CHAPTER 1.7

GENERAL PROVISIONS CONCERNING RADIOACTIVE MATERIAL

1.7.1 Scope and application

NOTE 1: *In the event of a nuclear or radiological emergency during the carriage of radioactive material, provisions as established by relevant national and/or international organizations shall be observed to protect people, property and the environment. This includes arrangements for preparedness and response established in accordance with the national and/or international requirements and in a consistent and coordinated manner with the national and/or international emergency arrangements.*

NOTE 2: *The arrangements for preparedness and response shall be based on the graded approach and take into consideration the identified hazards and their potential consequences, including the formation of other dangerous substances that may result from the reaction between the contents of a consignment and the environment in the event of a nuclear or radiological emergency. Guidance for the establishment of such arrangements is contained in "Preparedness and Response for a Nuclear or Radiological Emergency", IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015); "Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency", IAEA Safety Standards Series No. GSG-2, IAEA, Vienna (2011); "Arrangements for Preparedness for a Nuclear or Radiological Emergency", IAEA Safety Standards Series No. GS-G-2.1, IAEA, Vienna (2007), and "Arrangements for the Termination of a Nuclear or Radiological Emergency", IAEA Safety Standards Series No. GSG-11, IAEA, Vienna (2018).*

1.7.1.1 ADR establishes standards of safety which provide an acceptable level of control of the radiation, criticality and thermal hazards to people, property and the environment that are associated with the carriage of radioactive material. ADR is based on the 2018 edition of the IAEA Regulations for the Safe Transport of Radioactive Material. Explanatory material can be found in *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material* (2018 Edition), Safety Standards Series No. SSG-26 (Rev.1), IAEA, Vienna (2019).

1.7.1.2 The objective of ADR is to establish requirements that shall be satisfied to ensure safety and to protect people, property and the environment from harmful effects of ionizing radiation during the carriage of radioactive material. This protection is achieved by requiring:

(a) Containment of the radioactive contents;

(b) Control of external dose rate;

(c) Prevention of criticality; and

(d) Prevention of damage caused by heat.

These requirements are satisfied firstly by applying a graded approach to contents limits for packages and vehicles and to performance standards applied to package designs depending upon the hazard of the radioactive contents. Secondly, they are satisfied by imposing conditions on the design and operation of packages and on the maintenance of packagings, including a consideration of the nature of the radioactive contents. Thirdly, they are satisfied by requiring administrative controls including, where appropriate, approval by competent authorities. Finally, further protection is provided by making arrangements for planning and preparing emergency response to protect people, property and the environment.

1.7.1.3 ADR applies to the carriage of radioactive material by road including carriage which is incidental to the use of the radioactive material. Carriage comprises all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of loads of radioactive material and packages. A graded approach is applied to the performance standards in ADR that are characterized by three general severity levels:

(a) Routine conditions of carriage (incident free);

(b) Normal conditions of carriage (minor mishaps);

(c) Accident conditions of carriage.

1.7.1.4 The provisions laid down in ADR do not apply to any of the following:

(a) Radioactive material that is an integral part of the means of transport;

(b) Radioactive material moved within an establishment which is subject to appropriate safety regulations in force in the establishment and where the movement does not involve public roads or railways;

(c) Radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;

(d) Radioactive material in or on a person who is to be transported for medical treatment because the person has been subject to accidental or deliberate intake of radioactive material or to contamination;

(e) Radioactive material in consumer products which have received regulatory approval, following their sale to the end user;

(f) Natural material and ores containing naturally occurring radionuclides (which may have been processed), provided the activity concentration of the material does not exceed 10 times the values specified in Table 2.2.7.2.2.1, or calculated in accordance with 2.2.7.2.2.2 (a) and 2.2.7.2.2.3 to 2.2.7.2.2.6. For natural materials and ores containing naturally occurring radionuclides that are not in secular equilibrium the calculation of the activity concentration shall be performed in accordance with 2.2.7.2.2.4;

(g) Non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit set out in the definition for "contamination" in 2.2.7.1.2.

1.7.1.5 ***Specific provisions for the carriage of excepted packages***

1.7.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles or empty packagings as specified in 2.2.7.2.4.1 shall be subject only to the following provisions of Parts 5 to 7:

(a) The applicable provisions specified in 5.1.2.1, 5.1.3.2, 5.1.5.2.2, 5.1.5.2.3, 5.1.5.4, 5.2.1.10, 5.4.1.2.5.1 (f) (i) and (ii), 5.4.1.2.5.1 (i), 7.5.11 CV33 (3.1), (4.3), (5.1) to (5.4) and (6); and

(b) The requirements for excepted packages specified in 6.4.4.

except when the radioactive material possesses other hazardous properties and has to be classified in a class other than Class 7 in accordance with special provision 290 or 369 of Chapter 3.3, where the provisions listed in (a) and (b) above apply only as relevant and in addition to those relating to the main class.

1.7.1.5.2 Excepted packages are subject to the relevant provisions of all other parts of ADR.

1.7.2 Radiation protection programme

1.7.2.1 The carriage of radioactive material shall be subject to a Radiation protection programme which shall consist of systematic arrangements aimed at providing adequate consideration of radiation protection measures.

1.7.2.2 Doses to persons shall be below the relevant dose limits. Protection and safety shall be optimized in order that the magnitude of individual doses, the number of persons exposed and the likelihood of incurring exposure shall be kept as low as reasonably achievable, economic and social factors being taken into account within the restriction that the doses to individuals be subject to dose constraints. A structured and systematic approach shall be adopted and shall include consideration of the interfaces between carriage and other activities.

1.7.2.3 The nature and extent of the measures to be employed in the programme shall be related to the magnitude and likelihood of radiation exposures. The programme shall incorporate the requirements in 1.7.2.2, 1.7.2.4, 1.7.2.5 and 7.5.11 CV33 (1.1). Programme documents shall be available, on request, for inspection by the relevant competent authority.

1.7.2.4 For occupational exposures arising from transport activities, where it is assessed that the effective dose either:

(a) Is likely to be between 1 mSv and 6 mSv in a year, a dose assessment programme via work place monitoring or individual monitoring shall be conducted; or

(b) Is likely to exceed 6 mSv in a year, individual monitoring shall be conducted.

When workplace monitoring or individual monitoring is conducted, appropriate records shall be kept.

NOTE: *For occupational exposures arising from transport activities, where it is assessed that the effective dose is most unlikely to exceed 1 mSv in a year, no special work patterns, detailed monitoring, dose assessment programmes or individual record keeping need be required.*

1.7.2.5 Workers (see 7.5.11, CV33 note 3) shall be appropriately trained in radiation protection including the precautions to be observed in order to restrict their occupational exposure and the exposure of other people who might be affected by their actions.

1.7.3 Management system

A management system based on international, national or other standards acceptable to the competent authority shall be established and implemented for all activities within the scope of ADR, as identified in 1.7.1.3, to ensure compliance with the relevant provisions of ADR. Certification that the design specification has been fully implemented shall be available to the competent authority. The manufacturer, consignor or user shall be prepared:

(a) To provide facilities for inspection during manufacture and use; and

(b) To demonstrate compliance with ADR to the competent authority.

Where competent authority approval is required, such approval shall take into account and be contingent upon the adequacy of the management system.

1.7.4 Special arrangement

1.7.4.1 Special arrangement shall mean those provisions, approved by the competent authority, under which consignments which do not satisfy all the requirements of ADR applicable to radioactive material may be transported.

NOTE: *Special arrangement is not considered to be a temporary derogation in accordance with 1.5.1.*

1.7.4.2 Consignments for which conformity with any provision applicable to radioactive material is impracticable shall not be transported except under special arrangement. Provided the competent authority is satisfied that conformity with the radioactive material provisions of ADR is impracticable and that the requisite standards of safety established by ADR have been demonstrated through means alternative to the other provisions of ADR, the competent authority may approve special arrangement transport operations for a single consignment or a planned series of multiple consignments. The overall level of safety in carriage shall be at least equivalent to that which would be provided if all the applicable requirements of ADR had been met. For international consignments of this type, multilateral approval shall be required.

1.7.5 Radioactive material possessing other dangerous properties

In addition to the radioactive and fissile properties, any subsidiary hazard of the contents of the package, such as explosiveness, flammability, pyrophoricity, chemical toxicity and corrosiveness, shall also be taken into account in the documentation, packing, labelling, marking, placarding, stowage, segregation and carriage, in order to be in compliance with all relevant provisions for dangerous goods of ADR.

1.7.6 Non-compliance

1.7.6.1 In the event of non-compliance with any limit in ADR applicable to dose rate or contamination,

(a) The consignor, carrier, consignee and any organization involved during carriage who may be affected, as appropriate, shall be informed of the non-compliance by:

(i) The carrier if the non-compliance is identified during carriage; or

(ii) The consignee if the non-compliance is identified at receipt;

(b) The consignor, carrier or consignee, as appropriate shall:

(i) Take immediate steps to mitigate the consequences of the non-compliance;

(ii) Investigate the non-compliance and its causes, circumstances and consequences;

(iii) Take appropriate action to remedy the causes and circumstances that led to the non-compliance and to prevent a recurrence of the causes and circumstances similar to those that led to the non-compliance; and

(iv) Communicate to the competent authority(ies) on the causes of the non-compliance and the corrective or preventive actions taken or to be taken;

(c) The communication of the non-compliance to the consignor and competent authority(ies), respectively, shall be made as soon as practicable and it shall be immediate whenever an emergency exposure situation has developed or is developing.

CHAPTER 1.8

CHECKS AND OTHER SUPPORT MEASURES TO ENSURE COMPLIANCE WITH SAFETY REQUIREMENTS

1.8.1 Administrative controls of dangerous goods

1.8.1.1 The competent authorities of the Contracting Parties may, on their national territory, at any time, conduct spot checks to verify whether the requirements concerning the carriage of dangerous goods have been met including, in accordance with 1.10.1.5, those concerning security measures.

These checks shall, however, be made without endangering persons, property or the environment and without major disruption of road services.

1.8.1.2 Participants in the carriage of dangerous goods (Chapter 1.4) shall, without delay, in the context of their respective obligations, provide the competent authorities and their agents with the necessary information for carrying out the checks.

1.8.1.3 The competent authorities may also, for the purposes of carrying out checks on the premises of the enterprises participating in the carriage of dangerous goods (Chapter 1.4), make inspections, consult the necessary documents and remove samples of dangerous goods or packagings for examination, provided that safety is not jeopardized thereby. The participants in the carriage of dangerous goods (Chapter 1.4) shall also make the vehicles or parts of vehicles and the equipment and installations accessible for the purpose of checking where this is possible and reasonable. They may, if they deem necessary, designate a person from the enterprise to accompany the representative of the competent authority.

1.8.1.4 If the competent authorities observe that the requirements of ADR have not been met, they may prohibit a consignment or interrupt a transport operation until the defects observed are rectified, or they may prescribe other appropriate measures. Immobilization may take place on the spot or at another place selected by the authorities for safety reasons. These measures shall not cause a major disruption in road services.

1.8.2 Mutual administrative support

1.8.2.1 The Contracting Parties shall agree on mutual administrative support for the implementation of ADR.

1.8.2.2 When a Contracting Party has reasons to observe that the safety of the carriage of dangerous goods on its territory is compromised as a result of very serious or repeated infringements by an enterprise which has its headquarters on the territory of another Contracting Party, it shall notify the competent authorities of this Contracting Party of such infringements. The competent authorities of the Contracting Party on the territory of which the very serious or repeated infringements were observed may request the competent authorities of the Contracting Party on the territory of which the enterprise has its headquarters to take appropriate measures against the offender(s). The transmission of data referring to persons shall not be permitted unless it is necessary for the prosecution of very serious or repeated infringements.

1.8.2.3 The authorities notified shall communicate to the competent authorities of the Contracting Party on the territory of which the infringements were observed, the measures which have, if necessary, been taken with respect to the enterprise.

1.8.3 Safety adviser

1.8.3.1 Each undertaking, the activities of which include the consigning or the carriage of dangerous goods by road, or the related packing, loading, filling or unloading shall appoint one or more safety advisers for the carriage of dangerous goods, responsible for helping to prevent the risks inherent in such activities with regard to persons, property and the environment.

1.8.3.2 The competent authorities of the Contracting Parties may provide that these requirements shall not apply to undertakings:

(a) *(Reserved)*

(b) The activities of which concern quantities in each transport unit not exceeding those referred to in 1.1.3.6, 1.7.1.4 and in Chapters 3.3, 3.4 and 3.5; or

(c) The main or secondary activities of which are not the consignment, carriage or the related packing, filling, loading or unloading of dangerous goods but which occasionally engage in the national consignment, carriage or the related packing, filling, loading or unloading of dangerous goods posing little danger or risk of pollution.

1.8.3.3 The main task of the adviser shall be, under the responsibility of the head of the undertaking, to seek by all appropriate means and by all appropriate action, within the limits of the relevant activities of that undertaking, to facilitate the conduct of those activities in accordance with the requirements applicable and in the safest possible way.

