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COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	17 December 2019
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
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Subject:	COMMISSION STAFF WORKING DOCUMENT […] Accompanying the document Report from the Commission to the Council, the European Parliament and the European Economic and Social Committee on the implementation by the Member States of Council Directive 2006/117/EURATOM on the supervision and control of shipments of radioactive waste and spent fuel Third Report

Delegations will find attached document SWD(2019) 437 final.

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COMMISSION STAFF WORKING DOCUMENT

[…]

Accompanying the document

Report from the Commission to the Council, the European Parliament and the European Economic and Social Committee

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

Third Report

{COM(2019) 633 final}

Contents

1. INTRODUCTION

The present Staff Working Document (SWD) is prepared in support of the Commission's third report to the European Parliament, the Council and the European Economic and Social Committee (COM(2019)633) on the implementation of Council Directive 2006/117/Euratom[1] on supervision and control of shipments of spent fuel and radioactive waste by the Member States in the 2015-2017 (26.12.2014 to 25.12.2017) period. It is based on the latest national reports from Member States to the Commission on the implementation of the Directive due by December 2017.

According to Article 20, Member States have to report every three years to the Commission on the implementation of the Directive. On the basis of national reports the Commission shall, in accordance with the procedure laid down in Article 21 (Advisory Committee), establish a summary report for the European Parliament, the Council and the European Economic and Social Committee. In its report the Commission shall pay particular attention to the implementation of Article 4 on reshipment related to non-authorised shipments and undeclared radioactive waste.

The overall purpose of this document (SWD) is to provide various stakeholders with information on current radioactive waste and spent fuel shipments, and their supervision and control for the purpose of adequate protection of the population. This document provides also an overview and specific information on authorisations for import, export and transit issued by Member States and summarises the feedback from the Member States in implementing the Directive.

All EU Member States produce radioactive waste from numerous activities including energy production, research, industrial and medical applications. In addition, those Member States operating nuclear power plants and research reactors also generate spent fuel. Spent fuel can be either considered as radioactive waste or, in a "closed fuel cycle", reprocessed in the Member State of origin or abroad for further use[2,3,4]. This report covers both spent fuel and radioactive waste import to, transit through and export from the Community.

As of 2016, nuclear energy accounts for 28.1 % of the production[5] of energy in the EU. Fourteen Member States[6] are operating 126 nuclear power reactors in the Community and three Member States (Finland, France and Slovakia) have construction projects for new-built nuclear power plants ongoing[6]. Another eight Member States are in the pre-project phase for building new nuclear power plants (United Kingdom, Hungary, Poland, etc.) or planning to build new units.

Most Member States that currently operate nuclear power plants are aiming for lifetime extension. Poland is not a nuclear power plant operator today but has expressed its intention to potentially develop nuclear power plants in the near future. In the EU, as of January 2018, 93 nuclear power plants[7] were in final shutdown in 11 Member States and some of these Member States have

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

2 Communication from the Commission Nuclear Illustrative Programme presented under Article 40 of the Euratom Treaty for the opinion of the European Economic and Social Committee{SWD(2016) 102 final}.

3 For an overview on this topic, the European Commission together with EASAC have issued in 2014 the report "Management of spent nuclear fuel and its waste" that can be found at http://publications.jrc.ec.europa.eu/repository/bitstream/JRC84826/jrc-report-anagement-spent-fuel-and-waste.pdf (Doi:10.2760/25402).

4 Status and Trends report in spent fuel and radioactive waste management, IAEA Nuclear Energy Series NW-T-1.14, https://www.iaea.org/publications/11173/status-and-trends-in-spent-fuel-and-radioactive-waste-management.

5 EU energy in figures, statistical pocketbook 2018, ISBN 978-92-79-88735-2.

6 The 14 Member States that have nuclear power reactors in operation are Belgium, Bulgaria, Czechia, Finland, France, Germany, Hungary, the Netherlands, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom (Croatia does not have a nuclear power plant within its own national borders, but co-owns with Slovenia the Krško power plant).

7 Information from the IAEA "Power Reactor Information System", https://pris.iaea.org/Home/Pris.asp.

already some reactors in decommissioning stage and/or in preparation for decommissioning. Only three reactors have been decommissioned so far, all of which are in Germany.

In addition, 19 Member States[8] have research reactors at different stages of their lifecycle – operational, shutdown or under decommissioning. Subject to the reactor design Member States are often depending on supply of nuclear fuel and return of spent fuel to countries external to the EU (e.g. Russia, USA). In most cases there is also an arrangement for return of spent fuel to the supplier, which is covered both by the provision of this Directive and through Directive 2011/70/Euratom[9].

In addition, some of the fuel cycle facilities, e.g. uranium mines, fuel fabrication plants and reprocessing plants came to the end of their lifecycle or were closed and are under decommissioning and/or remediation.

All above described activities are generating radioactive waste and/or spent fuel, and shipments of these materials occur between Member States, as well as exports and imports between the Community and third countries. The transport of these materials is due to available capacities for processing or reprocessing (hence minimisation of waste) and/or need for safe long term management (i.e. disposal). It is of utmost importance for the European Union that radioactive waste and spent fuel is managed (including transportation) in a safe, responsible and effective way, under the supervision of the national competent authorities.

The management of radioactive waste and spent fuel is subject to legal requirements with the aim to ensure the highest standards of safety and protection of workers and the general public. These requirements stem from both international and EU law. At European Union (EU) level, the Basic Safety Standards Directive 2013/59/Euratom[10] (that was to be transposed by Member States by February 2018) has an overall objective to enhance the protection against the dangers arising from exposure to ionizing radiation. It repeals and consolidates in a single piece of legislation the provisions of five EU Directives, including the High-Activity Sealed Sources Directive[11]. In compliance with the latter Directive, EU Member States have established national electronic registries for radioactive sources and source holders, protected against unauthorized access. Building on that the new Directive 2013/59/Euratom also includes requirements for the management of orphan sources and contaminated scrap metal, as well as on management of material containing naturally occurring radionuclides (NORM).

Within the scope of this comprehensive EU framework, Directive 2006/117/Euratom specifically addresses transboundary shipments of radioactive waste and spent fuel, laying down a system of supervision and control for import to, transit through and export from the Community aiming at adequate protection of EU population.

2. GENERAL PRINCIPLES FOR SHIPMENT OF SPENT FUEL AND RADIOACTIVE WASTE

Directive 2006/117/Euratom applies to shipment of spent fuel and radioactive waste whenever the country of origin, the country of destination or any country of transit is an EU Member State. It requires that Member States involved in the shipment (State of origin, State of destination and

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8 The Spanish research reactors have been all decommissioned.

9 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.

10 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.

11 Council Directive 2003/122/Euratom of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources.

transit States) are informed about any planned shipments on their territories, and shall either give their consent or a reasoned refusal to these shipments.

