these materials in and outside the territories of Member States, is a legal requirement stemming from both international and EU law.

At international level, the main reference in this field is the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (hereinafter “the Joint Convention”)⁹. Among other provisions, the Joint Convention imposes obligations on contracting parties in relation to the safety of transboundary movements (import, export and transit) of spent fuel and radioactive waste. It requires each contracting party involved in transboundary movements to take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of the Joint Convention and relevant binding international instruments. All 27 EU Member States as well as the Euratom

⁷ Nuclear Energy Statistics. Eurostat. February, 2021. ISSN 2443-8219.

⁸ Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, the Netherlands, Romania, Slovakia, Slovenia, Spain, and Sweden.

⁹ The Joint Convention entered into force on 18 June 2001. It applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and applications and to spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes, or when declared as spent fuel or radioactive waste for the purpose of the Convention by the Contracting Party. The Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities.

Community are contracting parties to the Joint Convention¹⁰, which demonstrates their commitment to ensuring a high level of safety of spent fuel and radioactive waste – from generation to disposal.

At EU level, a comprehensive legal framework ensures protection of the health of workers and the general public from the risks arising from ionizing radiation, including during shipments of spent fuel and radioactive waste. The framework currently consists of the Directive, and Council Directives 2013/59/Euratom¹¹ (hereinafter “the Basic Safety Standards”) and 2011/70/Euratom¹² (hereinafter “the Radioactive Waste Directive”) which have an effect on the scope of the Directive.

Within the EU nuclear and radiation safety framework, the Directive specifically addresses regulatory authorisations and procedural aspects of transboundary shipments of radioactive waste and spent fuel generated from civilian facilities and activities. The overall objective is to enhance the protection from dangers arising from exposure to ionizing radiation, through supervision and control of shipments of spent fuel and radioactive waste. The Directive applies whenever:

- The country of origin, the country of destination or any country of transit of the spent fuel or radioactive waste is an EU Member State;
- The quantities and concentration of the spent fuel or radioactive waste for shipment (referred to as consignment) exceed the levels laid down in the Basic Safety Standards.

Where a shipment cannot be completed or if the conditions for shipment are not complied with in accordance with the Directive, the competent authorities of the Member State of origin must ensure that the concerned material is taken back by the holder¹³, unless an alternative safe arrangement can be made. The competent authorities must ensure that the person responsible for the shipment takes corrective safety measures where necessary. In such case the holder is liable for costs arising in cases where the shipment cannot or may not be completed¹⁴.

Any refusal of authorisation for shipment of spent fuel and radioactive waste (i)

¹⁰ The United Kingdom is a contracting party too. As of 11 February 2022 there are 88 Contracting Parties.
(https://www-legacy.iaea.org/Publications/Documents/Conventions/jointconv_status.pdf).

¹¹ Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom, OJ L 13, 17.1.2014, p. 1–73.

¹² Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, OJ L 199, 2.8.2011, p. 48–56.

¹³ Holder means any natural or legal person who, before carrying out a shipment of radioactive waste or spent fuel is responsible under the applicable national law for such materials and plans to carry out a shipment to a consignee. (Article 5(9) of the Directive).

¹⁴ Article 12 of the Directive.

needs to be justified on the basis of the criteria set out in the Directive; (ii) should not be arbitrary; and (iii) should be founded on relevant national, Community or international law. Member States' decisions for consents or refusals must be in line with the provisions set out in the Joint Convention and the Directive¹⁵ which prohibit export of radioactive waste or spent fuel to a destination south of latitude 60° south, to African, Caribbean or Pacific countries or to a third country which does not have the resources to manage the radioactive waste or spent fuel safely.

In addition to the three-yearly reporting to the Commission, Member States are obliged to notify¹⁶ on a yearly basis the Commission and the Advisory Committee of any unauthorised shipments to a third country, and forward¹⁷ to the Commission the contact details of the competent authority(ies) and all the necessary information for rapid communication.

2.1. Implementation of the Directive

For all shipments (including imports, exports and transits between Member States and from/to outside the Community) within the scope of the Directive, the Directive requires the use of a standard document¹⁸, which was established by Commission Decision in 2008¹⁹ as amended in 2011²⁰. The standard document includes forms for the following purposes:

- Application for authorisation for shipment of spent fuel or radioactive waste;
- Acknowledgement of receipt of application – request for missing information for spent fuel and radioactive waste;
- Consent or refusal of radioactive waste or spent fuel shipment by the competent authorities concerned;
- Authorisation of shipment of spent fuel and radioactive waste;
- Description of radioactive waste consignment and list of packages;
- Acknowledgement of receipt of radioactive waste and spent fuel.