With regard to the undertaking's activities, the adviser has the following duties in particular:

- Monitoring compliance with the requirements governing the carriage of dangerous goods;
- Advising his undertaking on the carriage of dangerous goods;
- Preparing an annual report to the management of his undertaking or a local public authority, as appropriate, on the undertaking's activities in the carriage of dangerous goods. Such annual reports shall be preserved for five years and made available to the national authorities at their request.

The adviser's duties also include monitoring the following practices and procedures relating to the relevant activities of the undertaking:

- The procedures for compliance with the requirements governing the identification of dangerous goods being transported;
- The undertaking's practice in taking account, when purchasing means of transport, of any special requirements in connection with the dangerous goods being transported;
- The procedures for checking the equipment used in connection with the carriage, packing, filling, loading or unloading of dangerous goods;
- The proper training of the undertaking's employees, including on the changes to the regulations, and the maintenance of records of such training;
- The implementation of proper emergency procedures in the event of any accident or incident that may affect safety during the carriage, packing, filling, loading or unloading of dangerous goods;
- Investigating and, where appropriate, preparing reports on serious accidents, incidents or serious infringements recorded during the carriage, packing, filling, loading or unloading of dangerous goods;
- The implementation of appropriate measures to avoid the recurrence of accidents, incidents or serious infringements;
- The account taken of the legal prescriptions and special requirements associated with the carriage of dangerous goods in the choice and use of sub-contractors or third parties;
- Verification that employees involved in the consigning, carriage, packing, filling, loading or unloading of dangerous goods have detailed operational procedures and instructions;
- The introduction of measures to increase awareness of the risks inherent in the carriage, packing, filling, loading and unloading of dangerous goods;
- The implementation of verification procedures to ensure the presence on board the means of transport of the documents and safety equipment which must accompany transport and the compliance of such documents and equipment with the regulations;
- The implementation of verification procedures to ensure compliance with the requirements governing packing, filling, loading and unloading;
- The existence of the security plan indicated in 1.10.3.2.

1.8.3.4 The adviser may also be the head of the undertaking, a person with other duties in the undertaking, or a person not directly employed by that undertaking, provided that that person is capable of performing the duties of adviser.

1.8.3.5 Each undertaking concerned shall, on request, inform the competent authority or the body designated for that purpose by each Contracting Party of the identity of its adviser.

1.8.3.6 Whenever an accident affects persons, property or the environment or results in damage to property or the environment during carriage, packing, filling, loading or unloading carried out by the undertaking concerned, the adviser shall, after collecting all the relevant information, prepare an accident report to the management of the undertaking or to a local public authority, as appropriate. That report shall not replace any report by the management of the undertaking which might be required under any other international or national legislation.

1.8.3.7 An adviser shall hold a vocational training certificate, valid for transport by road. That certificate shall be issued by the competent authority or the body designated for that purpose by each Contracting Party.

1.8.3.8 To obtain a certificate, a candidate shall undergo training and pass an examination approved by the competent authority of the Contracting Party.

1.8.3.9 The main aims of the training shall be to provide candidates with sufficient knowledge of the risks inherent in the carriage, packing, filling, loading or unloading of dangerous goods, of the applicable laws, regulations and administrative provisions and of the duties listed in 1.8.3.3.

1.8.3.10 The examination shall be organized by the competent authority or by an examining body designated by the competent authority. The examining body shall not be a training provider.

The examining body shall be designated in writing. This approval may be of limited duration and shall be based on the following criteria:

- Competence of the examining body;
- Specifications of the form of the examinations the examining body is proposing, including, if necessary, the infrastructure and organisation of electronic examinations in accordance with 1.8.3.12.5, if these are to be carried out;
- Measures intended to ensure that examinations are impartial;
- Independence of the body from all natural or legal persons employing safety advisers.

1.8.3.11 The aim of the examination is to ascertain whether candidates possess the necessary level of knowledge to carry out the duties incumbent upon a safety adviser as listed in 1.8.3.3, for the purpose of obtaining the certificate prescribed in sub-section 1.8.3.7, and it shall cover at least the following subjects:

(a) Knowledge of the types of consequences which may be caused by an accident involving dangerous goods and knowledge of the main causes of accidents;

(b) Requirements under national law, international conventions and agreements, with regard to the following in particular:

- Classification of dangerous goods (procedure for classifying solutions and mixtures, structure of the list of substances, classes of dangerous goods and principles for their classification, nature of dangerous goods transported, physical, chemical and toxicological properties of dangerous goods);
- General packing provisions and provisions for tanks (types, code, marking, construction, initial and periodic inspection and testing);
- Marking and labelling, placarding and orange-coloured plate marking (marking and labelling of packages, placing and removal of placards and orange-coloured plates);
- Particulars in transport documents (information required);
- Method of consignment and restrictions on dispatch (full load, carriage in bulk, carriage in intermediate bulk containers, carriage in containers, carriage in tanks);

- Transport of passengers;
- Prohibitions and precautions relating to mixed loading;
- Segregation of goods;
- Limitation of the quantities carried and quantities exemptions;
- Handling and stowage (packing, filling – degree of filling or filling ratio, as appropriate –, loading and unloading, stowage and segregation);
- Cleaning and/or degassing before packing, filling, loading and after unloading;
- Crews, vocational training;
- Vehicle documents (transport documents, instructions in writing, vehicle approval certificate, driver training certificate, copies of any derogations, other documents);
- Instructions in writing (implementation of the instructions and crew protection equipment);
- Supervision requirements (parking);
- Traffic regulations and restrictions;
- Operational discharges or accidental leaks of pollutants;
- Requirements relating to transport equipment.

1.8.3.12 ***Examinations***

1.8.3.12.1 The examination shall consist of a written test which may be supplemented by an oral examination.

1.8.3.12.2 The competent authority or an examining body designated by the competent authority shall invigilate every examination. Any manipulation and deception shall be ruled out as far as possible. Authentication of the candidate shall be ensured. The use in the written test of documentation other than international or national regulations is not permitted. All examination documents shall be recorded and kept as a print-out or electronically as a file.

1.8.3.12.3 Electronic media may be used only if provided by the examining body. There shall be no means of a candidate introducing further data to the electronic media provided; the candidate may only answer the questions posed.

1.8.3.12.4 The written test shall consist of two parts:

(a) Candidates shall receive a questionnaire. It shall include at least 20 open questions covering at least the subjects mentioned in the list in 1.8.3.11. However, multiple choice questions may be used. In this case, two multiple choice questions count as one open question. Amongst these subjects particular attention shall be paid to the following subjects:

- General preventive and safety measures;
- Classification of dangerous goods;
- General packing provisions, including tanks, tank-containers, tank-vehicles, etc.;
- Danger marking, labelling and placardings;
- Information in transport document;
- Handling and stowage;
- Crew, vocational training;
- Vehicle documents and transport certificates;

- Instructions in writing;
- Requirements concerning transport equipment;

(b) Candidates shall undertake a case study in keeping with the duties of the adviser referred to in 1.8.3.3, in order to demonstrate that they have the necessary qualifications to fulfil the task of adviser.

1.8.3.12.5 Written examinations may be performed, in whole or in part, as electronic examinations, where the answers are recorded and evaluated using electronic data processing (EDP) processes, provided the following conditions are met:

(a) The hardware and software shall be checked and accepted by the competent authority or by an examining body designated by the competent authority;

(b) Proper technical functioning shall be ensured. Arrangements as to whether and how the examination can be continued shall be made for a failure of the devices and applications. No aids shall be available on the input devices (e.g. electronic search function), the equipment provided according to 1.8.3.12.3 shall not allow the candidates to communicate with any other device during the examination;

(c) Final inputs of each candidate shall be logged. The determination of the results shall be transparent.

1.8.3.13 The Contracting Parties may decide that candidates who intend working for undertakings specializing in the carriage of certain types of dangerous goods need only be questioned on the substances relating to their activities. These types of goods are:

- Class 1;
- Class 2;
- Class 7;
- Classes 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 8 and 9;
- UN Nos. 1202, 1203, 1223, 3475, and aviation fuel classified under UN Nos. 1268 or 1863.

The certificate prescribed in 1.8.3.7 shall clearly indicate that it is only valid for one type of the dangerous goods referred to in this sub-section and on which the adviser has been questioned under the conditions defined in 1.8.3.12.

1.8.3.14 The competent authority or the examining body shall keep a running list of the questions that have been included in the examination.

1.8.3.15 The certificate prescribed in 1.8.3.7 shall take the form laid down in 1.8.3.18 and shall be recognized by all Contracting Parties.

1.8.3.16 ***Validity and renewal of certificates***

1.8.3.16.1 The certificate shall be valid for five years. The period of the validity of a certificate shall be extended from the date of its expiry for five years at a time where, during the year before its expiry, its holder has passed an examination. The examination shall be approved by the competent authority.

1.8.3.16.2 The aim of the examination is to ascertain that the holder has the necessary knowledge to carry out the duties set out in 1.8.3.3. The knowledge required is set out in 1.8.3.11 (b) and shall include the amendments to the regulations introduced since the award of the last certificate. The examination shall be held and supervised on the same basis as in 1.8.3.10 and 1.8.3.12 to 1.8.3.14. However, holders need not undertake the case study specified in 1.8.3.12.4 (b).

1.8.3.17 *(Deleted)*

1.8.3.18 ***Form of certificate***

Certificate of training as safety adviser for the transport of dangerous goods

Certificate No: .....

Distinguishing sign of the State issuing the certificate: .....

Surname: .....

Forename(s): .....

Date and place of birth: .....

Nationality: .....

Signature of holder: .....

Valid until ..... for undertakings which transport dangerous goods and for undertakings which carry out related consigning, packing, filling, loading or unloading:

□ by road □ by rail □ by inland waterway

Issued by: .....

Date: ..... Signature: .....

1.8.3.19 ***Extension of the certificate***

Where an adviser extends the scope of his certificate during its period of validity by meeting the requirements of 1.8.3.16.2, the period of validity of a new certificate shall remain that of the previous certificate.

1.8.4 **List of competent authorities and bodies designated by them**

The Contracting Parties shall communicate to the Secretariat of the United Nations Economic Commission for Europe the addresses of the authorities and bodies designated by them which are competent in accordance with national law to implement ADR, referring in each case to the relevant requirement of ADR and giving the addresses to which the relevant applications should be made.

The Secretariat of the United Nations Economic Commission for Europe shall establish a list on the basis of the information received and shall keep it up-to-date. It shall communicate this list and the amendments thereto to the Contracting Parties.

1.8.5 **Notifications of occurrences involving dangerous goods**

1.8.5.1 If a serious accident or incident takes place during loading, filling, carriage or unloading of dangerous goods on the territory of a Contracting Party, the loader, filler, carrier, unloader or consignee, respectively, shall ascertain that a report conforming to the model prescribed in 1.8.5.4 is made to the competent authority of the Contracting Party concerned at the latest one month after the occurrence.

1.8.5.2 The Contracting Party shall in turn, if necessary, make a report to the Secretariat of the United Nations Economic Commission for Europe with a view to informing the other Contracting Parties.

1.8.5.3 An occurrence subject to report in accordance with 1.8.5.1 has occurred if dangerous goods were released or if there was an imminent risk of loss of product, if personal injury, material or environmental damage occurred, or if the authorities were involved and one or more of the following criteria has/have been met:

Personal injury means an occurrence in which death or injury directly relating to the dangerous goods carried has occurred, and where the injury

(a) Requires intensive medical treatment;

(b) Requires a stay in hospital of at least one day; or

(c) Results in the inability to work for at least three consecutive days.

Loss of product means the release of dangerous goods

(a) Of transport category 0 or 1 in quantities of 50 kg / 50 *l* or more;

(b) Of transport category 2 in quantities of 333 kg / 333 *l* or more; or

(c) Of transport category 3 or 4 in quantities of 1 000 kg / 1 000 *l* or more.

The loss of product criterion also applies if there was an imminent risk of loss of product in the above-mentioned quantities. As a rule, this has to be assumed if, owing to structural damage, the means of containment is no longer suitable for further carriage or if, for any other reason, a sufficient level of safety is no longer ensured (e.g. owing to distortion of tanks or containers, overturning of a tank or fire in the immediate vicinity).

If dangerous goods of Class 6.2 are involved, the obligation to report applies without quantity limitation.

In occurrences involving radioactive material, the criteria for loss of product are:

(a) Any release of radioactive material from the packages;

(b) Exposure leading to a breach of the limits set out in the regulations for protection of workers and members of the public against ionizing radiation (*Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards*, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014)); or

(c) Where there is reason to believe that there has been a significant degradation in any package safety function (containment, shielding, thermal protection or criticality) that may have rendered the package unsuitable for continued carriage without additional safety measures.

NOTE: *See the requirements of 7.5.11 CV33 (6) for undeliverable consignments.*

Material damage or environmental damage means the release of dangerous goods, irrespective of the quantity, where the estimated amount of damage exceeds 50,000 Euros. Damage to any directly involved means of carriage containing dangerous goods and to the modal infrastructure shall not be taken into account for this purpose.

Involvement of authorities means the direct involvement of the authorities or emergency services during the occurrence involving dangerous goods and the evacuation of persons or closure of public traffic routes (roads/railways) for at least three hours owing to the danger posed by the dangerous goods.

If necessary, the competent authority may request further relevant information.

