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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 12: Facilitation Programmes

ENHANCING COOPERATION BETWEEN IAEA AND ICAO TO RAISE AWARENESS AND INCREASE KNOWLEDGE ON THE SAFE AND SECURE TRANSPORT OF RADIOACTIVE MATERIAL

(Presented by the International Atomic Energy Agency (IAEA))

REVISION NO. 1

EXECUTIVE SUMMARY

Action: The Assembly is invited to:

- reiterate the International Civil Aviation Organization (ICAO) Member States' continued commitment to economic development;
- strengthen support to the ICAO policy on Annex 9 — *Facilitation* provided that safety requirements are met;
- make ICAO Member States aware that hospitals and clinics worldwide depend on fast and reliable transport, including by air, of radioactive material (often short-lived radiopharmaceuticals), for cancer diagnosis and treatment; and
- encourage ICAO Member States to share this working paper with their civil aviation authorities, for awareness raising and enhanced coordination with their national competent authorities for the transport of radioactive material.

<i>Strategic Goals:</i>	This working paper relates to Strategic Goals <i>Every Flight is Safe and Secure, The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All</i> and <i>Aviation Delivers Seamless, Accessible and Reliable Mobility for All</i> .
<i>Financial implications:</i>	
<i>References:</i>	Annex 9 — <i>Facilitation</i> Doc 9284, <i>Technical Instructions for the Safe Transport of Dangerous Goods by Air</i>

¹ English, Arabic, Chinese, French, Russian and Spanish versions provided by the International Atomic Energy Agency (IAEA).

INTRODUCTION

1.1 The International Atomic Energy Agency (IAEA), a specialized agency of the United Nations, is the world's central intergovernmental forum for scientific and technical cooperation in the nuclear field. It works for the safe, secure and peaceful uses of nuclear science and technology, contributing to international peace and security and the United Nations' Sustainable Development Goals.

1.2 The use of radioactive material brings many benefits, including medical, industrial, agricultural and power generation. Transport of radioactive material is required between mining sites, refining and production facilities, through to final customers in nuclear power plants, hospitals and various industries. Transport modes include road, rail, air and sea (including inland waterways).

1.3 Nuclear medicine is based on access to radioactive material (radiopharmaceuticals) for a variety of diagnostic uses and specific therapies. Over 10 000 hospitals worldwide use radioisotopes in medicine, mostly for cancer diagnosis and cancer treatment. Getting some radiopharmaceuticals from the manufacturers to hospitals and medical clinics by the shortest, fastest route, including air transport, is critical given that some radiopharmaceuticals have a very short half-life (the time taken for half the material to decay and become unusable), in some cases of only a few days.

1.4 A robust international regulatory framework for the safe transport of radioactive material by all modes has been in place for more than six decades. The latest set of requirements for this international framework were established in IAEA *Regulations for the Safe Transport of Radioactive Material*, 2018 Edition (SSR-6, Rev.1), which was incorporated into modal regulations that apply to international transport of dangerous goods by air and sea and regional agreements by road and rail. Dangerous goods are classified into nine hazard classes of which radioactive material is classified as Class 7. Despite this well-established and well recognized international regulatory framework with strong safety records, there have been instances of denials of and delays in the international shipment of radioactive material.

2. DENIAL OF SHIPMENT

2.1 A denial or delay of shipment can be defined as an explicit, or implicit, refusal to carry a shipment of radioactive material though it conforms to all the applicable international regulations for the safe transport of radioactive materials, including relevant requirements of the modal regulations.

2.2 There are three situations that characterize a Denial or Delay of shipment (DoS):

2.2.1 Delay, when an intentional delay adds journey time, which reduces the effectiveness of the material or renders the material unusable when delivered or delays the use of the material. For example, radiopharmaceuticals destined for cancer patients either treat fewer patients or become completely unusable.

2.2.2 Denial, when a consignment is not accepted at a point during the journey, even though the consignment complies with all regulatory requirements, including documentation. An example would be gamma sources for sterilization operations of, for example, critical single use medical equipment, where difficulties in restocking a decaying gamma source result in reduced operational capacity and insufficient sterilized medical equipment.

2.2.3 Denial, when there is a policy decision not to accept radioactive material by one of the parties involved in a route, resulting in the route being unavailable. Typically, when an airline refuses to accept Class 7 cargo.

3. DENIAL OF SHIPMENT WORKING GROUP

3.1 To address this issue, and following previous actions, IAEA recently established the Denial of Shipment Working Group (DoS WG) for the period 2023–2026, with the participation of international organizations like the International Civil Aviation Organization (ICAO) and many IAEA Member States (Argentina, Armenia, Australia, Brazil, Canada, Egypt, France, Germany, Ghana, Iran (Islamic Republic of), Iraq, Italy, Japan, Mauritania, Norway, Philippines, Russian Federation, Saudi Arabia, Singapore, Slovakia, Switzerland, Thailand, Türkiye, United Kingdom and United States).

3.2 This working group is evaluating the extent of the issue of DoS, identifying and implementing potential solutions and monitoring progress. DoS WG has recognized the need to change the perception of risks associated with the transport of radioactive material and to make their transport more accepted.