Under Council Directive 2006/117/Euratom, each Member State should remain fully responsible for the choice of its own policy on the management of radioactive waste and spent fuel within its jurisdiction. The Directive should therefore be without prejudice to the right of Member States to export their spent fuel for reprocessing or radioactive waste for processing. Also nothing in its provisions implies that a Member State of destination has to accept shipments of radioactive waste and spent fuel for final treatment or disposal, except in the case of reshipment (return to the country of origin). However, any refusal needs to be justified on the basis of the criteria set out in the Directive. They should not be arbitrary and should be founded on relevant national, Community or international law. Moreover, in line with the provisions set by the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (further the Joint Convention), the Directive prohibits the 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 it safely.

For intra-Community shipments, whenever an entity which, under the applicable national law, is responsible for the radioactive waste or spent fuel (i.e. holder[12]) plans to carry out a shipment, it has to submit a duly completed application to the competent authorities of the Member State of origin[13].

Imports from third countries into the Community also require the consignee (i.e. any natural or legal person to whom radioactive waste or spent fuel is shipped) to submit an application to the competent authorities of the Member State of destination[14]. Concerning exports outside the EU borders, the holder shall submit an application for authorisation to the competent authorities of the Member State of origin and then the competent authorities in the Member State of origin must ask the relevant authorities of the country of destination and countries of transit for their consents[15].

As regards transits of radioactive waste and spent fuel through the Community originating from and destined to a third country, the entity responsible for the safe management of the material in the first Member State of transit shall submit an application for authorisation to the competent authorities of that Member State[16].

Council Directive 2006/117/Euratom sets requirements for the use of a standard document for the supervision and control of shipments of radioactive waste and spent fuel (further referred to as "standard document"), and the establishment of criteria for intra-Community shipments, imports from outside the EU, exports from Member States to third countries and transits within the Community. The standard document adopted with a Commission Decision in 2008[17] acknowledges different types of shipments reflected in the "Type Code" graphically presented in Figure 1 and summarised in Table 1.

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12 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.

13 See Article 6 of Directive 2006/117/Euratom.

14 See Article 13 of Directive 2006/117/Euratom.

15 See Article 15 of Directive 2006/117/Euratom.

16 See Article 14 of Directive 2006/117/Euratom.

17 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).

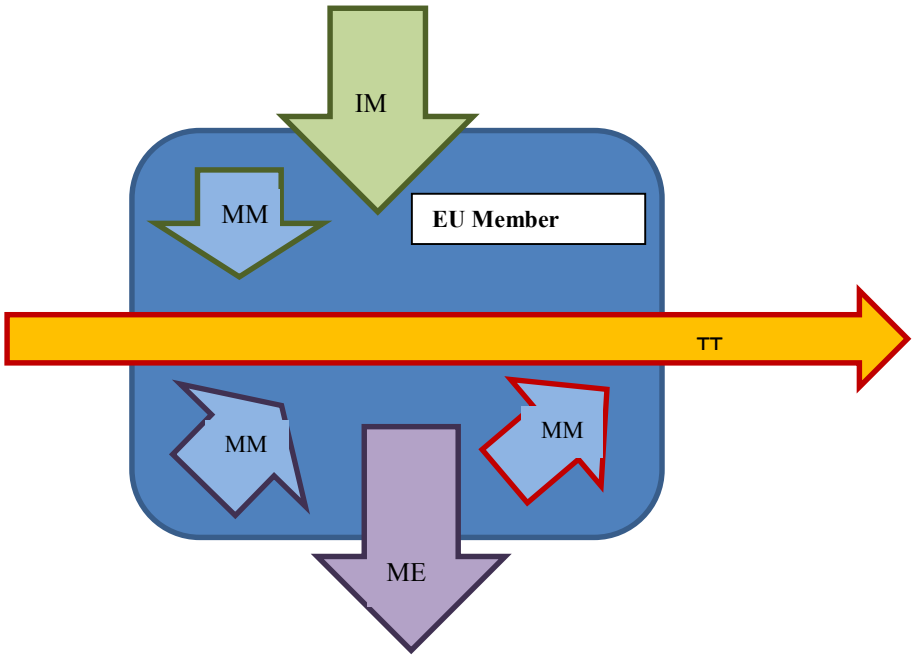

Table 1. Types of shipments and respective "Type Code" according to the standards document of Directive 2006/117/Euratom

Type of Shipment	**Different possibilities for movements within, into and out of Community**	**Type Code used**
Intra Community	• *Import*, (for the Member State that consents as destination) can be associated with movement from an EU Member State to another EU Member State, i.e. internal EU shipment. • *Export,* (for the Member State that authorizes as origin) can be associated with movement from an EU Member State to another EU Member State, i.e. internal EU shipment. • *Transit,* (for the Member State that consents to the transit) can be associated with internal EU movement, from an EU Member State to another EU Member State.	MM
Extra Community	• *Import*, from a country external to EU (third country) to an EU Member State	IM
	• *Export*, from an EU Member State to a country external to EU (third country)	ME
	• *Transit*, from a country external to EU to a country external to EU (third countries of origin and destination), but the shipment going through some EU Member State(s).	TT

Figure 1. Types of shipments and respective "Type Code"

The shipments of spent fuel and radioactive waste cannot take place until the competent authorities of the country of destination and of any country of transit have notified the competent authorities of the country of origin their consent (or until giving their tacit consent according to Article 9(2) of the Directive).

The competent authorities of the Member State of origin (in case of ME and MM) shall send the duly completed application to the competent authorities of the Member State of destination and of the Member States of transit (see Article 7 of the Directive). The Directive stipulates a period of two months after receipt of the application for notification of consent or refusal.

The authorisation is issued by competent authority of:

- in case of ME and MM, Member State of **origin** of the shipment,
- in case of IM, Member State of **destination** of the shipment,
- in case of TT, the **first** Member State that the shipment entry in the EU territory.

The competent authorities in the Member States of transit or destination may add conditions to the shipments of spent fuel and radioactive waste. Nevertheless, for shipments within the Community, it is not possible to lay down conditions which are more stringent than those laid down by the national law of a Member State on the shipment of radioactive waste on its own territory.

Finally, if the conditions applying to the shipment are not complied with or the shipment cannot be completed, the competent authorities of the Member State of origin must ensure that the radioactive waste and/or spent fuel in question is taken back by the holder, unless an alternative safe arrangement can be made. The holder shall be liable for costs arising in cases where the shipment cannot or may not be completed (see Article 12 of the Directive).

3. STATUS OF IMPLEMENTATION OF THE GENERAL PROVISIONS

3.1. Transposition of the Directive

All 28 Member States completed the transposition of the Directive by 2013 and notified their transposition measures. Transposition details for each Member State are given in the Staff Working Documents of the first[18] and second[19] reporting period.