1.8.5.4 ***Model for report on occurrences during the carriage of dangerous goods***

Report on occurrences during the carriage of dangerous goods in accordance with RID/ADR section 1.8.5

Carrier/Railway infrastructure operator: .....

Address: .....

Contact name: ..... Telephone: ..... Fax: .....

(The competent authority shall remove this cover sheet before forwarding the report)

1. Mode	
□ Rail Wagon number (optional)	□ Road Vehicle registration (optional) .....
2. Date and location of occurrence	
Year: ..... Month:	Day: ..... Time: .....
Rail □ Station □ Shunting/marshalling yard □ Loading/unloading/transhipment site Location / Country: ..... or □ Open line: Description of line: ..... Kilometres:	Road □ Built-up area □ Loading/unloading/transhipment site □ Open road Location / Country: .....
3. Topography	
□ Gradient/incline □ Tunnel □ Bridge/Underpass □ Crossing	
4. Particular weather conditions	
□ Rain □ Snow □ Ice □ Fog □ Thunderstorm □ Storm Temperature: ..... °C	
5. Description of occurrence	
□ Derailment/Leaving the road □ Collision □ Overturning/Rolling over □ Fire □ Explosion □ Loss □ Technical fault Additional description of occurrence:	

6. Dangerous goods involved

UN Number (1)	Class	Packing Group	Estimated quantity of loss of products (kg or *l*) (2)	Means of containment (3)	Means of containment material	Type of failure of means of containment (4)

(1) For dangerous goods assigned to collective entries to which special provision 274 applies, also the technical name shall be indicated.

(2) For Class 7, indicate values according to the criteria in 1.8.5.3.

(3) Indicate the appropriate number
1 Packaging
2 IBC
3 Large packaging
4 Small container
5 Wagon
6 Vehicle
7 Tank-wagon
8 Tank-vehicle
9 Battery-wagon
10 Battery-vehicle
11 Wagon with demountable tanks
12 Demountable tank
13 Large container
14 Tank-container
15 MEGC
16 Portable tank
17 MEMU
18 Extra-large tank-container

(4) Indicate the appropriate number
1 Loss
2 Fire
3 Explosion
4 Structural failure

7. Cause of occurrence (if clearly known)

□ Technical fault
□ Faulty load securing
□ Operational cause (rail operation)
□ Other:
.....
.....
.....

8. Consequences of occurrence

Personal injury in connection with the dangerous goods involved:
□ Deaths (number: .....)
□ Injured (number: .....)

Loss of product:
□ Yes
□ No
□ Imminent risk of loss of product

Material/Environmental damage:
□ Estimated level of damage ≤ 50,000 Euros
□ Estimated level of damage > 50,000 Euros

Involvement of authorities:
□ Yes
  □ Evacuation of persons for a duration of at least three hours caused by the dangerous goods involved
  □ Closure of public traffic routes for a duration of at least three hours caused by the dangerous goods involved
□ No

If necessary, the competent authority may request further relevant information.

1.8.6 Administrative controls for the activities described in 1.8.7 and 1.8.8

NOTE 1: *For the purpose of this section the terms:*

- *"approved inspection body" means an inspection body approved by the competent authority to perform different activities according to 1.8.6.1; and*
- *"recognized inspection body" means an approved inspection body recognized by another competent authority.*

NOTE 2: *An inspection body may be designated by the competent authority to act as the competent authority (see the definition of competent authority in 1.2.1).*

1.8.6.1 ***General rules***

The competent authority of a Contracting Party to ADR may approve inspection bodies for the following activities: conformity assessments, periodic inspections, intermediate inspections, exceptional inspections, entry into service verifications and authorization and surveillance of the in-house inspection service as relevant in Chapters 6.2 and 6.8.

1.8.6.2 ***Obligations of the competent authority***

1.8.6.2.1 When the competent authority approves an inspection body to perform the activities specified in 1.8.6.1, the accreditation of the inspection body shall be according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A requirements.

When the competent authority approves an inspection body to perform periodic inspections of pressure receptacles according to Chapter 6.2, the accreditation of the inspection body shall be according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A requirements or type B requirements.

The accreditation shall clearly cover the activities of the approval.

When the competent authority performs the tasks of the inspection body itself, the competent authority shall comply with the provisions of 1.8.6.3. However, when a competent authority designates an inspection body to act as the competent authority the designated body shall be accredited according to the standard EN ISO/IEC 17020:2012 (except clause 8.1.3) type A.

1.8.6.2.2 *Approval of inspection bodies*

1.8.6.2.2.1 Type A inspection bodies shall be established under domestic law and be a legal entity in the Contracting Party to ADR where the application for approval is made.

Type B inspection bodies shall be established under domestic law and be part of a legal entity supplying gas in the Contracting Party to ADR where the application for approval is made.

1.8.6.2.2.2 The competent authority shall ensure that the inspection body continuously meets the conditions for its approval and shall end it if these conditions are not met. However, in the case of suspension of the accreditation, the approval is only suspended during the suspension period of the accreditation.

1.8.6.2.2.3 An inspection body starting a new activity may be approved temporarily. Before temporary approval, the competent authority shall ensure that the inspection body meets the requirements of 1.8.6.3.1. The inspection body shall be accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) in its first year of activity to be able to continue this new activity.

1.8.6.2.3 *Monitoring of inspection bodies*

1.8.6.2.3.1 Wherever the activities of an inspection body are performed, the competent authority that approved this body shall ensure the monitoring of the activities of this body, including on-site monitoring. The competent authority shall revoke or restrict the approval given if this body is no longer in compliance with the approval, the requirements of 1.8.6.3.1 or does not follow the procedures specified in the provisions of ADR.

NOTE: *Monitoring of subcontractors as mentioned in 1.8.6.3.3 by the inspection body shall also be included in the monitoring of the inspection body.*

1.8.6.2.3.2 If the approval of the inspection body is revoked or restricted or if the inspection body ceased activity, the competent authority shall take the appropriate steps to ensure that the files are either processed by another inspection body or kept available.

1.8.6.2.4 *Information obligations*

1.8.6.2.4.1 Contracting Parties to ADR shall publish their national procedures for the assessment, approval and monitoring of inspection bodies and of any changes to that information.

1.8.6.2.4.2 The competent authority of the Contracting Party to ADR shall publish an up-to-date list of all the inspection bodies it has approved, including inspection bodies approved temporarily as described in 1.8.6.2.2.3. This list shall at least contain the following information:

(a) Name, address(es) of the office(s) of the inspection body;

(b) The scope of activities for which the inspection body is approved;

(c) Confirmation that the inspection body is accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) by the national accreditation body and that the accreditation covers the scope of activities for which the inspection body is approved;

(d) The identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body and the mark of any in-house inspection service authorized by the inspection body.

A reference to this list shall be made on the website of the UNECE secretariat.

1.8.6.2.4.3 An inspection body approved by a competent authority may be recognized by another competent authority.

Where a competent authority wishes to engage the services of an inspection body already approved by another competent authority to carry out activities related to conformity assessments and inspections on its behalf, then that competent authority shall add this inspection body, the scope of activities for which it is recognized, and the competent authority that approved the inspection body, to the list mentioned in 1.8.6.2.4.2 and inform the UNECE secretariat. If the approval is withdrawn or suspended, the recognition is no longer valid.

NOTE: *In that context, reciprocal recognition agreements between Contracting Parties to ADR shall be respected.*

1.8.6.3 ***Obligations of the inspection bodies***

1.8.6.3.1 *General rules*

The inspection body shall:

(a) Have a staff with an organizational structure, capable, trained, competent and skilled, to satisfactorily perform its technical functions;

(b) Have access to suitable and adequate facilities and equipment;

(c) Operate in an impartial manner and be free from any influence which could prevent it from doing so;

(d) Ensure commercial confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;

(e) Maintain clear demarcation between actual inspection body functions and unrelated functions;

(f) Have a documented quality system, equivalent to that set out in EN ISO/IEC 17020:2012 (except clause 8.1.3);

(g) Ensure that the tests and inspections specified in the relevant standards and in ADR are performed;

(h) Maintain an effective and appropriate report and record system in accordance with 1.8.7 and 1.8.8;

(i) Be free from any commercial or financial pressure and not remunerate its personnel depending on the number of the inspections carried out or on the results of those inspections;

(j) Have a liability insurance covering the risks in relation to the conducted activities;

NOTE: *This is not necessary if the Contracting Party to ADR assumes liability in accordance with domestic law.*

(k) Have person(s) responsible for carrying out the inspections who shall:

(i) Not be directly involved in the design, manufacture, supply, installation, purchase, ownership, use or maintenance of the product (pressure receptacle, tank, battery-vehicle or MEGC) to be inspected;

(ii) Have been trained in all aspects of the activities in relation to which the inspection body has been approved;

(iii) Have appropriate knowledge, technical skills and understanding of the applicable requirements, of the applicable standards and of the relevant provisions of Parts 4 and 6;

(iv) Have the ability to draw up certificates, records and reports demonstrating that assessments have been carried out;

(v) Observe professional secrecy with regard to information obtained in carrying out their tasks or any provision of domestic law giving effect to it, except in relation to the competent authorities of the Contracting Party to ADR in which its activities are carried out. At the request of other inspection bodies, information may be shared as far as necessary for the performance of inspections and tests.

The requirements above are deemed to be met in the case of accreditation according to the standard EN ISO/IEC 17020:2012 (except clause 8.1.3).

1.8.6.3.2 *Operational obligations*

1.8.6.3.2.1 The competent authority or inspection body shall carry out conformity assessments, periodic inspections, intermediate inspections, exceptional inspections and entry into service verifications in a proportionate manner, avoiding unnecessary burdens. The competent authority or inspection body shall perform its activities taking into consideration the size, the sector and the structure of the undertakings involved, the relative complexity of the technology and the serial character of production.

1.8.6.3.2.2 The competent authority or inspection body shall respect the degree of rigour and the level of protection required for the compliance with the provisions of Parts 4 and 6 as applicable.

1.8.6.3.2.3 Where a competent authority or inspection body finds out that requirements laid down in Parts 4 or 6 have not been met by the manufacturer, it shall require the manufacturer to take appropriate corrective measures and it shall not issue any type approval certificate or initial inspection and test certificate until the appropriate corrective measures have been implemented.

1.8.6.3.3 *Delegation of inspection tasks*

NOTE: *The following provisions only apply to type A inspection bodies. Type B inspection bodies are not allowed to delegate the activities for which they are approved. For in-house inspection services see 1.8.7.7.2.*

1.8.6.3.3.1 Where an inspection body uses the services of a subcontractor to carry out specific tasks connected with its activities, the subcontractor shall be assessed and monitored by the inspection body, or it shall be accredited separately. In the case of separate accreditation, the subcontractor shall be duly accredited according to EN ISO/IEC 17025:2017 (except clause 8.1.3) or EN ISO/IEC 17020:2012 (except clause 8.1.3) as an independent and impartial testing laboratory or inspection body in order to perform testing tasks in accordance with its accreditation. The inspection body shall ensure that this subcontractor meets the requirements set out for the tasks given to it with the same level of competence and safety as laid down for inspection bodies (see 1.8.6.3.1) and the inspection body shall monitor it. The inspection body shall inform the competent authority about the above-mentioned arrangements.

1.8.6.3.3.2 The inspection body shall take full responsibility for the tasks performed by such subcontractors wherever the tasks are performed by them.

1.8.6.3.3.3 The type A inspection body may delegate only a part of each of its activities. In any case, the assessment and the issue of certificates shall be carried out by the inspection body itself.

1.8.6.3.3.4 Activities shall not be delegated without the agreement of the manufacturer, owner or operator as appropriate.

1.8.6.3.3.5 The inspection body shall keep at the disposal of the competent authority the relevant documents concerning the assessment of the qualifications and the work carried out by the above-mentioned subcontractors.

1.8.6.3.4 *Information obligations*

Any inspection body shall inform the competent authority, which had approved it, of the following:

(a) Except when the provisions of 1.8.7.2.2.2 apply, any refusal, restriction, suspension or withdrawal of type approval certificates;

(b) Any circumstance(s) affecting the scope of and conditions for the approval as granted by the competent authority;

(c) Any refusal of inspection certificates;

(d) Any request for information on activities performed which they have received from competent authorities monitoring compliance according to this section;

(e) On request, all activities performed within the scope of their approval, including delegation of tasks

(f) Any authorization or suspension or withdrawal of an in-house inspection service.

1.8.7 Procedures for conformity assessment, type approval certificate issue and inspections

NOTE 1: *In this section, "relevant body" means a body as assigned in Chapters 6.2 and 6.8.*

NOTE 2: *In this section, "manufacturer" means the enterprise who is responsible to the competent authority for all aspects of the conformity assessment and for ensuring the conformity of construction whose name and mark appear in the approvals and on the markings. It is not essential that the enterprise is directly involved in all stages of the construction of the product (see 1.8.7.1.5) which is subject of the conformity assessment.*

1.8.7.1 ***General provisions***

1.8.7.1.1 The procedures in section 1.8.7 shall be applied as specified in Chapters 6.2 and 6.8.

If the competent authority performs the tasks itself, the competent authority shall meet the provisions of this section.