¹⁵ Article 16 of the Directive.

¹⁶ Article 16(1)(c) of the Directive.

¹⁷ Article 18 of the Directive.

¹⁸ According to Article 17 of the Directive.

¹⁹ Commission Decision of 5 March 2008 establishing the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/Euratom, (notified under document number C(2008) 793), (2008/312/Euratom), OJ L 107, 17.4.2008, pp. 32 – 59.

²⁰ Corrigendum to Commission Decision 2008/312/Euratom of 5 March 2008 establishing the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/Euratom, OJ L 343, 23.12.2011, p. 149.

When such materials are intended to be shipped to third countries for disposal, Member States are also required, pursuant to Article 4(4) of the Radioactive Waste Directive to apply the criteria for shipment established by the Commission in accordance with Article 16(2) of the Directive and the applicable Commission Recommendation²¹.

2.2. Opinion of the Advisory Committee

The XII. Advisory Committee meeting was held on 7 November 2022 in Luxembourg to discuss the draft of this report and its accompanying staff working document. The Advisory Committee gave a positive opinion.

2.3. Competent authorities

As of July 2022, all Member States have provided information on their competent authorities under Article 5(13)²² of the Directive.

The list of competent authorities in the Member States is annexed to the accompanying staff working document.

3. OBSERVATIONS

The Commission has observed that no failures involving transboundary movements of radioactive waste or spent fuel were reported by Member States in this reporting cycle.

The Member States did not report any issues that could fall under Article 4 "*Reshipment related to non-authorised shipments of undeclared radioactive waste*"; Article 12 "*Shipment failure*" nor Article 16(1)(c) "*Prohibited exports*". Thus, based on the reported information, no unauthorised shipment was carried out on the EU territory during the reporting period.

In the reporting period there were four cases of refusal to grant consent:

- One Member State refused to consent to two applications due to a temporary inaccessibility of the final treatment facilities.
- One Member State refused to consent to two applications for the transit of contaminated scrap metal, considering the application out of the scope of the

²¹ Commission Recommendation of 4 December 2008 on criteria for the export of radioactive waste and spent fuel to third countries (notified under document number C(2008)7570) (2008/956/Euratom).

²² Article 5(13) of the Directive defines "competent authorities" as "any authority which, under the law or regulations of the countries of origin, transit or destination, are empowered to implement the system of supervision and control of shipments of radioactive waste or spent fuel".

Directive²³. These transits were, however, regularly carried out under the applicable local legislation.

Three Member States (Croatia, Cyprus, and Malta) have not reported any authorised shipments on their territory since the reporting obligations were imposed on them by the Directive.

A detailed presentation of the transboundary shipments of radioactive waste and spent fuel in the EU during the current reporting period is provided in the accompanying staff working document.

3.1. Statistics (2018-2020)

This section provides a statistical overview of authorisations and shipments.