3.3 Surveys of Member States, industry and carriers, have provided a qualitative overview of the DoS issue. Quantifying DoS precisely is challenging, in part due to the majority of denials being systemic, such as policy decisions mean Class 7 cannot be transported on certain routes or through certain airports. Consignors do careful planning to avoid denials, are aware of previously denied routes, and adjust their transport plans accordingly.

3.4 Many of the beliefs held by those concerned by the transport of radioactive material are based on incorrect information or lack of knowledge. DoS occurs mainly due to the low volume of Class 7 compared to other Dangerous Goods and the associated regulatory burden that carriers must comply with, or non-acceptance by different airports if Class 7 is to be transported and the required resources are not available. Survey results and presentations given in DoS WG lead to the following root causes for delays and denials of radioactive material transport:

3.4.1 Negative perception about the risks of radioactive material in the general public and the economic sectors not working with radiation.

3.4.2 Variation in additional transport regulations among Member States, beyond those required by SSR-6 or modal transport regulations, sometimes exacerbated or caused by the perception highlighted above.

3.4.3 Complexity in meeting all applicable national requirements in addition to the international regulatory framework, in particular for maritime transport with many jurisdictions transited by one mode of transport, can lead to denial of the most direct route.

3.5 Based on the previous efforts by IAEA and ICAO, as well as industry associations the International Air Transport Association (IATA), the International Federation of Air Line Pilots' Associations (IFALPA) and other stakeholders, and where appropriate in coordination with Member States, the issues of transport of radiopharmaceuticals by air have been reduced. However, there is still a significant issue on some international routes.

3.6 Of particular note are ICAO Annex 9 — *Facilitation* references whereby “A Contracting State shall facilitate the prompt release of radioactive material being imported by air, particularly material used in medical applications, provided that applicable laws and regulations governing the importation of such material are complied with” and “A Contracting State should avoid imposing customs or other entry/exit regulations or restrictions supplementary to the provisions of Doc 9284, Technical Instructions for the Safe Transport of Dangerous Goods by Air”.

3.7 Special efforts undertaken by ICAO and other stakeholders during the COVID pandemic when air transport became a scarce resource, were successful in ensuring continued transport of radiopharmaceuticals at that time and demonstrated what could be achieved through good cooperation.

4. PROPOSED SOLUTIONS AND ACTIONS TAKEN BY IAEA

4.1 DoS WG has proposed the following potential solutions:

4.1.1 Each IAEA Member State has been encouraged to nominate a National Focal Point (NFP) for denial and delay of shipment of radioactive material, acting as an interface between governments and those directly involved in the radioactive material transport. NFPs are responsible for identifying and validating reports of denial and delay as well as coordinating and communicating with involved parties at national and international level to facilitate solutions, and reporting on their experience to IAEA.

4.1.1.1 A list of NFPs has been established and is being maintained by the IAEA; a first training workshop for NFPs was held from 25 to 28 November 2024 and another is planned for 2026 involving NFPs from Africa, Asia and Europe. Noting the interest by Member States this network of NFPs may be considered a sustainable solution to address DoS at international, regional and national level. IAEA will continue to support this through organizing periodic meetings, if resources are available.

4.1.2 For IAEA to collect and publish national regulatory variations to assist involved parties, as is currently done by ICAO at <https://www.icao.int/Dangerous-Goods/State-Variations>.

4.1.3 Increasing cooperation between IAEA and relevant United Nations Organizations, as the identified root causes are mainly related to carriers and (air)port authorities, including:

4.1.3.1 Enhancing collaboration with sister organizations and inviting them to the DoS WG meetings.

4.1.3.2 Building on the IAEA-ICAO Joint Statement, drafting a Memorandum of Understanding, and holding a joint webinar for airport authorities and airlines in 2025.

4.1.3.3 Jointly develop e-learning material on safe air transport of Class 7 with ICAO.

4.1.4 Establishing and maintaining a website on Facilitation of Transport of Radioactive Material at <https://gnssn.iaea.org/main/fastram/Pages/default.aspx>.

4.1.5 Maintaining outreach at all levels (including use of a Communication Strategy developed by DoS WG); and take actions to improve the perception of radioactive materials, including by raising awareness of DoS as a topic at relevant international events, for example PATRAM 2025, and the International Conference on Safe and Secure Transport of Nuclear and Radioactive Material scheduled for 23 to 27 March 2026 in Vienna. Additionally, IAEA is enhancing the capacity of Member States that have no or limited regulatory infrastructure for safe and secure transport of radioactive material.

4.2 IAEA is working actively to support the group and to implement some of the solutions, noting that a combination of solutions is required to effectively deal with the issue. There is agreement that with all the proposed solutions, the issue of DoS can be reduced. The problem of DoS can never be fully resolved however, due to the natural turnover of trained or expert personnel in the supply chains (including state and local authorities and industry).

5. IAEA COORDINATION

5.1 All the above solutions require the active involvement of all stakeholders (industry, regulators, States, intergovernmental organizations, etc.) and a key coordination role by IAEA. Moreover, the persistent nature of DoS and potential impact on the supply chain particularly for medical applications, demands sustainable resources not only for the short-term support of the working group, but equally to maintain long-term oversight for the facilitation of the safe and secure transport of radioactive material.

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