1.8.7.1.2 Each application for:

(a) The type examination in accordance with 1.8.7.2.1;

(b) The type approval certificate issue in accordance with 1.8.7.2.2;

(c) The supervision of manufacture in accordance with 1.8.7.3; or

(d) The initial inspection and tests in accordance with 1.8.7.4

shall be lodged by the manufacturer with a competent authority or an inspection body, as applicable, in conformity with Chapters 6.2 and 6.8.

Each application for:

(e) The entry into service verification in accordance with 1.8.7.5; or

(f) The periodic inspection, intermediate inspection and exceptional inspection in accordance with 1.8.7.6

shall be lodged by the owner or its authorized representative, or by the operator or its authorized representative, with a competent authority or an inspection body.

When the in-house inspection service is authorized for (c), (d), or (f), it is not necessary to lodge an application for (c), (d), or (f).

1.8.7.1.3 The application shall include:

(a) The name and address of the applicant according to 1.8.7.1.2;

(b) A written declaration that the same application has not been lodged with any other competent authority or inspection body;

(c) The relevant technical documentation in 1.8.7.8;

(d) A statement allowing the competent authority or the inspection body, as appropriate, access for conformity assessment or inspection purposes to the locations of manufacture, inspection, testing and storage and providing it with all necessary information to perform their tasks.

1.8.7.1.4 Where the manufacturer or an enterprise with a testing facility is allowed to establish an in-house inspection service according to 6.2.2.12, 6.2.3.6.1, 6.8.1.5.3 (b) or 6.8.1.5.4 (b), it shall demonstrate to the satisfaction of the inspection body that the in-house inspection service is able to perform inspections and tests in conformity with 1.8.7.

1.8.7.1.5 Type approval certificates, inspection certificates and reports for the products (pressure receptacles, tanks, service equipment and the assembly of the elements, structural equipment and service equipment of battery-vehicles or MEGCs), including the technical documentation, shall be kept:

(a) By the manufacturer for a period of at least 20 years from the expiry date of the type approval;

(b) By the issuing competent authority or the issuing inspection body, for a period of at least 20 years from the issuing date;

(c) By the owner or operator for a period of at least 15 months after the product is taken out of service.

1.8.7.2 ***Type examination and type approval certificate issue***

1.8.7.2.1 *Type examination*

1.8.7.2.1.1 The manufacturer shall:

(a) In the case of pressure receptacles, place at the disposal of the inspection body representative samples of the production envisaged. The inspection body may request further samples if required by the test programme;

(b) In the case of tanks, battery-vehicles or MEGCs, give access to the prototype for type testing;

(c) In the case of service equipment, place at the disposal of the inspection body representative samples of the production envisaged. The inspection body may request further samples if required by the test programme.

NOTE: *The results of assessments and tests according to other regulations or standards may be taken into account.*

1.8.7.2.1.2 The inspection body shall:

(a) Examine the technical documentation specified in 1.8.7.8.1 to verify that the design is in accordance with the relevant provisions of ADR, and the prototype or the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;

(b) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site, as specified in ADR, including the relevant standards, to determine that the provisions have been applied and fulfilled, and the procedures adopted by the manufacturer meet the requirements;

(c) Check the material(s) certificate(s) issued by the manufacturer(s) of the materials against the relevant provisions of ADR;

(d) As applicable, approve the procedures for the permanent joining of parts or check that they have been previously approved, and verify that the staff undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;

(e) Agree with the manufacturer the location(s) where the examinations and necessary tests are to be carried out.

The inspection body shall issue a report of the type examination to the manufacturer.

1.8.7.2.2 *Type approval certificate issue*

Type approvals authorize the construction of products within the period of validity of that approval.

1.8.7.2.2.1 Where the type satisfies all applicable provisions, the competent authority or the inspection body, shall issue a type approval certificate to the manufacturer in conformity with Chapters 6.2 and 6.8.

This certificate shall contain:

(a) The name and address of the issuer;

(b) The competent authority under whom the certificate is issued;

(c) The name and address of the manufacturer;

(d) A reference to the version of ADR and standards used for the type examination;

(e) Any requirements resulting from the type examination;

(f) The data contained in the documents for the type-examination according to 1.8.7.8.1, necessary for the identification of the type and variation, as defined by the relevant standards. The documents, or a list identifying the documents, containing the data shall be included or annexed to the certificate;

(g) The reference to the type examination report(s);

(h) The maximum period of validity of the type approval; and

(i) Any specific requirements in accordance with Chapters 6.2 and 6.8.

1.8.7.2.2.2 The type approval shall be valid for a maximum of ten years. If within that period the relevant technical requirements of ADR have changed so that the approved type is no longer in conformity with them, then the type approval is no longer valid. If within that period, the withdrawal date according to column (3) of the tables in 6.2.2.1 and 6.2.2.3 or column (5) of the tables in 6.2.4.1, 6.8.2.6.1 and 6.8.3.6 applies, the type approval is also no longer valid. It shall then be withdrawn by the competent authority or the inspection body which issued the type approval certificate.

NOTE: *For the latest date for withdrawal of existing type approvals, see column (5) of the tables in 6.2.4.1 and 6.8.2.6.1 or 6.8.3.6 as appropriate.*

If a type approval has expired, or has been withdrawn, the manufacture of the products according to that type approval is no longer authorized.

NOTE: *The relevant provisions concerning the use, periodic inspection and intermediate inspection of products contained in a type approval which has expired or has been withdrawn shall continue to apply to the products constructed according to that type approval before its expiry or its withdrawal if they may continue to be used.*

Type approvals may be renewed on the basis of a new type examination. Results of the previous type examination tests shall be taken into account if these tests are still in accordance with the provisions of ADR including the standards applicable at the date of renewal. Renewal is not permitted after a type approval has been withdrawn.

NOTE: *The type examination for renewal may be performed by an inspection body other than the one which issued the original type examination report.*

Interim amendments of an existing type approval (e.g. for pressure receptacles minor amendments such as the addition of further sizes or volumes not affecting conformity, or for tanks see 6.8.2.3.3) do not extend or modify the original validity of the certificate.

1.8.7.2.2.3 In the case of a modification of a product with a valid, expired or withdrawn type approval, the relevant type examination, testing, inspection and approval are limited to the parts of the product that have been modified.

The modification shall meet the provisions of ADR applicable at the time of the modification. For all parts of the product not affected by the modification, the documentation of the initial type approval remains valid.

A modification may apply to one or more product(s) covered by the same type approval.

Where the modified product satisfies all applicable provisions, a supplementary approval certificate for the modification shall be issued to the owner or operator by the competent authority or inspection body of any Contracting Party to ADR in conformity with Chapters 6.2 and 6.8. For tanks, battery-vehicles or MEGCs, a copy shall be kept as part of the tank record.

1.8.7.3 ***Supervision of manufacture***

1.8.7.3.1 The manufacturer shall take all the necessary measures to ensure that the manufacturing process complies with the applicable provisions of ADR and of the type approval certificate, the technical documentation according to 1.8.7.8.3 and reports.

1.8.7.3.2 The manufacturing process shall be subject to supervision by the relevant body.

The relevant body shall:

(a) Verify the conformity with the technical documentation specified in 1.8.7.8.3 and with the applicable provisions of ADR and of the type approval certificate and reports;

(b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it;

(c) Verify the traceability of materials and check the material(s) certificate(s) against the specifications;

(d) As applicable, verify that the personnel undertaking the permanent joining of parts and the non-destructive tests are qualified or approved;

(e) Agree with the manufacturer on the location where the examinations and necessary tests are to be carried out; and

(f) Provide a written report of the results of the supervision of manufacture.

1.8.7.4 ***Initial inspection and tests***

1.8.7.4.1 The manufacturer shall:

(a) Affix the marks specified in ADR; and

(b) Supply to the relevant body the technical documentation specified in 1.8.7.8.4.

1.8.7.4.2 The relevant body shall:

(a) Perform the examinations and the tests, or perform the examinations and verify the test conditions and supervise the tests on site to ensure that the product is manufactured in accordance with the type approval and the relevant provisions;

(b) Check the certificates supplied by the manufacturers of service equipment against the service equipment;

(c) Issue an initial inspection and tests report relating to the detailed tests and verifications carried out and the verified technical documentation;

(d) Issue an initial inspection and tests certificate and affix its mark when the manufacture satisfies the provisions; and

(e) Check if the type approval remains valid after provisions of ADR (including the referenced standards) relevant to the type approval have changed. If the type approval is no longer valid, the relevant body shall issue a refusal inspection report and inform the competent authority or the inspection body which issued the type approval certificate.

The certificate in (d) and report in (c) may cover a number of products of the same type (group certificate or report).

1.8.7.4.3 The certificate in 1.8.7.4.2 (d) shall contain as a minimum:

(a) The name and address of the inspection body and the name and address of the in-house inspection service when applicable;

(b) The name and address of the manufacturer;

(c) The location of the initial inspection;

(d) A reference to the version of ADR and the standards used for the initial inspections and tests;

(e) The results of the inspections and tests;

(f) The data for identification of the inspected product(s), at least the serial number or for non refillable cylinders the batch number;

(g) The type approval number; and

(h) The reference to the certificate of authorization of the in-house inspection service when applicable.

1.8.7.5 ***Entry into service verification***

1.8.7.5.1 If an entry into service verification is required by the competent authority under 6.8.1.5.5, the owner or operator shall engage a single inspection body to perform the entry into service verification and shall provide it with the type approval certificate and the technical documentation specified in 1.8.7.8.4.

1.8.7.5.2 The inspection body shall review the documentation and:

(a) Perform external checks (e.g. marking, condition);

(b) Verify conformity with the type approval certificate;

(c) Verify the validity of the approvals of the inspection bodies who performed the previous inspections and tests;

(d) Verify that the transitional measures of 1.6.3 or 1.6.4 have been fulfilled.

1.8.7.5.3 The inspection body shall issue an entry into service verification report that contains the results of the assessment. The owner or operator shall present this report at the request of the competent authority requiring the entry into service verification, and to the inspection body(ies) in charge of subsequent inspections and tests.

In the event of a failed entry into service verification, the non-conformities shall be rectified and a new entry into service verification passed before the tank is used.

The inspection body in charge of the entry into service verification shall, without delay, inform its competent authority of any refusal.

1.8.7.6 ***Periodic inspection, intermediate inspection and exceptional inspection***

1.8.7.6.1 The relevant body shall:

(a) Perform the identification and verify the conformity with the documentation;

(b) Perform the inspections and the tests, or perform the inspections and verify the test conditions and supervise the tests on site in order to check that the requirements are met;

(c) Issue reports and certificates, as appropriate, of the results of the inspections and tests, which may cover a number of products; and

(d) Ensure that the required marks are applied.

1.8.7.6.2 Reports of periodic inspections and tests of pressure receptacles shall be retained by the owner or operator at least until the next periodic inspection.

NOTE: *For tanks, see provisions for tank records in 4.3.2.1.7.*

1.8.7.7 ***Authorization and surveillance of the in-house inspection service***

1.8.7.7.1 Where an in-house inspection service is used according to 6.2.2.12, 6.2.3.6.1, 6.8.1.5.3 (b) or 6.8.1.5.4 (b), the manufacturer or the testing facility shall:

(a) Implement a quality system for the in-house inspection service, including technical procedures, for inspections and tests documented in 1.8.7.8.6 and subject to surveillance;

(b) Fulfil the obligations arising out of the quality system as approved and ensure that it remains satisfactory and efficient in particular:

(i) Authorize trained and competent personnel for the in-house inspection service; and

(ii) Affix the identity mark or stamp, as specified in Chapters 6.2 and 6.8, of the inspection body, and the mark of the in-house inspection service where appropriate on the product to ensure traceability.

1.8.7.7.2 The inspection body shall carry out an initial audit at each site. If satisfactory the inspection body shall inform the competent authority of the authorization of the in-house inspection service and issue a certificate of authorization for a period not exceeding three years. The following provisions shall be met:

(a) This audit shall be undertaken at each site to confirm that the inspections and tests performed are in compliance with the requirements of ADR;

(b) The inspection body may authorize the in-house inspection service to affix the identity mark or stamp, as specified in Chapter 6.2 and 6.8, of the inspection body to each approved product;

(c) The authorization may be renewed after a satisfactory audit at each site in the last year prior to the expiry. The new period of validity shall begin with the date of expiry of the authorization;

(d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and

(e) The in-house inspection service shall be engaged in activities at a frequency which ensures the necessary level of competence.

The in-house inspection service may, in specific cases only, subcontract specific parts of its activities if approved by the inspection body which has authorized it. The subcontractor shall additionally be accredited according to EN ISO/IEC 17025:2017 (except clause 8.1.3) or EN ISO/IEC 17020:2012

(except clause 8.1.3) as an independent and impartial testing laboratory or inspection body in order to perform testing tasks in accordance with its accreditation.

1.8.7.7.3 The certificate of authorization shall contain as a minimum:

(a) The name and address of the inspection body;

(b) The name and address of the manufacturer or testing facility and addresses of all in-house inspection service sites;

(c) A reference to the version of ADR used for authorization of the in-house inspection service and standards or recognised technical codes according to 6.2.5 used for initial inspection and tests or periodic inspections;

(d) The reference to the initial audit report;

(e) As necessary, further information to define the scope of the in-house inspection service (e.g. type approvals of the products for initial inspection and tests);

(f) The mark of the in-house inspection service, if applicable; and

(g) The expiry date.