3.2. Standard document for the supervision and control of shipments

Commission Decision 2008/312/Euratom established the standard document to be used by EU Member States for any shipments of radioactive waste and spent fuel falling under the scope of the Directive (thus including imports, exports and transits between Member States and from/to outside of the Community). As amended in 2011, 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;
- Description of radioactive waste consignment and list of packages;
- Acknowledgement of receipt of radioactive waste and spent fuel;

[18] Commission Staff Working Document SWD(2013)150 final "Shipment Directive" Accompanying the document Report from the Commission to the Council, the European Parliament and the European Economic and Social Committee on the implementation by the Member States of Council Directive 2006/117 EURATOM on the supervision and control of shipments of radioactive waste and spent fuels{COM(2013) 240 final}.

[19] Commission Staff Working Document "Shipment Directive" Accompanying the document Report from the Commission to the Council, the European Parliament and the European Economic and Social Committee on the implementation by the Member States of Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuels{COM(2018) 6 final}.

- Authorisation of shipment of spent fuel and radioactive waste.

3.3. Competent authorities

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". In order to facilitate communication between Member States regarding supervision and control of shipments of spent fuel and radioactive waste, by July 2017 all Member States provided the Commission with the updated contact details of their competent authority or authorities.

3.4. Transmission

In compliance with the requirement of Article 19 of the Directive, the Commission issued a Recommendation[20] for a secure and effective system of transmission of the documents and information relating to the provisions of the Directive. The Commission has also established an electronic communication platform containing relevant information related to the Directive (https://ec.europa.eu/energy/en/topics/nuclear-energy/radiation-protection/transport-radioactive-materials).

The data have been updated, where appropriate, following information transmitted to the Commission by each Member State as foreseen under Article 19 of the Directive, including the contact details of the competent authorities in the Member States. The list of these authorities is presented in Annex I and can also be accessed via the Europa website mentioned above.

3.5. Regular reports

As stated in Article 20, all Member States have to inform the Commission of the implementation of the Directive. This is done by means of regular reports submitted by competent authorities every three years. In order to support Member States in their reporting obligations and ensure a certain degree of harmonisation of the information received, the Commission provided Member States with a reporting template that they can – but are not obliged to – use for submitting their national reports to the European Commission. On the basis of national reports, the Commission is due to issue a summary document aimed to inform the European Parliament, the Council and the European Economic and Social Committee. This latter was drafted by the Commission, in parallel to the present Staff Working Document.

The deadline for submission of national reports under Directive 2006/117/Euratom was 25 December 2017. During this third reporting round fewer delays were noted with the respect to the previous reporting period. In the current reporting round, only four countries did not submit their reports by the deadline; however they did it within a delay of less than six months (Italy, Malta, Portugal and Greece).

For this third reporting period, Member States were to provide the Commission with their national reports covering shipments authorised during 2015-2017.

National reports have been thoroughly assessed by the Commission. Interaction with some Member States was necessary in order to clarify or complete the information. In order to provide an overview of the authorisations given Community-wide and to inform about any trends or practical difficulties, the Commission has prepared the third Report to the European Parliament, the Council and the European Economic and Social Committee on the implementation of the Directive by the Member States during the considered reporting period, as well as the present

[20] Commission Recommendation (2009/527/Euratom) of 7 July 2009, for a secure and effective system of transmission of the documents and information relating to the provisions of Council Directive 2006/117/Euratom Directive.

Staff Working Document. However, one Member State systematically does not report details on consents (as country of destination or transit), and two other Member States did not report the return consents (return) between themselves. However, all shipments of spent fuel and/or radioactive waste were reported and authorized (i.e. no unauthorized shipments took place during the reporting period).

Considering the inconsistences and the issues showed in Sections 4.4 and 4.5, and the Member States suggestions for the improvement of the reporting template, a new version has been developed. The new version of the reporting template with the explanations was presented during the XI Advisory Committee meeting.

4. SHIPMENTS OF RADIOACTIVE WASTE AND SPENT FUEL IN 2015-2017

4.1. Overview of authorised shipments

The Directive requires shipments of radioactive waste and spent fuel to take place only with prior informed consent of the competent authorities of all Member States involved, including transit Member States[21]. For the current reporting period, 19 Member States out of 28 reported on authorised shipments on their territory.

The following nine Member States did not report any authorised shipment on their territory: Croatia, Cyprus, Estonia, Greece, Ireland, Latvia, Luxembourg, Malta and Portugal. Among them, six Member States did not report any authorised shipments of radioactive waste on their territory since the beginning of reporting obligations under the present Directive (2009): Croatia[22], Cyprus, Estonia, Greece, Malta and Portugal.

Overall, 146 authorisations for different types of shipments (intra- and extra-Community shipments) have been reported by EU Member States for the period 2015-2017. The Figure 2 shows the number for spent fuel, radioactive waste and other material authorizations. The other material type corresponds to the samples of radioactive material which are shipped for analysis[23], the other material shipments are considered in the radioactive waste type for the rest of the statistics presented on this staff working document (for the present reporting period 2015-2017).

In comparison with the two previous reporting periods under the present Directive, this is the lowest number of authorisations since the beginning of the reporting obligations in 2009 (Figure 2). In particular the number of authorisations for spent fuel shipments decreased by 50% with respect to the first reporting period (2009-2011). However, as each authorization may cover more than one shipment, this does not necessarily indicate a change in the number of shipments (see below). Moreover, this is the first reporting period, in which the number of shipments is available to the Commission, therefore no comparisons with previous periods are possible.

For all 146 reported authorisations in 2015-2017, 203 consents have been issued by the receiving or transit Member States. Around 86% of the authorisations relate to shipments of radioactive waste (including other materials), 14% to the shipment of spent fuel.

21 See Article 9 of Council Directive 2006/117/Euratom.

22 Croatia reported for the second time since the country joined the EU on 1 July 2013.

23 Spent fuel was not considered as other material even if it was shipped for research. Return of samples are considered as radioactive waste. The origin of the other material shipments are Sweden and United Kingdom.