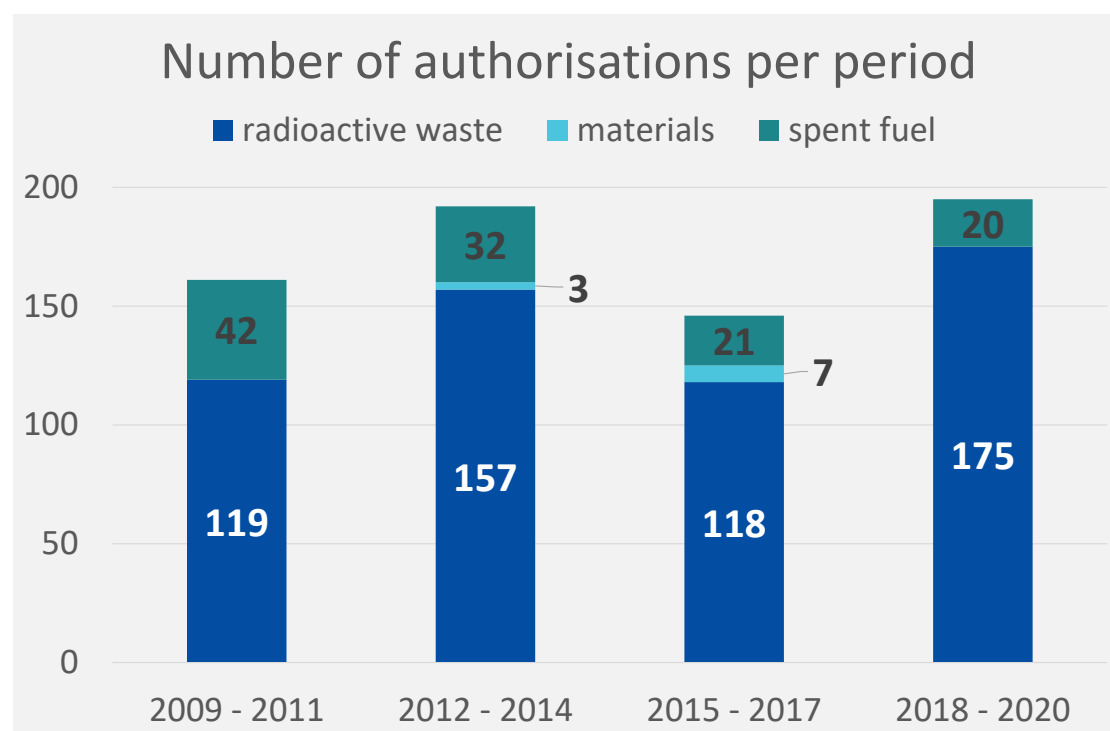


Figure 1. Number of authorisations

The 195 authorisations reported by 21 Member States in the period 2018-2020 correspond to 1770 authorised shipments. An authorisation pertains in general to several shipments, and may exceed the period of time covered by the present report.

²³ There are different views between Member States whether transboundary shipments of contaminated scrap metal, that is treated and recycled, is within the scope of the Directive or not. Member States that do not consider contaminated scrap metal that will be recycled to be waste, do not grant consent to the corresponding shipment authorisation (refusal).

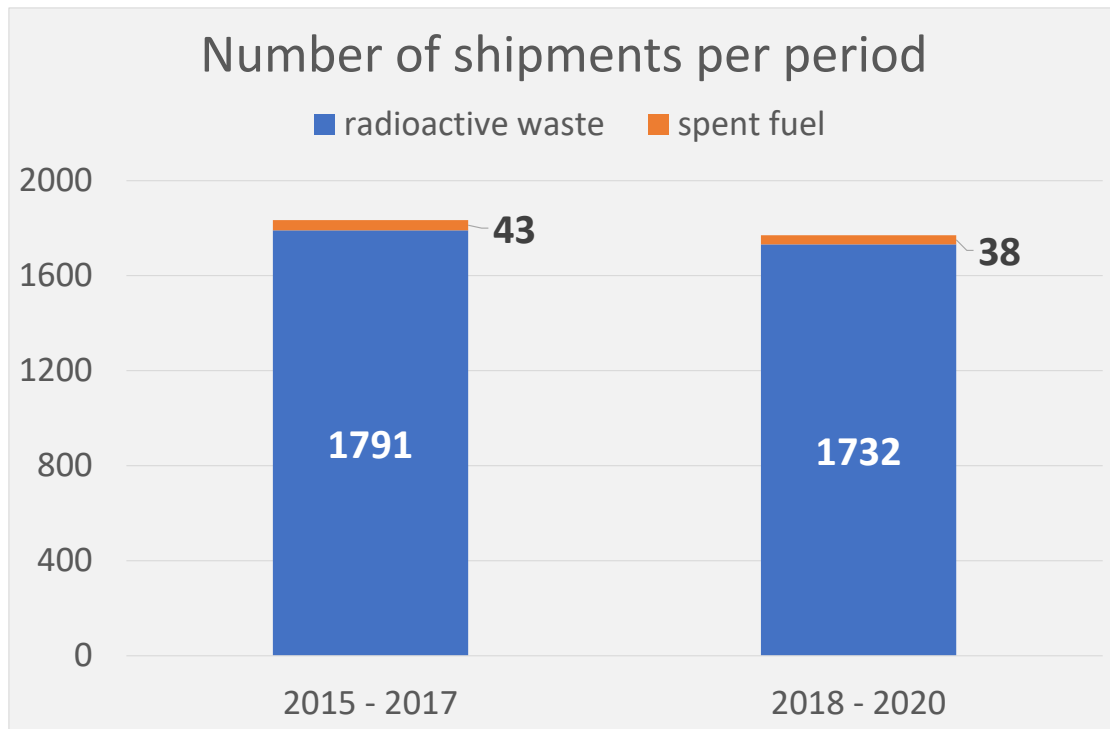


Figure 2. Number of shipments

In terms of authorised shipments, 98% (1,732 shipments) related to radioactive waste and 2% (38 shipments) related to spent fuel.

Most of the authorisations and shipments pertained to intra-Community movements. Overall, 92.6% of shipments were intra-Community (MM category), while 2.7% was for exports (ME category) and 4.7% for imports (IM category).