1.8.7.7.4 The inspection body shall carry out periodic audits at each site within the duration of the authorization to make sure that the in-house inspection service maintains and applies the quality system, including the technical procedures. The following provisions shall be met:

(a) The audits shall be carried out no later than every six months;

(b) The inspection body may require additional visits, training, technical changes, modifications of the quality system, restrict or prohibit the inspections and tests to be done by the in-house inspection service;

(c) The inspection body shall assess any changes in the quality system and decide whether the modified quality system still satisfies the requirements of the initial audit or whether a full reassessment is required;

(d) The inspectors of the inspection body undertaking the audits shall be competent to carry out the assessment of conformity of the product covered by the quality system and to assess the quality system itself; and

(e) The inspection body shall provide the manufacturer or the testing facility, as applicable, and the in-house inspection service, with the report of the audit and, if tests have taken place, with a test report.

1.8.7.7.5 In cases of non-conformity with the relevant requirements the inspection body shall ensure that corrective measures are taken. If corrective measures are not taken in due time, the inspection body shall suspend or withdraw the permission for the in-house inspection service to carry out its activities. The notice of suspension or withdrawal shall be transmitted to the competent authority. A report shall be provided to the manufacturer or the testing facility, as applicable, and to the in-house inspection service giving detailed reasons for the decisions taken by the inspection body.

1.8.7.8 ***Documents***

The technical documentation shall enable an assessment to be made of conformity with the relevant requirements.

1.8.7.8.1 *Documents for the type examination*

The manufacturer shall provide as appropriate:

(a) The list of standards used for the design and manufacture;

(b) A description of the type including all variations;

(c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;

(d) A general assembly drawing or drawings;

(e) The detailed drawings, including the dimensions used for the calculations, of the product, the service equipment, the structural equipment, the marking and the labelling necessary to verify the conformity;

(f) The calculation notes, results and conclusions;

(g) The list of the service equipment with the relevant technical data and information on the safety devices including the calculation of the relief capacity if relevant;

(h) The list of material requested in the standard for manufacture used for every part, sub-part, lining, service and structural equipment and the corresponding material specifications or the corresponding declaration of conformity to ADR;

(i) The approved qualification of permanent joining processes;

(j) The description of the heat treatment process(es); and

(k) The procedures, descriptions and records of all relevant tests listed in the standards or ADR for the type approval and for the manufacture.

1.8.7.8.2 *Documents for the type approval certificate issue*

The manufacturer shall provide as appropriate:

(a) The list of standards used for the design and manufacture;

(b) A description of the type, including all variations;

(c) The instructions according to the relevant column of table A of Chapter 3.2 or a list of dangerous goods to be carried for dedicated products;

(d) A general assembly drawing or drawings;

(e) The list of materials in contact with the dangerous goods;

(f) The list of service equipment;

(g) The type-examination report; and

(h) Further documents mentioned under 1.8.7.8.1 on request of the competent authority or inspection body.

1.8.7.8.3 *Documents for the supervision of manufacture*

The manufacturer shall provide as appropriate:

(a) The documents listed in 1.8.7.8.1 and 1.8.7.8.2;

(b) A copy of the type approval certificate;

(c) The manufacturing procedures including test procedures;

(d) The manufacturing records;

(e) The approved qualifications of permanent joining operators;

(f) The approved qualifications of the non-destructive test operators;

(g) The reports of the destructive and non-destructive tests;

(h) The heat treatment records; and

(i) The calibration records.

1.8.7.8.4 *Documents for initial inspection and tests, and for entry into service verification*

The manufacturer for initial inspection and tests, and the owner or operator for the entry into service verification shall provide as appropriate:

(a) The documents listed in 1.8.7.8.1, 1.8.7.8.2, and 1.8.7.8.3;

(b) The material certificates of the product and any sub-parts including the service equipment;

(c) The certificates of conformity of the service equipment; and

(d) A declaration of conformity including the description of the product and all the variations adopted from the type approval.

1.8.7.8.5 *Documents for periodic inspection, intermediate inspection and exceptional inspection*

The owner or operator, or its authorized representative shall provide as appropriate:

(a) For pressure receptacles, the documents specifying special requirements when the manufacturing and periodic inspections and tests standards so require;

(b) For tanks:

(i) The tank record; and

(ii) Any relevant document mentioned in 1.8.7.8.1 to 1.8.7.8.4 if requested by the inspection body.

1.8.7.8.6 *Documents for the surveillance of in-house inspection service*

The in-house inspection service shall provide the quality system documentation as appropriate:

(a) The organizational structure and responsibilities;

(b) The relevant inspection and test, quality control, quality assurance and process operation instructions, and systematic actions that will be used;

(c) The quality records, such as inspection reports, test data, calibration data and certificates;

(d) The management reviews to ensure the effective operation of the quality system arising from the on-site audits in accordance with 1.8.7.7;

(e) The process describing how customer and regulation requirements are met;

(f) The process for control of documents and their revision;

(g) The procedures for dealing with non-conforming products; and

(h) The training programmes and qualification procedures for relevant personnel.

1.8.8 Procedures for conformity assessment of gas cartridges

When assessing the conformity of gas cartridges, one of the following procedures shall be applied:

(a) The procedure in section 1.8.7 for non-UN pressure receptacles, with the exception of 1.8.7.6; or

(b) The procedure in sub-sections 1.8.8.1 to 1.8.8.7.

1.8.8.1 ***General provisions***

1.8.8.1.1 The supervision of manufacture shall be carried out by an Xa body and the tests as required in 6.2.6 shall be carried out either by that Xa body or by an IS authorized by that Xa body; for definition of Xa

and IS, see definitions in 6.2.3.6.1. Conformity assessment shall be carried out by the competent authority, its delegate or its approved inspection body of a Contracting Party to ADR.

1.8.8.1.2 By the application of 1.8.8, the applicant shall demonstrate, ensure and declare on his sole responsibility the conformity of gas cartridges with the provisions of 6.2.6 and all further applicable provisions of ADR.

1.8.8.1.3 The applicant shall

(a) Carry out a design type examination of each type of gas cartridges (including materials to be used and variations of that type, e.g. volumes, pressures, drawings and closing and release devices) according to 1.8.8.2;

(b) Operate an approved quality system for design, manufacture, inspection and testing according to 1.8.8.3;

(c) Operate an approved testing regime according to 1.8.8.4 for the tests required in 6.2.6;

(d) Apply for the approval of his quality system for supervision of manufacture and for testing to one Xa body of his choice of the Contracting Party; if the applicant is not established in a Contracting Party he shall apply to one Xa body of a Contracting Party prior to first transport into a Contracting Party;

(e) If the gas cartridge is finally assembled from parts manufactured by the applicant by one or more other enterprise(s), provide written instructions how to assemble and fill the gas cartridges to meet the provisions of his type examination certificate.

1.8.8.1.4 Where the applicant and enterprises assembling or filling gas cartridges according to the instructions of the applicant, can demonstrate to the satisfaction of the Xa body conformity with the provisions of 1.8.7.7 excluding 1.8.7.7.1 (d) and 1.8.7.7.2 (b), they may establish an in-house inspection service which may perform part or all of the inspections and tests specified in 6.2.6.

1.8.8.2 ***Design type examination***

1.8.8.2.1 The applicant shall establish a technical documentation for each type of gas cartridges including the technical standard(s) applied. If he chooses to apply a standard not referenced in 6.2.6, he shall add the standard applied to the documentation.

1.8.8.2.2 The applicant shall retain the technical documentation together with samples of that type at the disposal of the Xa body during production and afterwards for a period of minimum five years starting from the last date of production of gas cartridges according to that type examination certificate.

1.8.8.2.3 The applicant shall after careful examination issue a design type certificate which shall be valid for a maximum period of ten years; he shall add this certificate to the documentation. This certificate authorises him to produce gas cartridges of that type for that period.

1.8.8.2.4 If within that period the relevant technical requirements of ADR (including referenced standards) have changed so that the design type is no longer in conformity with them, the applicant shall withdraw his type examination certificate and inform the Xa body.

1.8.8.2.5 The applicant may after careful and complete review reissue the certificate for another period of maximum ten years.

1.8.8.3 ***Supervision of manufacture***

1.8.8.3.1 The procedure of design type examination as well as the manufacturing process shall be subject to a survey by the Xa body to ensure the type certified by the applicant and the product as produced are in conformity with the provisions of the design type certificate and the applicable provisions of ADR. If 1.8.8.1.3 (e) applies, the assembling and filling enterprises shall be included in that procedure.

1.8.8.3.2 The applicant shall take all the necessary measures to ensure that the manufacturing process complies with the applicable provisions of ADR and of his design type certificate and its annexes. If 1.8.8.1.3 (e) applies, the assembling and filling enterprises shall be included in that procedure.

1.8.8.3.3 The Xa body shall:

(a) Verify the conformity of the design type examination of the applicant and conformity of the type of gas cartridges with the technical documentation specified in 1.8.8.2;

(b) Verify that the manufacturing process produces products in conformity with the requirements and the documentation which apply to it; if the gas cartridge is finally assembled from parts manufactured by the applicant by one or more enterprise(s), the Xa body shall also verify that the gas cartridges are in full conformity with all applicable provisions after final assembly and filling and that the instructions of the applicant are correctly applied;

(c) Verify that the personnel undertaking the permanent joining of parts and the tests are qualified or approved;

(d) Record the results of its surveys.

1.8.8.3.4 If the findings of the Xa body show non-conformity of the design type certificate of the applicant or the manufacturing process, he shall require appropriate corrective measures or withdrawal of the certificate from the applicant.

1.8.8.4 ***Leakproofness test***

1.8.8.4.1 The applicant and enterprises finally assembling and filling gas cartridges according to the instructions of the applicant shall:

(a) Carry out the tests required in 6.2.6;

(b) Record the test results;

(c) Issue a certificate of conformity only for gas cartridges, which are in full compliance with the provisions of his design type examination and the applicable provisions of ADR and have successfully passed the tests as required in 6.2.6;

(d) Retain the documentation as specified in 1.8.8.7 during production and afterwards for a period of minimum five years from the last date of production of gas cartridges belonging to one type approval for inspection by the Xa body at random intervals;

(e) Affix a durable and legible mark identifying the type of gas cartridge, the applicant and the date of production or batch number; where due to limited available space the mark cannot be fully applied to the body of the gas cartridge, he shall affix a durable tag with this information to the gas cartridge or place it together with a gas cartridge in an inner packaging.

1.8.8.4.2 The Xa body shall:

(a) Perform the necessary examinations and tests at random intervals, but at least shortly after starting of manufacture of a type of gas cartridges and thereafter at least once every three years, in order to verify that the procedure for design type examination of the applicant as well as that the manufacture and testing of the product are carried out in accordance with the design type certificate and the relevant provisions;

(b) Check the certificates supplied by the applicant;

(c) Carry out the tests as required in 6.2.6 or approve the program of testing and the in-house inspection service to carry out the tests.

1.8.8.4.3 The certificate shall contain as a minimum:

(a) The name and address of the applicant and, when the final assembly is not carried out by the applicant but by an enterprise or enterprises in accordance with the written instructions of the applicant, the name(s) and address(es) of these enterprises;

(b) A reference to the version of ADR and the standard(s) used for manufacture and tests;

(c) The result of inspections and tests;

(d) The data for marking as required in 1.8.8.4.1 (e).

1.8.8.5 *(Reserved)*

1.8.8.6 ***Surveillance of the in-house inspection service***

When the applicant or enterprise assembling or filling gas cartridges has established an in-house inspection service, the provisions of 1.8.7.7 excluding 1.8.7.7.1 (b) (ii) and 1.8.7.7.2 (b) shall be applied. The enterprise assembling or filling gas cartridges shall comply with the provisions relevant to the applicant.

1.8.8.7 ***Documents***

The provisions of 1.8.7.8.1, 1.8.7.8.2, 1.8.7.8.3, 1.8.7.8.4 and 1.8.7.8.6 shall be applied.

CHAPTER 1.9

TRANSPORT RESTRICTIONS BY THE COMPETENT AUTHORITIES

1.9.1 In accordance with Article 4, paragraph 1 of ADR, the entry of dangerous goods into the territory of Contracting Parties may be subject to regulations or prohibitions imposed for reasons other than safety during carriage. Such regulations or prohibitions shall be published in an appropriate form.

1.9.2 Subject to the provisions of 1.9.3, a Contracting Party may apply to vehicles engaged in the international carriage of dangerous goods by road on its territory certain additional provisions not included in ADR, provided that those provisions do not conflict with Article 2, paragraph 2 of the Agreement, and are contained in its domestic legislation applying equally to vehicles engaged in the domestic carriage of dangerous goods by road on the territory of that Contracting Party.

1.9.3 Additional provisions falling within the scope of 1.9.2 are as follows:

(a) Additional safety requirements or restrictions concerning vehicles using certain structures such as bridges, vehicles using combined transport modes such as ferries or trains, or vehicles entering or leaving ports or other transport terminals;

(b) Requirements for vehicles to follow prescribed routes to avoid commercial or residential areas, environmentally sensitive areas, industrial zones containing hazardous installations or roads presenting severe physical hazards;

(c) Emergency requirements regarding routeing or parking of vehicles carrying dangerous goods resulting from extreme weather conditions, earthquake, accident, industrial action, civil disorder or military hostilities;

(d) Restrictions on movement of dangerous goods traffic on certain days of the week or year.