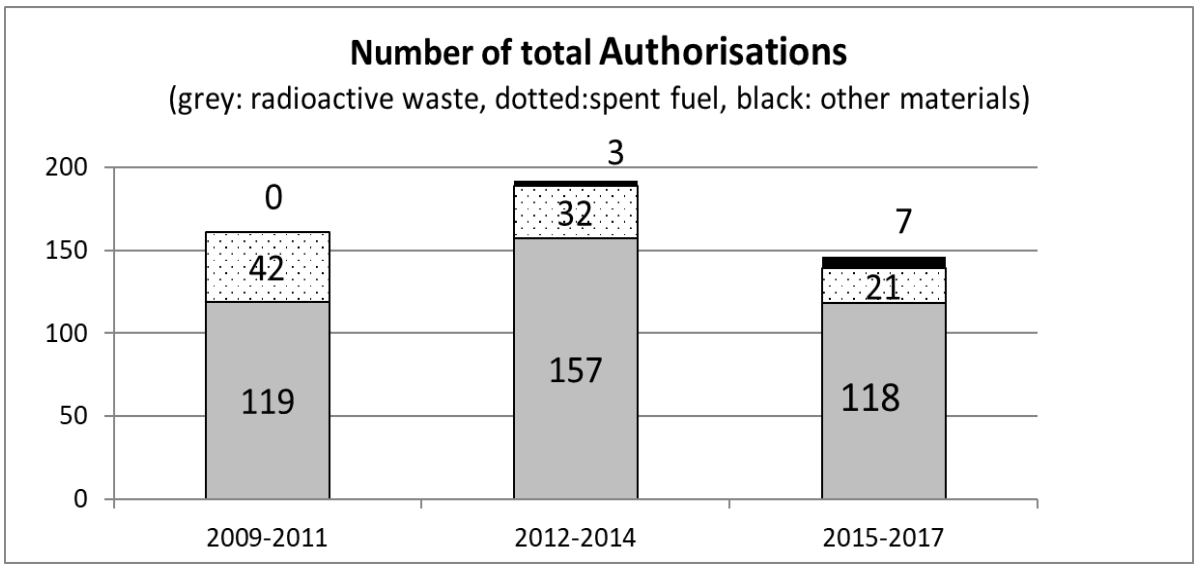

Figure 2. Number of total authorisations for shipments of radioactive waste, spent fuel and other materials.

Each authorisation may cover more than one shipment. In total, 1834 shipments of radioactive waste or spent fuel on the Community's territory have been authorised (Figure 3). Concerning specifically radioactive waste (and to a lesser extent also spent fuel), some countries tend to issue one authorisation for multiple shipments. For example, the United Kingdom issues authorisations for multiple shipments with the purpose of radioactive waste treatment. As a result, on average there were 12-13 authorized shipments per each authorisation. It should be noted that some authorisations are given for several shipments to be carried out over a time period that may exceed the period covered by the present report (2015-2017).

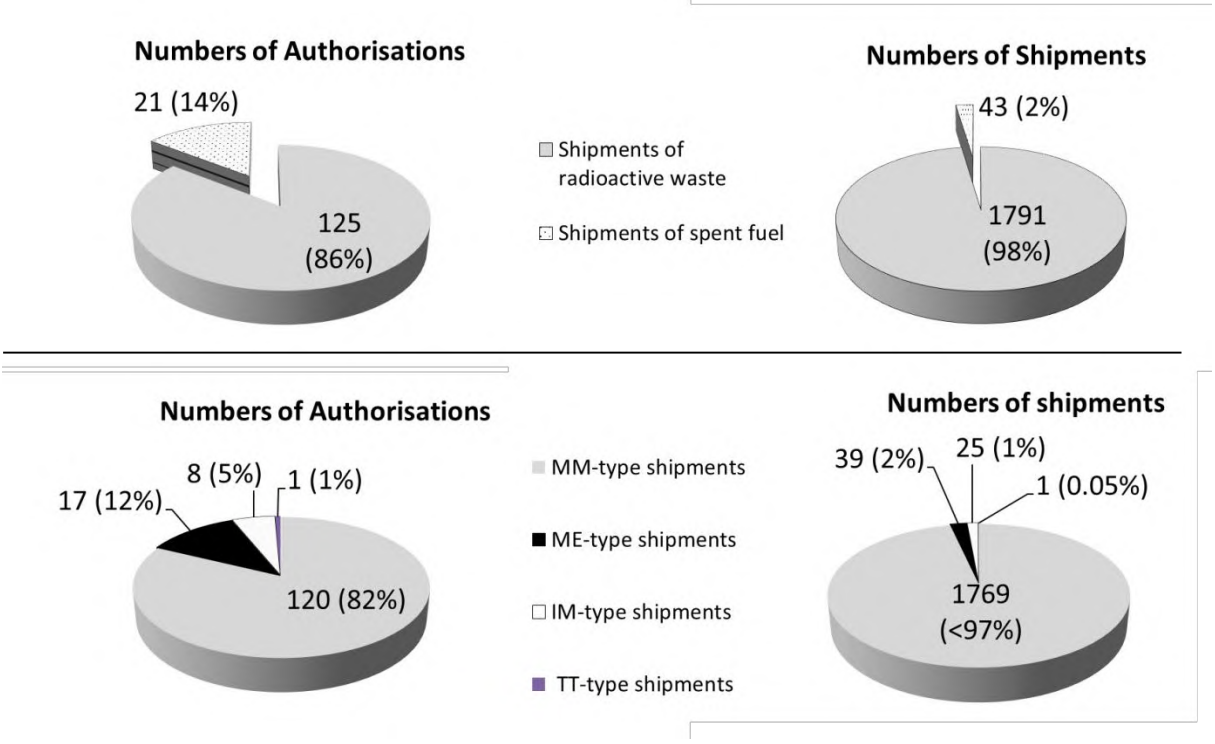

Figure 3. Number of Authorizations and Shipments (spent fuel vs radioactive waste and type of shipments)

As regards the different types of shipments, 82% of authorisations (and 97% of authorised shipments) relate to shipments between Member States: 120 authorisations for a total of 1769 MM type shipments (Figure 3). About 12% of authorisations (2% of authorised shipments) relate to exports to third countries (ME type shipments), and about 5% of authorisations (1% of authorised shipments) to imports (IM type shipments). One single transit originating from outside the EU and having a third country as final destination (TT) was authorised during 2015-2017. This latter was reported by Lithuania and involved a return of rods of boiler from Belarus to the manufacturer in India.

4.2. Intra-Community shipments (MM type)

Concerning shipments of radioactive waste, there were a total of 106 authorisations related to intra-Community (MM-type) shipments, out of the 125 radioactive waste authorisations reported for the present report (2015-2017). Some authorisations are given for several shipments to be carried out over a time period that may exceed the one covered by the present report (2015-2017). The MM-type authorisations account for 1741 shipments of radioactive waste authorised by 14 Member States of origin during the current reporting period (Figure 4).

Two Member States issued 62% of the reported authorisations for shipping radioactive waste to another Member State (66 authorisations for 362 shipments from Germany and Sweden, the majority for the purpose of return of treated waste to the country of origin)[24]. As mentioned in Section 4.1, the United Kingdom tends to issue single authorisations for multiple radioactive waste shipments, and most of these shipments are sent to Sweden and Germany for the purpose of treatment.

Two Member States issued 54% of consents as destination country for the intra-Community radioactive waste shipments (Figure 4). Germany and Sweden are the destination of these authorisations, since they have facilities for: repackaging, conditioning, and treatment of radioactive waste.