Statistics show that for 79% of all intra-Community shipments the radioactive waste originated in the nuclear industry, while 21% originated from non-nuclear activities (e.g. medicine, research).

Processing of radioactive waste (such as treatment for volume reduction, or conditioning) in dedicated facilities was the main purpose of shipments, as well as returns of processed radioactive waste or spent fuel to the country of origin. Sweden and Germany were the countries issuing the highest number of authorisations, both as country of origin and country of destination.

Movements of spent fuel were either due to reprocessing or return to the country of origin.

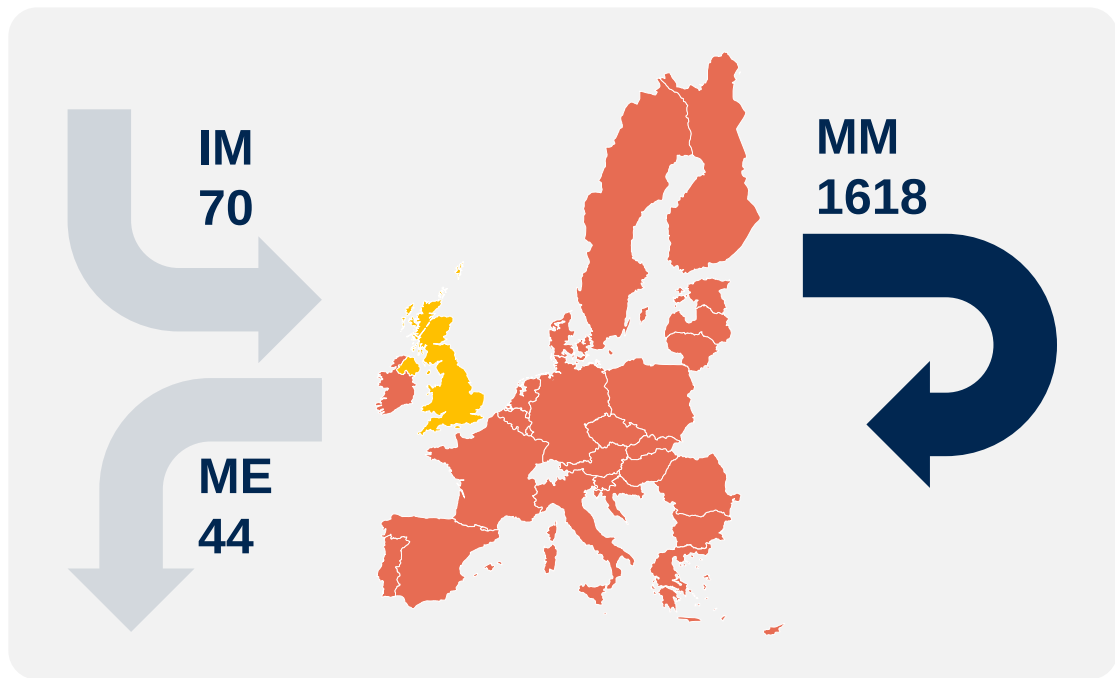


Figure 3. Shipments of radioactive waste, intra-Community (MM), exports (ME), imports (IM)