1.9.4 The competent authority of the Contracting Party applying on its territory any additional provisions within the scope of 1.9.3 (a) and (d) above shall notify the secretariat of the United Nations Economic Commission for Europe of the additional provisions, which secretariat shall bring them to the attention of the Contracting Parties[1,2].

1.9.5 Tunnel restrictions

NOTE: *Provisions concerning restrictions for the passage of vehicles through road tunnels are also included in Chapter 8.6.*

1.9.5.1 ***General provisions***

When applying restrictions to the passage of vehicles carrying dangerous goods through tunnels, the competent authority shall assign the road tunnel to one of the tunnel categories defined in 1.9.5.2.2. Account should be taken of the tunnel characteristics, risk assessment including availability and suitability of alternative routes and modes and traffic management considerations. The same tunnel may be assigned to more than one tunnel category, e.g. depending on the hours of the day, or the day of the week etc.

1.9.5.2 ***Categorization***

1.9.5.2.1 The categorization shall be based on the assumption that in tunnels there are three major dangers which may cause numerous victims or serious damage to the tunnel structure:

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[1] *A General Guideline for the Calculation of Risks in the Transport of Dangerous Goods by Road may be consulted on the website of the secretariat of the United Nations Economic Commission for Europe (http://www.unece.org/guidelines-telematics-application-standards-construction-and-approval-vehicles-calculation-risks).*

[2] *Multimodal guidelines (Inland TDG Risk Management Framework) may be consulted on the website of the Directorate General for Mobility and Transport of the European Commission (https://ec.europa.eu/transport/themes/dangerous_good/risk_management_framework_en).*

(a) Explosions;

(b) Release of toxic gas or volatile toxic liquid;

(c) Fires.

1.9.5.2.2 The five tunnel categories are the following:

Tunnel category A:

No restrictions for the carriage of dangerous goods;

Tunnel category B:

Restriction for the carriage of dangerous goods which may lead to a very large explosion;

The following dangerous goods are considered to fulfil this criterion[3]:

Class 1:	Compatibility groups A and L;
Class 2:	UN No. 3529;
Class 3:	Classification code D (UN Nos. 1204, 2059, 3064, 3343, 3357 and 3379);
Class 4.1:	Classification codes D and DT; and Self-reactive substances, type B (UN Nos. 3221, 3222, 3231 and 3232);
Class 5.2:	Organic peroxides, type B (UN Nos. 3101, 3102, 3111 and 3112).
When the total net explosive mass per transport unit is greater than 1000 kg:	
Class 1:	Divisions 1.1, 1.2 and 1.5 (except compatibility groups A and L).
When carried in tanks:	
Class 2:	Classification codes F, TF and TFC;
Class 4.2:	Packing group I;
Class 4.3:	Packing group I;
Class 5.1:	Packing group I;
Class 6.1:	UN No. 1510

Tunnel category C:

Restriction for the carriage of dangerous goods which may lead to a very large explosion, a large explosion or a large toxic release;

The following dangerous goods are considered to fulfil this criterion[3]:

- The dangerous goods restricted in tunnel category B, and
- The following dangerous goods:

Class 1:	Divisions 1.1, 1.2 and 1.5 (except compatibility groups A and L); and Division 1.3 (compatibility groups H and J);
Class 7:	UN Nos. 2977 and 2978.
When the net explosive mass per transport unit is greater than 5000 kg:	
Class 1:	Division 1.3 (compatibility groups C and G).
When carried in tanks:	
Class 2:	Classification codes 2A, 2O, 3A and 3O, and classification codes containing the letter T only or letter groups TC, TO and TOC;
Class 3:	Packing group I for classification codes FC, FT1, FT2 and FTC;
Class 6.1:	Packing group I, except UN No. 1510;
Class 8:	Packing group I for classification codes CT1, CFT and COT.

[3] *The assessment is based on the intrinsic dangerous properties of the goods, the type of containment and the quantity carried.*

Tunnel category D:

Restriction for the carriage of dangerous goods which may lead to a very large explosion, to a large explosion, to a large toxic release or to a large fire;

The following dangerous goods are considered to fulfil this criterion[3]:

- The dangerous goods restricted in tunnel category C, and
- The following dangerous goods:

Class 1:	Division 1.3 (compatibility groups C and G);
Class 2:	Classification codes F, FC, T, TF, TC, TO, TFC and TOC;
Class 3:	Class 3: UN No. 3528;
Class 4.1:	Self-reactive substances, types C, D, E and F; and UN Nos. 2956, 3241, 3242, 3251, 3531, 3532, 3533 and 3534;
Class 5.2:	Organic peroxides, types C, D, E and F;
Class 6.1:	Packing group I for classification codes TF1, TFC and TFW and UN No.3507; and Toxic by inhalation entries for which special provision 354 is assigned in column (6) of Table A of Chapter 3.2 and toxic by inhalation entries of UN Nos. 3381 to 3390;
Class 8:	Packing group I for classification codes CT1, CFT and COT;
Class 9:	Classification codes M9 and M10.
When carried in bulk or in tanks:	
Class 3	
Class 4.2:	Packing group II;
Class 4.3:	Packing group II;
Class 6.1:	Packing group II; and Packing group III for classification code TF2;
Class 8:	Packing group I for classification codes CF1, CFT and CW1; and Packing group II for classification codes CF1 and CFT
Class 9:	Classification codes M2 and M3.

Tunnel category E:

Restriction for the carriage of all dangerous goods other than those for which '(-)' is marked in column (15) of Table A of Chapter 3.2 and for all dangerous goods in accordance with the provisions of Chapter 3.4 if the quantities carried exceed 8 tonnes total gross mass per transport unit..

NOTE: *For the dangerous goods assigned to UN Nos. 2919 and 3331, restrictions to the passage through tunnels may, however, be part of the special arrangement approved by the competent authority(ies) on the basis of 1.7.4.2.*

1.9.5.3 ***Provisions for road signs and notification of restrictions***

1.9.5.3.1 Contracting Parties shall indicate tunnel prohibitions and alternative routes by means of signs and signals.

1.9.5.3.2 For this purpose, they may use signs C, 3h and D, 10a, 10b and 10c and signals according to the Vienna Convention on Road Signs and Signals (Vienna, 1968) and the European Agreement supplementing the Convention on Road Signs and Signals (Geneva, 1971) as interpreted by the Resolution on Road Signs and Signals (R.E.2) of the UNECE Inland Transport Committee Principal Working Party on Road Transport, as amended.

1.9.5.3.3 In order to facilitate international understanding of signs, the system of signs and signals prescribed in the Vienna Convention is based on the use of shapes, and colours characteristic of each class of signs and wherever possible, on the use of graphic symbols rather than inscriptions. Where Contracting Parties consider it necessary to modify the signs and symbols prescribed, the modifications made shall

[3] *The assessment is based on the intrinsic dangerous properties of the goods, the type of containment and the quantity carried.*

not alter their essential characteristics. Where Contracting Parties do not apply the Vienna Convention, the prescribed signs and symbols may be modified, provided that the modifications made shall not alter their essential intent.

1.9.5.3.4 Traffic signs and signals intended to prohibit access of vehicles carrying dangerous goods to road tunnels shall be affixed at a place where the choice of alternative routes is possible.

1.9.5.3.5 When access to tunnels is restricted or alternative routes are prescribed, the signs shall be displayed with additional panels as follows:

No sign: no restriction

Sign with additional panel bearing the letter B: applies to vehicles carrying dangerous goods not allowed in tunnels of category B;

Sign with additional panel bearing the letter C: applies to vehicles carrying dangerous goods not allowed in tunnels of category C;

Sign with additional panel bearing the letter D: applies to vehicles carrying dangerous goods not allowed in tunnels of category D;

Sign with additional panel bearing the letter E: applies to vehicles carrying dangerous goods not allowed in tunnels of category E.

1.9.5.3.6 Tunnel restrictions shall apply to transport units for which an orange-coloured plate marking in accordance with 5.3.2 is required, except for the carriage of dangerous goods for which '(-)' is marked in column (15) of Table A of Chapter 3.2. For the dangerous goods assigned to UN Nos. 2919 and 3331, restrictions to the passage through tunnels may, however, be part of the special arrangement approved by the competent authority(ies) on the basis of 1.7.4.2. For tunnels of category E, they shall apply also to transport units for which a marking in accordance with 3.4.13 is required or carrying containers for which a marking in accordance with 3.4.13 is required.

Tunnel restrictions shall not apply when dangerous goods are carried in accordance with 1.1.3, except when transport units carrying such goods are marked in accordance with 3.4.13 subject to 3.4.14.

1.9.5.3.7 Restrictions shall be published officially and made publicly available. Contracting Parties shall notify the secretariat of UNECE of such restrictions and the secretariat shall make this information publicly available on its website.

1.9.5.3.8 When Contracting Parties apply specific operating measures designed to reduce the risks and related to some or all vehicles using tunnels, such as declaration before entering or passage in convoys escorted by accompanying vehicles, such operating measures shall be published officially and made publicly available.

CHAPTER 1.10

SECURITY PROVISIONS

NOTE: *For the purposes of this Chapter, security means measures or precautions to be taken to minimise theft or misuse of dangerous goods that may endanger persons, property or the environment.*

1.10.1 General provisions

1.10.1.1 All persons engaged in the carriage of dangerous goods shall consider the security requirements set out in this Chapter commensurate with their responsibilities.

1.10.1.2 Dangerous goods shall only be offered for carriage to carriers that have been appropriately identified.

1.10.1.3 Areas within temporary storage terminals, temporary storage sites, vehicle depots, berthing areas and marshalling yards used for the temporary storage during carriage of dangerous goods shall be properly secured, well-lit and, where possible and appropriate, not accessible to the general public.

1.10.1.4 Each member of a vehicle crew shall carry with them means of identification, which includes their photograph, during carriage of dangerous goods.

1.10.1.5 Safety inspections in accordance with 1.8.1 and 7.5.1.1 shall cover appropriate security measures.

1.10.1.6 The competent authority shall maintain up-to-date registers of all valid training certificates for drivers stipulated in 8.2.1 issued by it or by any recognized organization.

1.10.2 Security training

1.10.2.1 The training and the refresher training specified in Chapter 1.3 shall also include elements of security awareness. The security refresher training need not be linked to regulatory changes only.

1.10.2.2 Security awareness training shall address the nature of security risks, recognising security risks, methods to address and reduce such risks and actions to be taken in the event of a security breach. It shall include awareness of security plans (if appropriate) commensurate with the responsibilities and duties of individuals and their part in implementing security plans.

1.10.2.3 Such training shall be provided or verified upon employment in a position involving dangerous goods transport and shall be periodically supplemented with refresher training.

1.10.2.4 Records of all security training received shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority.

1.10.3 Provisions for high consequence dangerous goods

NOTE: *In addition to the security provisions of ADR, competent authorities may implement further security provisions for reasons other than safety during carriage (see also Article 4, paragraph 1 of the Agreement). In order not to impede international and multimodal carriage by different explosives security marks, it is recommended that such marks be formatted consistent with an internationally harmonized standard (e.g. European Union Commission Directive 2008/43/EC).*

1.10.3.1 Definition of high consequence dangerous goods

1.10.3.1.1 High consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce serious consequences such as mass casualties, mass destruction or, particularly for Class 7, mass socio-economic disruption.

1.10.3.1.2 High consequence dangerous goods in classes other than Class 7 are those listed in Table 1.10.3.1.2 below and carried in quantities greater than those indicated therein.

Table 1.10.3.1.2: List of high consequence dangerous goods

Class	Division	Substance or article	Quantity		
			Tank (*l*) [c]	Bulk (kg) [d]	Packages (kg)
1	1.1	Explosives	[a]	[a]	0
	1.2	Explosives	[a]	[a]	0
	1.3	Compatibility group C explosives	[a]	[a]	0
	1.4	Explosives of UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456, 0500, 0512 and 0513	[a]	[a]	0
	1.5	Explosives	0	[a]	0
	1.6	Explosives	[a]	[a]	0
2		Flammable, non-toxic gases (classification codes including only letters F or FC)	3000	[a]	[b]
		Toxic gases (classification codes including letters T, TF, TC, TO, TFC or TOC) excluding aerosols	0	[a]	0
3		Flammable liquids of packing groups I and II	3000	[a]	[b]
		Desensitized explosives	0	[a]	0
4.1		Desensitized explosives	[a]	[a]	0
4.2		Packing group I substances	3000	[a]	[b]
4.3		Packing group I substances	3000	[a]	[b]
5.1		Oxidizing liquids of packing group I	3000	[a]	[b]
		Perchlorates, ammonium nitrate, ammonium nitrate fertilisers and ammonium nitrate emulsions or suspensions or gels	3000	3000	[b]
6.1		Toxic substances of packing group I	0	[a]	0
6.2		Infectious substances of Category A (UN Nos. 2814 and 2900, except for animal material) and medical waste of Category A (UN No. 3549)	[a]	0	0
8		Corrosive substances of packing group I	3000	[a]	[b]

[a] *Not relevant.*

[b] *The provisions of 1.10.3 do not apply, whatever the quantity is.*

[c] *A value indicated in this column is applicable only if carriage in tanks is authorized, in accordance with Chapter 3.2, Table A, column (10) or (12). For substances that are not authorized for carriage in tanks, the instruction in this column is not relevant.*

[d] *A value indicated in this column is applicable only if carriage in bulk is authorized, in accordance with Chapter 3.2, Table A, column (10) or (17). For substances that are not authorized for carriage in bulk, the instruction in this column is not relevant.*

1.10.3.1.3 For dangerous goods of Class 7, high consequence radioactive material is that with an activity equal to or greater than a transport security threshold of 3 000 A_2 per single package (see also 2.2.7.2.2.1) except for the following radionuclides where the transport security threshold is given in Table 1.10.3.1.3 below.