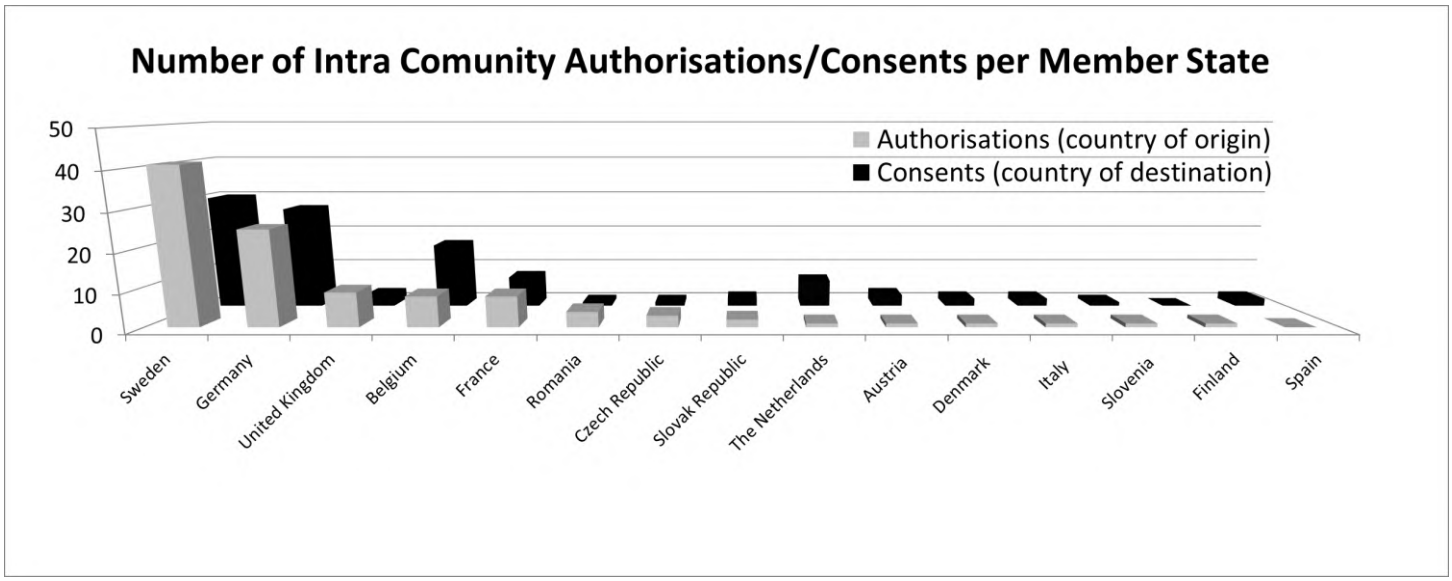

Figure 4. Intra-Community authorisations issued for radioactive waste shipments[25] during the reporting period (2015-2017)

[24] Two thirds of the authorisations of these two countries were for returning radioactive waste, 44 MM authorisations (202 shipments).

[25] Spain has no authorisations.

About 38% of the issued authorisations for intra-Community shipments of radioactive waste (40 authorisations) implied a transit through the territory of a Member State different from both the origin and the destination country.

As regards the purpose of all intra-Community shipments of radioactive waste, 79% of authorisations are related to the treatment of waste in another Member State and its return to the country of origin[26]. Four authorisations concern the return of radioactive waste to the country of origin after (re)treatment or reprocessing of spent fuel in the United Kingdom and France. Five authorisations are issued for the purpose of analysis/research, and 12 relate to the return of radioactive waste from the revision of primary pumps. One authorisation was issued for the return of a shipment which was unsuitable for receipt at the site.

For 89% of all MM-type authorisations the nuclear energy industry gave rise to the radioactive waste shipments (58% of the shipments). The remaining 11% are related to non-nuclear power activities (e.g. medicine, research). About 61% of the authorisations (93% of shipments) involve sea ways (road/sea, road/rail/sea, or rail/sea), 28% are executed by means of road or rail/road, and only two authorisations involve air transport (air or road/air).

Concerning spent fuel shipments, 14 authorisations for 28 shipments refer to intra-Community shipments. Member States of origin are Belgium, Finland, France, Germany, Italy, the Netherlands, Sweden and the United Kingdom. Member States of destination are Belgium, France, Germany, Sweden and the United Kingdom. France and the United Kingdom have specialized facilities (they received spent fuel for reprocessing during the reporting period).

About 29% of the authorisations of all MM-type (64% shipments) of spent fuel are related to the (re)treatment or reprocessing of spent fuel in France. The remaining authorisations are for the purpose of analysis/research or returns after examination (as for example the shipments between Sweden and the United Kingdom).

Type of activity giving rise to the spent fuel is nuclear energy industry and research (about 43% of authorisations for nuclear industry and 50% of the shipments). About 86% of the authorisations (93% of shipments) are executed by means of road or road/rail. The remaining 7% involve sea way (road/sea or road/rail/sea).

In contrast to radioactive waste shipments, for spent fuel there were only few authorisations for multiple shipments (on average there are two authorized shipments per authorisation). Specifically, multiple shipment authorisations were issued by France (four authorisations) related to the (re)treatment or reprocessing of spent fuel.

4.3. Extra-Community shipments (exports and imports)

Concerning exports[27] of **radioactive waste** from the Community to third countries, a total of 13 (ME) authorisations - representing 35 shipments - were issued by six Member States during the reporting period (Table 2). Most authorisations of those exports were given by two Member States (Sweden and the United Kingdom). Section 4.6 presents the significant conditions reported by Member State on export criteria.

[26] E.g., (re)packaging, conditioning, and volume reduction.

[27] Pursuant to the Directive, exports are shipments from the authorising MS to a third country; consents by transit MSs are required.

With reference to imports[28] of **radioactive waste** from outside the EU, three Member States (France, Germany and the United Kingdom) received radioactive waste from third countries. In total, 5 (IM) authorisations for 14 shipments were issued during 2015-2017 (Table 3).

Three imports were related to the final disposal of a third country's radioactive waste within the Community's territory: one single shipment from Monaco to France for final disposal in France, and two single shipments of a depleted uranium catalyst from the Bahamas to the United Kingdom. France states that a significant condition for authorizing the transfer of spent fuel or foreign radioactive waste to the French territory is the preliminary signing of a bilateral agreement with the country of origin of the radioactive waste or spent fuel. French regulation also prohibits the storage of foreign radioactive waste on French territory, except for those from the Principality of Monaco. The United Kingdom states that it allows imports for disposal only in certain circumstances (such as from developing countries which do not have their own facilities and cannot reasonably acquire them).

As regards **spent fuel**, a total of 4 (ME) authorisations for just as many shipments were issued by three Member States (Bulgaria, Germany and Poland) to export spent fuel to a third country (Section 4.6 dedicated to export criteria).

Bulgaria reports a single shipment of spent fuel for reprocessing in Russia, and states that it is compliant with the Commission Recommendation of 4 December 2008 on the criteria for the export of radioactive waste and spent fuel to third countries.

Poland reports one authorisation for the export of Highly Enriched Uranium spent fuel of Russian origin from a research reactor. Poland has signed an international agreement with the USA and with the Russian Federation, under the Global Threat Reduction Initiative (GTRI), for the conversion of their Highly Enriched Uranium spent fuel research reactor (by the return of to the Russian Federation) to Low Enriched Uranium.

Germany has authorised two single shipments to return irradiated alternative fuel (U3Si2-AC) to the USA (for research purposes).