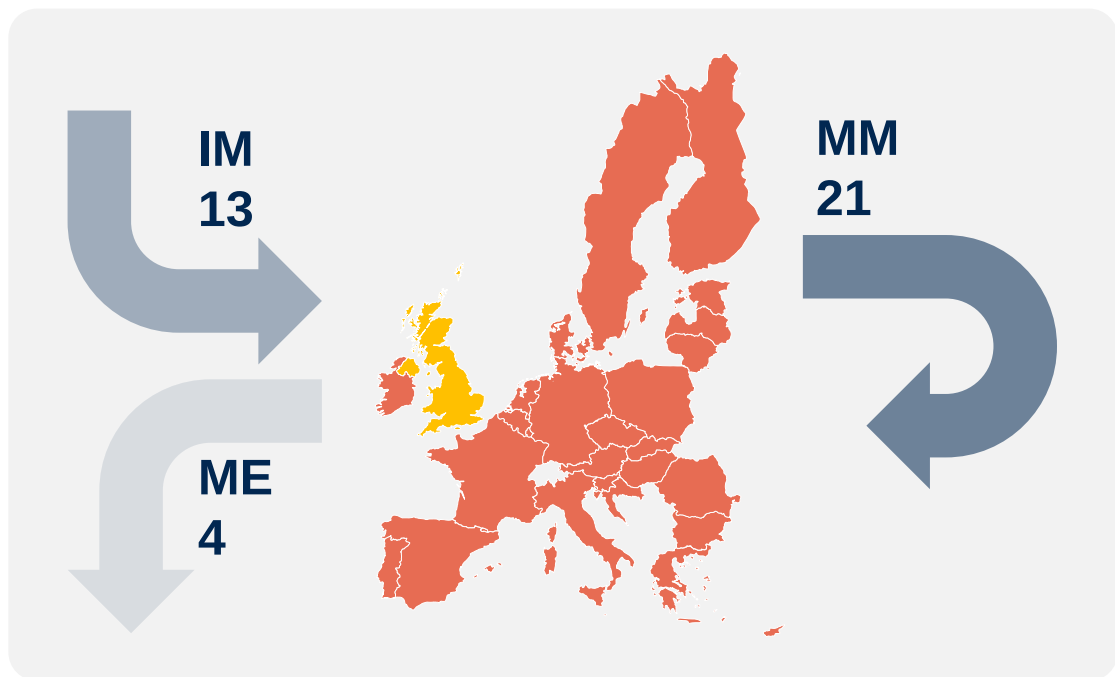


Figure 4. Shipments of spent fuel, intra-Community (MM), exports (ME), imports (IM)

4. FOLLOW-UP AND CONTINUOUS IMPROVEMENT

The Third Commission Report on the implementation of the Directive identified two needs: to enhance the harmonization of the standard document with the reporting template requirements; and to follow the effects of the Basic Safety Standards over the implementation of the supervision and control of transboundary shipments.

In its follow-up on the former point, the Commission has proposed, based on a proposal from a Member State, a revision of the standard document in line with Articles 17(2) and 21 of the Directive, with the aim to include information on the initial shipments in the amended standard document. Thus, in case of return shipments, involved Member States will be able to track shipments. In addition, as suggested by two Member States, the Commission has presented a digital standard document.

Regarding possible effects of the Basic Safety Standards on the implementation of the Directive, the Commission did not observe any major issue. However, the reported case of two refusals to consent to transit of radioactive waste through a Member State raised an important question about the application of the Directive. There were indeed different views between Member States whether or not transboundary shipments of contaminated scrap metal, that is treated and recycled, is within the scope of the Directive or not, as a Member State regulatory body may classify that material as radioactive waste. As per the definition of radioactive waste²⁴, if the regulatory bodies under the legislative and regulatory framework of the countries of origin and destination control the radioactive material as radioactive waste for which no further use is foreseen by either the countries of origin or destination, that material qualifies as radioactive waste under the Directive. Accordingly, the Commission would consider that a consent is due in such cases, notwithstanding the transit country not having qualified such material as radioactive waste.

In addition, one Member State indicated their preference to have NORM²⁵ waste shipments always within the scope of Council Directive 2006/117/Euratom. In this respect the Commission recalls²⁶ that from a legal point of view all waste containing NORM which requires regulatory control and is categorised as radioactive waste falls under the scope of the Directive.

During its XII. Meeting the Advisory Committee invited the Commission to consider an update of the standard document, specifically including information on the origin of the waste, i.e. reference to initial shipments.

²⁴ Article 5(1) of the Directive reads: ‘radioactive waste’ means radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the countries of origin and destination, or by a natural or legal person whose decision is accepted by these countries, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the countries of origin and destination.

²⁵ Naturally Occurring Radioactive Material.

²⁶ As pointed out in the Third Commission Report to the European Parliament, the Council and the European Economic and Social Committee on the implementation of the Directive.

5. CONCLUSIONS

The implementation of the Directive ensured that all transboundary movements of radioactive waste and spent fuel within the Community took place with the prior informed consent of the competent authorities of all involved Member States (including transit countries), through the use of the standard document. The information related to all authorised shipments within a defined reporting period (three years) was regularly transmitted by all Member States to the Commission. Supervision and control of shipments of radioactive waste and spent nuclear fuel was thus guaranteed, throughout the Community. For that purpose, the use of the provided "reporting template" although not mandatory, is still highly encouraged as it enabled straightforward data retrieval and mitigated risks of misinterpretation of information.

Overall, the Commission concludes that the current Euratom legal framework consisting of the Directive, the Basic Safety Standards and the Radioactive Waste Directive ensured the highest safety levels with respect to the risks of ionizing radiation in the territory of the EU in the context of transboundary shipments. Nonetheless, the Commission notes that possible differentiations between Member States in defining radioactive waste may lead to some issues in information and consent process. This is a matter for improvement, exploring options for further harmonisation in this field in agreement with the Member States.