Table 1.10.3.1.3: Transport security thresholds for specific radionuclides

Element	Radionuclide	Transport security threshold (TBq)
Americium	Am-241	0.6
Gold	Au-198	2
Cadmium	Cd-109	200
Californium	Cf-252	0.2
Curium	Cm-244	0.5
Cobalt	Co-57	7
Cobalt	Co-60	0.3
Caesium	Cs-137	1
Iron	Fe-55	8000
Germanium	Ge-68	7
Gadolinium	Gd-153	10
Iridium	Ir-192	0.8
Nickel	Ni-63	600
Palladium	Pd-103	900
Promethium	Pm-147	400
Polonium	Po-210	0.6
Plutonium	Pu-238	0.6
Plutonium	Pu-239	0.6
Radium	Ra-226	0.4
Ruthenium	Ru-106	3
Selenium	Se-75	2
Strontium	Sr-90	10
Thallium	Tl-204	200
Thulium	Tm-170	200
Ytterbium	Yb-169	3

1.10.3.1.4 For mixtures of radionuclides, determination of whether or not the transport security threshold has been met or exceeded can be calculated by summing the ratios of activity present for each radionuclide divided by the transport security threshold for that radionuclide. If the sum of the fractions is less than 1, then the radioactivity threshold for the mixture has not been met nor exceeded.

This calculation can be made with the formula:

$$\sum_i \frac{A_i}{T_i} < 1$$

Where:

Ai = activity of radionuclide i that is present in a package (TBq)

Ti = transport security threshold for radionuclide i (TBq).

1.10.3.1.5 When radioactive material possesses subsidiary hazards of other classes, the criteria of table 1.10.3.1.2 shall also be taken into account (see also 1.7.5).

1.10.3.2 ***Security plans***

1.10.3.2.1 Carriers, consignors and other participants specified in 1.4.2 and 1.4.3 engaged in the carriage of high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3) shall adopt, implement and comply with a security plan that addresses at least the elements specified in 1.10.3.2.2.

1.10.3.2.2 The security plan shall comprise at least the following elements:

(a) Specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;

(b) Records of dangerous goods or types of dangerous goods concerned;

(c) Review of current operations and assessment of security risks, including any stops necessary to the transport operation, the keeping of dangerous goods in the vehicle, tank or container before, during and after the journey and the intermediate temporary storage of dangerous goods during the course of intermodal transfer or transhipment between units as appropriate;

(d) Clear statement of measures that are to be taken to reduce security risks, commensurate with the responsibilities and duties of the participant, including:

- Training;
- Security policies (e.g. response to higher threat conditions, new employee/employment verification, etc.);
- Operating practices (e.g. choice/use of routes where known, access to dangerous goods in intermediate temporary storage (as defined in (c)), proximity to vulnerable infrastructure etc.);
- Equipment and resources that are to be used to reduce security risks;

(e) Effective and up to date procedures for reporting and dealing with security threats, breaches of security or security incidents;

(f) Procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;

(g) Measures to ensure the physical security of transport information contained in the security plan; and

(h) Measures to ensure that the distribution of information relating to the transport operation contained in the security plan is limited to those who need to have it. Such measures shall not preclude the provision of information required elsewhere in ADR.

NOTE: *Carriers, consignors and consignees should co-operate with each other and with competent authorities to exchange threat information, apply appropriate security measures and respond to security incidents.*

1.10.3.3 Devices, equipment or arrangements to prevent the theft of the vehicle carrying high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3) and its cargo, shall be applied and measures taken to ensure that these are operational and effective at all times. The application of these protective measures shall not jeopardize emergency response.

NOTE: *When appropriate and already fitted, the use of transport telemetry or other tracking methods or devices should be used to monitor the movement of high consequence dangerous goods (see Table 1.10.3.1.2) or high consequence radioactive material (see 1.10.3.1.3).*

1.10.4 The requirements of 1.10.1, 1.10.2, 1.10.3 and 8.1.2.1 (d) do not apply when the quantities carried in tanks or in bulk on a transport unit do not exceed those referred to in 1.1.3.6.3. In addition the provisions of this Chapter do not apply to the carriage of UN No. 2912 RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I) and UN No. 2913 RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I).

1.10.5 For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material (INFCIRC/274/Rev.1, IAEA, Vienna (1980)) and the IAEA circular on "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities" (INFCIRC/225/Rev.5, IAEA, Vienna (2011)) are applied.

PART 2

Classification

CHAPTER 2.1

GENERAL PROVISIONS

2.1.1 Introduction

2.1.1.1 The classes of dangerous goods according to ADR are the following:

Class 1	Explosive substances and articles
Class 2	Gases
Class 3	Flammable liquids
Class 4.1	Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances which, in contact with water, emit flammable gases
Class 5.1	Oxidizing substances
Class 5.2	Organic peroxides
Class 6.1	Toxic substances
Class 6.2	Infectious substances
Class 7	Radioactive material
Class 8	Corrosive substances
Class 9	Miscellaneous dangerous substances and articles

2.1.1.2 Each entry in the different classes has been assigned a UN number. The following types of entries are used:

A. Single entries for well-defined substances or articles including entries for substances covering several isomers, e.g.:

UN No. 1090 ACETONE
UN No. 1104 AMYL ACETATES
UN No. 1194 ETHYL NITRITE SOLUTION

B. Generic entries for a well-defined group of substances or articles, which are not n.o.s. entries, e.g.:

UN No. 1133 ADHESIVES
UN No. 1266 PERFUMERY PRODUCTS
UN No. 2757 CARBAMATE PESTICIDE, SOLID, TOXIC
UN No. 3101 ORGANIC PEROXIDE TYPE B, LIQUID

C. Specific n.o.s. entries covering a group of substances or articles of a particular chemical or technical nature, not otherwise specified, e.g.:

UN No. 1477 NITRATES, INORGANIC, N.O.S.
UN No. 1987 ALCOHOLS, N.O.S.

D. General n.o.s. entries covering a group of substances or articles having one or more dangerous properties, not otherwise specified, e.g.:

UN No. 1325 FLAMMABLE SOLID, ORGANIC, N.O.S.
UN No. 1993 FLAMMABLE LIQUID, N.O.S.

The entries defined under B., C. and D. are defined as collective entries.

2.1.1.3 For packing purposes, substances other than those of Classes 1, 2, 5.2, 6.2 and 7, and other than self-reactive substances of Class 4.1 are assigned to packing groups in accordance with the degree of danger they present:

Packing group I: Substances presenting high danger;
Packing group II: Substances presenting medium danger;
Packing group III: Substances presenting low danger.

The packing group(s) to which a substance is assigned is (are) indicated in Table A of Chapter 3.2.

Articles are not assigned to packing groups. For packing purposes any requirement for a specific packaging performance level is set out in the applicable packing instruction.

2.1.2 Principles of classification

2.1.2.1 The dangerous goods covered by the heading of a class are defined on the basis of their properties according to sub-section 2.2.x.1 of the relevant class. Assignment of dangerous goods to a class and a packing group is made according to the criteria mentioned in the same sub-section 2.2.x.1. Assignment of one or several subsidiary hazard(s) to a dangerous substance or article is made according to the criteria of the class or classes corresponding to those hazards, as mentioned in the appropriate sub-section(s) 2.2.x.1.

2.1.2.2 All dangerous goods entries are listed in Table A of Chapter 3.2 in the numerical order of their UN Number. This table contains relevant information on the goods listed, such as name, class, packing group(s), label(s) to be affixed, packing and carriage provisions[1]. The substances listed by name in column (2) of Table A of Chapter 3.2 shall be carried according to their classification in Table A or under the conditions specified in 2.1.2.8.

2.1.2.3 A substance may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance mentioned by name, i.e. listed as a single entry in Table A of Chapter 3.2, containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a solution or mixture (see 2.1.3.3).

2.1.2.4 Dangerous goods which are listed or defined in sub-section 2.2.x.2 of each class are not to be accepted for carriage.

2.1.2.5 Goods not mentioned by name, i.e. goods not listed as single entries in Table A of Chapter 3.2 and not listed or defined in one of the above-mentioned sub-sections 2.2.x.2 shall be assigned to the relevant class in accordance with the procedure of section 2.1.3. In addition, the subsidiary hazard (if any) and the packing group (if any) shall be determined. Once the class, subsidiary hazard (if any) and packing group (if any) have been established the relevant UN number shall be determined. The decision trees in sub-sections 2.2.x.3 (list of collective entries) at the end of each class indicate the relevant parameters for selecting the relevant collective entry (UN number). In all cases the most specific collective entry covering the properties of the substance or article shall be selected, according to the hierarchy indicated in 2.1.1.2 by the letters B, C and D respectively. If the substance or article cannot be classified under entries of type B or C according to 2.1.1.2, then, and only then shall it be classified under an entry of type D.

2.1.2.6 On the basis of the test procedures of Chapter 2.3 and the criteria set out in sub-sections 2.2.x.1 of classes when it is so specified, it may be determined that a substance, solution or mixture of a certain class, mentioned by name in Table A of Chapter 3.2, does not meet the criteria of that class. In such a case, the substance, solution or mixture is deemed not to belong to that class.

2.1.2.7 For the purposes of classification, substances with a melting point or initial melting point of 20 °C or lower at a pressure of 101.3 kPa shall be considered to be liquids. A viscous substance for which a specific melting point cannot be determined shall be subjected to the ASTM D 4359-90 test or to the test for determining fluidity (penetrometer test) prescribed in 2.3.4.

2.1.2.8 A consignor who has identified, on the basis of test data, that a substance listed by name in column (2) of Table A of Chapter 3.2 meets classification criteria for a class that is not identified in column (3a) or (5) of Table A of Chapter 3.2, may, with the approval of the competent authority, consign the substance:

– Under the most appropriate collective entry listed in sub-sections 2.2.x.3 reflecting all hazards; or

– Under the same UN number and name but with additional hazard communication information as appropriate to reflect the additional subsidiary hazard(s) (documentation, label, placard)

[1] ***Note by the Secretariat:*** *An alphabetic list of these entries has been prepared by the secretariat and is reproduced in Table B of Chapter 3.2. This table is not an official part of the ADR.*

provided that the class remains unchanged and that any other carriage conditions (e.g. limited quantity, packaging and tank provisions) that would normally apply to substances possessing such a combination of hazards are the same as those applicable to the substance listed.

NOTE 1: *The competent authority granting the approval may be the competent authority of any ADR Contracting Party who may also recognize an approval granted by the competent authority of a country which is not an ADR Contracting Party provided that this approval has been granted in accordance with the procedures applicable according to RID, ADR, ADN, the IMDG Code or the ICAO Technical Instructions.*

NOTE 2: *When a competent authority grants such approvals, it should inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods accordingly and submit a relevant proposal of amendment to the Dangerous Goods List of the UN Model Regulations. Should the proposed amendment be rejected, the competent authority should withdraw its approval.*

NOTE 3: *For carriage in accordance with 2.1.2.8, see also 5.4.1.1.20.*

2.1.3 Classification of substances, including solutions and mixtures (such as preparations and wastes), not mentioned by name

2.1.3.1 Substances including solutions and mixtures not mentioned by name shall be classified according to their degree of danger on the basis of the criteria mentioned in sub-section 2.2.x.1 of the various classes. The danger(s) presented by a substance shall be determined on the basis of its physical and chemical characteristics and physiological properties. Such characteristics and properties shall also be taken into account when such experience leads to a more stringent assignment.

2.1.3.2 A substance not mentioned by name in Table A of Chapter 3.2 presenting a single hazard shall be classified in the relevant class under a collective entry listed in sub-section 2.2.x.3 of that class.

2.1.3.3 A solution or mixture meeting the classification criteria of ADR composed of a single predominant substance mentioned by name in Table A of Chapter 3.2 and one or more substances not subject to ADR or traces of one or more substances mentioned by name in Table A of Chapter 3.2, shall be assigned the UN number and proper shipping name of the predominant substance mentioned by name in Table A of Chapter 3.2 unless:

(a) The solution or mixture is mentioned by name in Table A of Chapter 3.2;

(b) The name and description of the substance mentioned by name in Table A of Chapter 3.2 specifically indicate that they apply only to the pure substance;

(c) The class, classification code, packing group, or physical state of the solution or mixture is different from that of the substance mentioned by name in Table A of Chapter 3.2; or

(d) The hazard characteristics and properties of the solution or mixture necessitate emergency response measures that are different from those required for the substance mentioned by name in Table A of Chapter 3.2.