Two Member States (Germany and Sweden) received spent fuel imports from Norway (IM). In total, three (IM) authorisations for 11 shipments were issued during 2015-2017, for research purposes.

Table 2. Exports from Member States to third countries

Member State (authorising and sending the shipment)	Third country (country of destination)	Number of Authorisations (shipments)	Radioactive waste / Spent fuel	Purpose of the shipment as reported by Member States
BELGIUM	SWITZERLAND	2 (8)	Radioactive waste	Return of radioactive waste from components of a primary pump (from nuclear industry)

[28] Pursuant to the Directive, imports are shipments from a third country to the authorising MS; consents by transit MSs are required.

Member State (authorising and sending the shipment)	Third country (country of destination)	Number of Authorisations (shipments)	Radioactive waste / Spent fuel	Purpose of the shipment as reported by Member States
BULGARIA	RUSSIA	1 (1)	Spent fuel	Reprocessing (from nuclear industry)
FRANCE	AUSTRALIA	1 (1)	Radioactive waste	Vitrified residues, return after (re)treatment/ reprocessing of spent fuel (from nuclear industry)
GERMANY	USA	1 (1)	Radioactive waste	Treatment (from medicine, research, non-nuclear industry)
GERMANY	USA	2 (2)	Spent fuel	Return after irradiation (from research)
ITALY	USA	1 (3)	Radioactive waste	Treatment (from medical industry)
POLAND	RUSSIA	1 (1)	Spent fuel	Return according GTRI, for reprocessing and radioactive waste disposal (from research)
SWEDEN	NORWAY	1 (1)	Radioactive waste	For research purposes (from nuclear industry)
SWEDEN	NORWAY	1 (1)	Radioactive waste	For research purposes (from research)
SWEDEN	USA	1 (1)	Radioactive waste	For research purposes (from research)
SWEDEN	USA	1 (1)	Radioactive waste (nuclear industry)	For research purposes (from nuclear industry)
UK	USA	1 (4)	Radioactive waste	Treatment (from nuclear industry)
UK	USA	1 (10)	Radioactive waste	Treatment (from non-nuclear industry)

Member State (authorising and sending the shipment)	Third country (country of destination)	Number of Authorisations (shipments)	Radioactive waste / Spent fuel	Purpose of the shipment as reported by Member States
UK	JAPAN	1 (3)	Radioactive waste	Return after (re)treatment/reprocessing of spent fuel (from nuclear industry)
UK	SWITZERLAND	1 (1)	Radioactive waste (vitrified residues, nuclear industry)	Return after (re)treatment/reprocessing of spent fuel (from nuclear industry)

Table 3. Imports from third countries

Member State (authorising and receiving the shipment)	Third country (country of origin)	Number of Authorisations (shipments)	Radioactive waste / spent fuel	Purpose of the shipment as reported by Member States
FRANCE	MONACO	1 (1)	Radioactive waste	For final disposal (from medical activities)
GERMANY	USA	1 (1)	Radioactive waste	Return after treatment
GERMANY	NORWAY	1 (1)	Spent fuel	For research
SWEDEN	NORWAY	2 (10)	Spent fuel	For research
UK	USA	1 (10)	Radioactive waste	Return after treatment (conditioned Radium-containing waste)
UK	BAHAMAS	2 (2)	Radioactive waste	Treatment and final disposal (from non-nuclear industry)

4.4. Inconsistencies in the reporting

The overall reporting quality has significantly improved over the three reporting periods. Most of the Member States (23 out of 28) included Part A in the first submission of the third report, six Member States use Identify numbers for the shipments. There were very few mistakes in filling the Part B table concerning to the mode of transports and purpose of the shipments.

Also, delays in the fulfillment of reporting obligations have decreased, compared to previous reporting periods, during December 2017 and January 2018, 24 Member States communicated their national report.

- Nevertheless, a lack of homogeneity can be highlighted (the first two issues below were solved in a second stage, as a consequence of an ad-hoc request from the Commission):
    - 5 Member States did not report on the implementation of the Directive (Part A of the reporting template), and another 6 Member States provided an incomplete report;
    - 10 Member States reported spent fuel shipments using the radioactive waste template table (Part B of the reporting template);
    - still some countries did not apply correctly the Directive terminology (type code for intra-Community, import, export and transient) in the reporting and Part B tables;
    - one Member State only filled the table of Part B for MM when it is the authorizing country. And two other Member States did not report the return consents (return) between themselves.
- Additionally, differences have been observed in reporting to the Commission the correct technical data as provided to Member States by the applicant for authorisation[29]. This concerns, in particular:
    - errors on the number of shipments in multiple authorisations;
    - activities (total activities of the shipment, and maximum activities per package in that shipment);
    - understanding the net weight column on the spent fuel Part B table.
- During cross-checking between the Member States' reports, some shipments were found to be missing from the reporting in some of the countries. The reasons for this kind of inconsistency was due to the fact that some Member States:
    - reported shipments from previous period (2012-2014) or for 2018;
    - one Member State had a problem with its reporting tool (ICT system bug), another Member State was considering only the nuclear industry radioactive waste and not from other activities, such as medicine. Thanks to the cross checking some Member States have improved their awareness;
    - cancelled shipments. Transit Member States have not always been informed when shipments had been withdrawn. Also, in two cases, a refusal to grant consent reported by the potential receiver Member State was not reflected in the reports of the Member States from which the request had originated.

[29] Section A-1 – Application for authorisation of shipment(s) of radioactive waste, Commission Decision establishing the standard document (see section 2.2 of this document).

These inconsistencies were identified when cross-checking Member States' reports, due mainly to inaccuracy of the provided information. In this respect, it was particularly important to have full data sets (Table of Part B) available also from transit Member States.

4.5. Issues reported by Member States when using the standard document

The great majority of national reports under the Directive does not indicate any particular issues encountered in the use of the standard document. Some suggestions (from previous 2nd national reports and from current 3rd national reports) are, however, proposed for further improvement. For example:

- to add a section allowing for cross-reference to a previous authorisation/consent whenever the application for shipment is linked to the repatriation of residues arising from that previous shipment. This would facilitate monitoring and provide an audit trail between outgoing shipment for waste treatment/reprocessing of spent fuel and return shipment(s) of resulted waste and by-products.

- to have a digitally editable version of the standard document.

A few countries have also stressed that it is particularly challenging to fulfil the timeframe established by Articles 8 and 9 of the Directive, respectively on "Acknowledgment of receipt and request for information" and "Consent and refusal", when the application is introduced before the bilateral agreement between goverments is signed. On one occasion a Member State did not reply, creating uncertainties to the authorisation authority of the other country; finally the consent was given implicitly.

Finally, a lack of consistency between the standard document and the reporting template has been raised by a few Member States (the United Kingdom and Germany), suggesting enhanced harmonisation of the information required. For example, it was pointed out that the radioactivity is not included in the part B-1 (Application for authorisation of shipment(s) of spent fuel) of the standard document; however it is requested in the spent fuel template table of Part B. In fact, the radioactivity level is not requested in the template table, “activity” is refering to the type of sector from where the waste was originated (e.g. research, commercial nuclear power plants). To avoid the dificulties to use the voluntary reporting template, the Commission services have prepared a reviewed version that was presented during the XI Advisory Committee meeting.

Most of the modifications in the reviewed reporting template were introduced for full alignment with the terminology used in the standard document. Descriptions and clarifications were included for all the data required. Moreover, the main content from previous version of the reporting template was kept. The Member States concerns and the inconsistencies found by the Commission services (section 4.4) were considered during the review. The Member States are encouraged to include the authorisation numbers in their national reports. As concerns the return shipments, a reference of the original shipment can be included in the reporting template (the authorisation registration number of the original shipment).

4.6 Information on significant conditions required by the Member States for shipment– and export criteria implementation

Exports of radioactive waste and spent fuel to third countries fall under Articles 15 and 16 of the Directive. When submitting their national reports to the Commission, Member States are required to indicate any significant conditions they may have established to fulfil the shipment. The significant conditions reported by Member States for the period 2015-2017 are presented in this

section, and complement Member States' information on significant conditions for the two previous reporting periods (see Staff Working Documents SWD (2013)150 final and SWD (2018)4 final).

Austria: Transit shipments are authorised only under the condition of a prior notification 14 days in advance.

Belgium: The carrier(s) have to be in possession of a valid licence for the transport of radioactive materials. In case of import: the consignee has to be registered as importer of radioactive waste or spent fuel and obtain a licence for the use/disposal of radioactive waste or spent fuel. The packaging should be compliant with Belgian regulation, including approval by national authorities as appropriate.

Bulgaria: The only export activities falling under the Directive performed by Bulgaria during the third reporting period is a shipment of spent fuel to the Russian Federation, for reprocessing purposes. Significant conditions in this case are those required by the importing country (not an EU Member State).

Denmark: Danish authorities could request additional information (as it has been requested in some cases).

Ireland: Under Statutory Instrument S.I. 86 of 2009, the Irish Environmental Protection Agency (EPA) will seek the direction form the Ministry of Communications, Climate Action and Environment in respects of any applications it receives, as to whether it may proceed with the application. EPA can as well impose any such conditions as it deems necessary on the undertaking carrying out the shipment, when authorising or granting consent to any shipment.

Latvia: In addition to the requirement to fulfil the conditions set by directive, the Radiācijas drošības centrs (RDC) ir Valsts vides dienesta (VVD) regulation will require that the operator also takes out a relevant licence under the legislation in force (Cabinet Regulation No 752 of 22 December 2015 on the procedures for licensing and registering operations with sources of ionising radiation).

Luxembourg: Under current legislation, exports to third countries are not possible. However, transfers to other Member States are not affected by this export prohibition.

The Netherlands: Dutch legislation requires a transport licence for the transport (including import and/or export) of "splijtstoffen" (fissile materials and all materials containing a mass percentage of 0.1% uranium, 0.1% plutonium or 3.0% thorium). In all other cases (radioactive materials above exemption levels), the transport has to be notified three weeks in advance.

4.7 Information on significant cases of refusal to give authorisation/consent

During the considered reporting period four cases of refusal, concerning applications for the transit of contaminated scrap metal, has been reported by The Netherlands. The Dutch Government considered these transits out of the scope of the Directive, because contaminated scrap metal that will be recycled is not considered, according to Dutch legislation, as radioactive waste. Although the approvals were refused, the transits were carried out according to the applicable national regulations.

In addition, the United Kingdom refused to issue its consent to a German application for the shipment of radioactive waste for incineration and final disposal in the United Kingdom (liquid scintillation cocktails containing Tritium and Carbon 14). The United Kingdom only allows imports for disposal in certain circumstances (such as from developing countries which do not have their own facilities and cannot reasonably acquire them). The United Kingdom states that

after requesting further information from the applicant, the United Kingdom competent authorities concluded that Germany had the capacity to dispose of this waste in its own domestic facilities.

4.8 Member States reporting to the Joint Convention.

The Joint Convention[30] defines safety principles and requirements for management of radioactive waste and spent fuel in line with the internationally agreed safety standards of the IAEA (in particular the safety fundamentals). All 28 EU Member States are Contracting Parties to this Joint Convention which demonstrates Member States' commitment to ensuring high level of safety of spent fuel and radioactive waste – from generation to disposal.

The implementation of the Joint Convention, and in particular its Article 27, requires Member States to report on transboundary movements and exports of radioactive waste and spent fuel. However, the reporting period for the Joint Convention national reports is different to that of the reporting period of this Directive (third reporting period, 2015-2017). During the XI Advisory Committee meeting and the written procedure, several Member States suggested that it could be confusing to include an Annex on the Joint Convention national reports in the reporting template. Accordingly, the shipment (transboundary movements) related information reported under Article 27 of the Joint Convention (October 2014) for the 6th Review Meeting has not been included in this report.

[30] 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.

5. HIGHLIGHTS

Some of the pending issues that from the previous reporting period have been addressed with representatives from EU Member States during the XI meeting of the Advisory Committee held on 8th October 2019. On that occasion, the new version of the reporting template was presented and discussed. Several modifications were introduced in this template in order to achieve full alignment with the terminology used in the standard document. The main content from previous version of the reporting template was kept.

Besides, it is deemed necessary to enhance harmonisation and comparability of the information provided by all Member States in order to reduce room for interpretation and potential misunderstanding.

Additional requests for clarification raised by some Member States were tackled in the framework of the "Transport Study" (ref. ENER/2017/NUCL/SI2.751899) that dealt, among others, with the issue of shipments of radioactive waste between Member States having different clearance levels and that of NORM. Among the preliminary conclusions of the Study[31] it was excluded that different clearance levels for radioactive waste in the EU could represent an issue for shipment activities. Secondly, concerning NORM, it was clarified that all material containing NORM which requires regulatory control and is categorised as radioactive waste falls under the scope of the Directive 2006/117/Euratom and its shipment would be subject to its system of authorisations and consents; whereas NORM not considered as radioactive waste would fall outside the scope of the Directive.

In spite of the positive developments assessed for some pending issues, improvement is still sought for other aspects. Different approaches and interpretations to fill the reporting template has been acknowledged by the Commission, with some Member States having difficulties to report the correct technical data. These considerations refer, in particular, to the reporting of multiple shipments in single authorisations (difficulties in reporting the correct number of shipments per authorisation). Moreover, the technical terminology (in particular the difference between "shipment" and "package") was not always properly reflected in Member States' reports. The approach is uneven also with respect to consents for transit shipments, which are reported in details in the Tables (of the Part B of the reporting template) by the majority of Member States With exception of Germany that - when it is the transit country or the country of destination – provides just a brief information in Part A. Czechia and Slovakia do not report the return shipments between them when they are the country of destination.

In relation to important inconsistencies on the reports, the Commission recontacted some Member States with the request of additional clarification or further information. These exchanges brought new elements to the analysis. And due to the assessment carried out by the Commission, Member States' awareness of reporting all shipments has been improved. However, not all inconsistencies were clarified (e.g. transit Member States). The inconsistencies assessed by the Commission in reporting consents and authorisations for the two last reporting periods, 2012-2014 and 2015-2017 respectively, could have produced a double counting of issued authorisations for the two considered reporting periods (for example, the authorisation and the consents were reported in different reporting periods).

Taking into consideration any comments raised by Member States in their national reports, the outcomes of the analysis, the above mentioned difficulties and the views of the Advisory Committee, the Commission proposes a revised reporting template.

[31] ENER/2017/NUCL/SI2.751899.

The modifications can include a common reference identifying each authorisation (ID number) that would allow easier supervision of the declarations and make it unnecessary to report on more technical details (activity, isotopes, etc.).

The revised reporting template also includes more detailed instructions on how to report on authorisations per multiple shipments and explanatory notes clearly defining the different relevance between authorisations and shipments, for reporting purposes.

Moreover, the adoption of a common criterion for reporting on consents given for transits is recommended.

These suggestions, aimed at both reducing the administrative burden (for Member States and the Commission) and allowing more complete and less controversial supervision of shipments of radioactive waste and spent fuel in the EU, could be implemented during the current reporting period (2018-2020).

According to Article 20 and the procedures laid down in Article 21 of the Directive, the Advisory Committee views on this Staff Working Document have been taken into account.

ANNEX I

List of Competent National Authorities under Article 18 of Council Directive 2006/117/Euratom

Austria	Federal Ministry for Sustainability and Tourism Directorate I/7 – Radiation Protection Untere Donaustraße 11 A-1020 Vienna
Belgium	Federal Agency for Nuclear Control Security and transport department Import and transport office 36 rue Ravensteinstraat B-1000 Brussels
Bulgaria	Bulgarian Nuclear Regulatory Agency 69 Shipchenski prokhod Blvd. BG-1574 Sofia
Croatia	State Office for Radiological and Nuclear Safety Frankopanska 11 HR-10000 Zagreb
Cyprus	Ministry of Labour, Welfare and Social Insurance Radiation Inspection and Control Service Department of Labor Inspection 12 Apellis Street CY-1493 Lefkosia (Nicosia)
Czechia	State Office for Nuclear Safety Division of Radioactive Waste and Spent Fuel Management Senovážné namesti 9 CZ-110 00 Prague 1
Denmark	Danish Health Authority Radiation Protection

	Knapholm 7 DK-2730 Herlev
Estonia	Ministry of the Environment of Estonia Narva str 7a EE-Tallinn 15172
Finland	Radiation and Nuclear Safety Authority (STUK) Nuclear Waste and Material Regulation P.O. Box 14 FI-00881 Helsinki
France	Bureau réglementation et affaires techniques Sous-direction de l'Energie nucléaire Direction générale de l'Énergie et du Climat Ministère de l'Énergie, de l'Environnement et de la Mer (MEEM) Tour Sequia F-92055 LA DEFENSE Cédex
Germany	Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA) Referat323 – Nukleartechnik (NSG), Radioaktive Stoffe Frankfurter Straße 29-35 D-65760 Eschborn
Greece	Greek Atomic Energy Commission Department of Licensing & Inspections P.O. Box 60092 GR-153 10 Aghia Paraskevi-Attiki
Hungary	Hungarian Atomic Energy Authority P.O. Box 676 Fényes Adolf str. 4 HU-1036 Budapest
Ireland	Environmental Protection Agency Office of Environmental Enforment Radiation Protection Regulation 3 Clonskeagh Square, Dublin 14 D14 H424

	Ireland
Italy	Ministero dello Sviluppo Economico Direzione Generale per il Mercato Elettrico, le Rinnovabili e l'Efficienza Energetica, il Nucleare Divisione V – Impieghi Pacifici dell'Anergia Nucleare, Ricerca e Gestione di Materiali e Rifiuti Nucleari Via Molise, 2, I-00187 Roma Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA – ex-APAT) Department of Nuclear, Industrial and Technological Risk Division of Nuclear Plants Via Vitaliano Brancati 48 I-00144 Roma
Latvia	Radiation Safety Centre State Environmental Service Rupniecibas iela 23 LV-Riga 1045
Lithuania	Radiation Protection Centre (RPC) Kalvariju st. 153, LT-08221 Vilnius
Luxembourg	Ministère de la Santé Division de la Radioprotection Villa Louvigny- Allée Marconi L-2120 Luxembourg
Malta	Environment & Resources Authority Hexagon House Spencer Hill MT-Marsa MRS 1441
Poland	National Atomic Energy Agency Bonifraterska 17 street PL-00-203 Warsaw
Portugal	Agência Portugesa do Ambiente Rua da Murgueira 9/9ª – Zambujal

	Ap.7585 2610-124 Amadora Portugal
Romania	Commission for Nuclear Activities Control (CNCAN) 14 B-dul. Libertatii Street, Sector 5 RO-050706, Bucharest
Slovakia	Nuclear Regulatory Authority of the Slovak Republic Bajkalská 27 P.O. Box 24 SK-820 07 Bratislava 27 (2nd Workplace)
Slovenia	Slovenian Nuclear Safety Administration Litostrojska cesta 54 SI-1000 Ljubljana
Spain	Subdirección General de Energía Nuclear Dirección General de Política Energética y Minas Ministerio para la Transición Ecológica Paseo de la Castellana 160, 6ª Planta Despacho 23 E-28046 – Madrid Consejo de Seguridad Nuclear C/Justo Dorado Dellmans n 10 E-28040 – Madrid
Sweden	Swedish Radiation Safety Authority (SSM) Solna strandväg 96 SE-171 16 STOCKHOLM
The Netherlands	Authority for Nuclear Safety and Radiation Protection (ANVS) Postbus 16001 NL-2500 BA DEN HAAG

The United Kingdom Environment Agency

Nuclear Regulation Group

Ghyll Mount, Gillan Way |Penrith 40 Business Park Penrith Cumbria

UK-CA11 9BP

(for England) The Environment Agency

International Waste Shipments Team

Richard Fairclough House

Knutsford Road

Warrington WA4 1HT

United Kingdom

(for Nothern Ireland) Chief Radiochemical Inspector

Northern Ireland Environment Agency

Industrial Pollution and Radiochemical

Inspectorate

Klondyke Building

Cromac Avenue

Gasworks Business Park

Belfast BT7 2JA

United Kingdom

(for Scotland) Radioactive Substances Unit

Scottish Environment Protection Agency

Strathallan House

Castle Business Park

Stirling FK9 4TZ

United Kingdom

(for Wales) Natural Resources Wales

Waste Shipment Unit

St Mellons Business Park

Cardiff CF3 OEY

United Kingdom