In those other cases, except the one described in (a), the solution or mixture shall be classified as a substance not mentioned by name in the relevant class under a collective entry listed in sub-section 2.2.x.3 of that class taking account of the subsidiary hazards presented by that solution or mixture, if any, unless the solution or mixture does not meet the criteria of any class, in which case it is not subject to ADR.

2.1.3.4 Solutions and mixtures containing substances belonging to one of the entries mentioned in 2.1.3.4.1 or 2.1.3.4.2 shall be classified in accordance with the provisions of these paragraphs.

2.1.3.4.1 Solutions and mixtures containing one of the following substances mentioned by name shall always be classified under the same entry as the substance they contain, provided they do not have the hazard characteristics as indicated in 2.1.3.5.3:

- Class 3

  UN No. 1921 PROPYLENEIMINE, STABILIZED; UN No. 3064 NITROGLYCERIN SOLUTION IN ALCOHOL with more than 1 % but not more than 5 % nitroglycerin;

- Class 6.1

  UN No. 1051 HYDROGEN CYANIDE, STABILIZED, containing less than 3 % water; UN No. 1185 ETHYLENEIMINE, STABILIZED; UN No. 1259 NICKEL CARBONYL; UN No. 1613 HYDROCYANIC ACID, AQUEOUS SOLUTION (HYDROGEN CYANIDE, AQUEOUS SOLUTION), with not more than 20 % hydrogen cyanide; UN No. 1614 HYDROGEN CYANIDE, STABILIZED, containing not more than 3 % water and absorbed in a porous inert material; UN No. 1994 IRON PENTACARBONYL; UN No. 2480 METHYL ISOCYANATE; UN No. 2481 ETHYL ISOCYANATE; UN No. 3294 HYDROGEN CYANIDE, SOLUTION IN ALCOHOL, with not more than 45 % hydrogen cyanide;

- Class 8

  UN No. 1052 HYDROGEN FLUORIDE, ANHYDROUS; UN No. 1744 BROMINE or UN No. 1744 BROMINE SOLUTION; UN No. 1790 HYDROFLUORIC ACID with more than 85 % hydrogen fluoride; UN No. 2576 PHOSPHORUS OXYBROMIDE, MOLTEN;

2.1.3.4.2 Solutions and mixtures containing a substance belonging to one of the following entries of Class 9:

UN No. 2315 POLYCHLORINATED BIPHENYLS, LIQUID;
UN No. 3151 POLYHALOGENATED BIPHENYLS, LIQUID;
UN No. 3151 HALOGENATED MONOMETHYLDIPHENYLMETHANES, LIQUID;
UN No. 3151 POLYHALOGENATED TERPHENYLS, LIQUID;
UN No. 3152 POLYHALOGENATED BIPHENYLS, SOLID;
UN No. 3152 HALOGENATED MONOMETHYLDIPHENYLMETHANES, SOLID;
UN No. 3152 POLYHALOGENATED TERPHENYLS, SOLID; or
UN No. 3432 POLYCHLORINATED BIPHENYLS, SOLID

shall always be classified under the same entry of Class 9 provided that:

- They do not contain any additional dangerous component other than components of packing group III of classes 3, 4.1, 4.2, 4.3, 5.1, 6.1 or 8; and

- They do not have the hazard characteristics as indicated in 2.1.3.5.3.

2.1.3.4.3 Used articles, e.g. transformers and condensers, containing a solution or mixture mentioned in 2.1.3.4.2 shall always be classified under the same entry of Class 9, provided:

(a) They do not contain any additional dangerous components, other than polyhalogenated dibenzodioxins and dibenzofurans of Class 6.1 or components of packing group III of Class 3, 4.1, 4.2, 4.3, 5.1, 6.1 or 8; and

(b) They do not have the hazard characteristics as indicated in 2.1.3.5.3 (a) to (g) and (i).

2.1.3.5 Substances not mentioned by name in Table A of Chapter 3.2, having more than one hazard characteristic and solutions or mixtures meeting the classification criteria of ADR containing several dangerous substances shall be classified under a collective entry (see 2.1.2.5) and packing group of the appropriate class in accordance with their hazard characteristics. Such classification according to the hazard characteristics shall be carried out as follows:

2.1.3.5.1 The physical and chemical characteristics and physiological properties shall be determined by measurement or calculation and the substance, solution or mixture shall be classified according to the criteria mentioned in sub-section 2.2.x.1 of the various classes.

2.1.3.5.2 If this determination is not possible without disproportionate cost or effort (as for some kinds of wastes), the substance, solution or mixture shall be classified in the class of the component presenting the major hazard.

2.1.3.5.3 If the hazard characteristics of the substance, solution or mixture fall within more than one class or group of substances listed below then the substance, solution or mixture shall be classified in the class or group of substances corresponding to the major hazard on the basis of the following order of precedence:

(a) Material of Class 7 (apart from radioactive material in excepted packages for which, except for UN No. 3507 URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, special provision 290 of Chapter 3.3 applies , where the other hazardous properties take precedence);

(b) Substances of Class 1;

(c) Substances of Class 2;

(d) Liquid desensitized explosives of Class 3;

(e) Self-reactive substances and solid desensitized explosives of Class 4.1;

(f) Pyrophoric substances of Class 4.2;

(g) Substances of Class 5.2;

(h) Substances of Class 6.1 meeting the inhalation toxicity criteria of packing group I (Substances meeting the classification criteria of Class 8 and having an inhalation toxicity of dust and mist (LC_{50}) in the range of Packing group I and a toxicity through oral ingestion or dermal contact only in the range of Packing group III or less, shall be allocated to Class 8);

(i) Infectious substances of Class 6.2.

2.1.3.5.4 If the hazard characteristics of the substance fall within more than one class or group of substances not listed in 2.1.3.5.3 above, the substance shall be classified in accordance with the same procedure but the relevant class shall be selected according to the precedence of hazards table in 2.1.3.10.

2.1.3.5.5 If the substance to be carried is a waste, with a composition that is not precisely known, its assignment to a UN number and packing group in accordance with 2.1.3.5.2 may be based on the consignor's knowledge of the waste, including all available technical and safety data as requested by safety and environmental legislation in force[2].

In case of doubt, the highest danger level shall be taken.

If however, on the basis of the knowledge of the composition of the waste and the physical and chemical properties of the identified components, it is possible to demonstrate that the properties of the waste do not correspond to the properties of the packing group I level, the waste may be classified by default in the most appropriate n.o.s. entry of packing group II. However, if it is known that the waste possesses only environmentally hazardous properties, it may be assigned to packing group III under UN Nos. 3077 or 3082.

This procedure may not be used for wastes containing substances mentioned in 2.1.3.5.3, substances of Class 4.3, substances of the case mentioned in 2.1.3.7 or substances which are not accepted for carriage in accordance with 2.2.x.2.

2.1.3.6 The most specific applicable collective entry (see 2.1.2.5) shall always be used, i.e. a general n.o.s. entry shall only be used if a generic entry or a specific n.o.s. entry cannot be used.

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[2] *Such legislation is for instance the Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous wastes pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous wastes (Official Journal of the European Communities No. L 226 of 6 September 2000, page 3), as amended; and Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Official Journal of the European Union No. L312 of 22 November 2008, pages 3-30), as amended.*

2.1.3.7 Solutions and mixtures of oxidizing substances or substances with an oxidizing subsidiary hazard may have explosive properties. In such a case they are not to be accepted for carriage unless they meet the requirements for Class 1. For solid ammonium nitrate based fertilizers, see also 2.2.51.2.2, thirteenth and fourteenth indent and *Manual of Tests and Criteria*, Part III, Section 39.

2.1.3.8 Substances of classes 1 to 6.2, 8 and 9, other than those assigned to UN Nos. 3077 and 3082, meeting the criteria of 2.2.9.1.10 are additionally to their hazards of classes 1 to 6.2, 8 and 9 considered to be environmentally hazardous substances. Other substances meeting the criteria of no other class or of no other substance of Class 9, but those of 2.2.9.1.10 are to be assigned to UN Nos. 3077 and 3082 as appropriate.

2.1.3.9 Wastes that do not meet the criteria for classification in classes 1 to 9 but are covered by the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* may be carried under UN Nos. 3077 or 3082.

2.1.3.10 ***Table of precedence of hazards***

Class and packing group	4.1, II	4.1, III	4.2, II	4.2, III	4.3, I	4.3, II	4.3, III	5.1, I	5.1, II	5.1, III	6.1, I DERMAL	6.1, I ORAL	6.1, II	6.1, III	8, I	8, II	8, III	9
3, I	SOL LIQ 4.1 3, I	SOL LIQ 4.1 3, I	SOL LIQ 4.2 3, I	SOL LIQ 4.2 3, I	4.3, I	4.3, I	4.3, I	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, I 3, I	3, I	3, I	3, I	3, I	3, I	3, I	3, I	3, I
3, II	SOL LIQ 4.1 3, II	SOL LIQ 4.1 3, II	SOL LIQ 4.2 3, II	SOL LIQ 4.2 3, II	4.3, I	4.3, II	4.3, II	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, II 3, II	SOL LIQ 5.1, II 3, II	3, I	3, I	3, II	3, II	8, I	3, II	3, II	3, II
3, III	SOL LIQ 4.1 3, II	SOL LIQ 4.1 3, III	SOL LIQ 4.2 3, II	SOL LIQ 4.2 3, III	4.3, I	4.3, II	4.3, III	SOL LIQ 5.1, I 3, I	SOL LIQ 5.1, II 3, II	SOL LIQ 5.1, III 3, III	6.1, I	6.1, I	6.1, II	3, III [a]	8, I	8, II	3, III	3, III
4.1, II			4.2, II	4.2, II	4.3, I	4.3, II	4.3, II	5.1, I	4.1, II	4.1, II	6.1, I	6.1, I	SOL LIQ 4.1, II 6.1, II	SOL LIQ 4.1, II 6.1, II	8, I	SOL LIQ 4.1, II 8, II	SOL LIQ 4.1, II 8, II	4.1, II
4.1, III			4.2, II	4.2, III	4.3, I	4.3, II	4.3, III	5.1, I	4.1, II	4.1, III	6.1, I	6.1, I	6.1, II	SOL LIQ 4.1, III 6.1, III	8, I	8, II	SOL LIQ 4.1, III 8, III	4.1, III
4.2, II					4.3, I	4.3, II	4.3, II	5.1, I	4.2, II	4.2, II	6.1, I	6.1, I	4.2, II	4.2, II	8, I	4.2, II	4.2, II	4.2, II
4.2, III					4.3, I	4.3, II	4.3, III	5.1, I	5.1, II	4.2, III	6.1, I	6.1, I	6.1, II	4.2, III	8, I	8, II	4.2, III	4.2, III
4.3, I								5.1, I	4.3, I	4.3, I	6.1, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I	4.3, I
4.3, II								5.1, I	4.3, II	4.3, II	6.1, I	4.3, I	4.3, II	4.3, II	8, I	4.3, II	4.3, II	4.3, II
4.3, III								5.1, I	5.1, II	4.3, III	6.1, I	6.1, I	6.1, II	4.3, III	8, I	8, II	4.3, III	4.3, III
5.1, I											5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I	5.1, I
5.1, II											6.1, I	5.1, I	5.1, II	5.1, II	8, I	5.1, II	5.1, II	5.1, II
5.1, III											6.1, I	6.1, I	6.1, II	5.1, III	8, I	8, II	5.1, III	5.1, III
6.1, I DERMAL															SOL LIQ 6.1, I 8, I	6.1, I	6.1, I	6.1, I
6.1, I ORAL															SOL LIQ 6.1, I 8, I	6.1, I	6.1, I	6.1, I
6.1, II INHAL															SOL LIQ 6.1, I 8, I	6.1, II	6.1, II	6.1, II
6.1, II DERMAL															SOL LIQ 6.1, I 8, I	SOL LIQ 6.1, II 8, II	6.1, II	6.1, II
6.1, II ORAL															8.I	SOL LIQ 6.1, II 8, II	6.1, II	6.1, II
6.1, III															8, I	8, II	8, III	6.1, III
8, I																		8, I
8, II																		8, II
8, III																		8, III

SOL = Solid substances and mixtures
LIQ = Liquid substances, mixtures and solutions
DERMAL = Dermal toxicity
ORAL = Oral toxicity
INHAL = Inhalation toxicity

[a] *Class 6.1 for pesticides*

NOTE 1: *Examples to explain the use of the table*

Classification of a single substance

Description of the substance to be classified:

An amine not mentioned by name meeting the criteria for Class 3, packing group II as well as those for Class 8, packing group I.

Procedure:

The intersection of line 3 II with column 8 I gives 8 I.

This amine has therefore to be classified in Class 8 under:

UN No. 2734 AMINES LIQUID, CORROSIVE, FLAMMABLE, N.O.S. or UN No. 2734 POLYAMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.

packing group I

Classification of a mixture

Description of the mixture to be classified:

Mixture consisting of a flammable liquid classified in Class 3, packing group III, a toxic substance in Class 6.1, packing group II and a corrosive substance in Class 8, packing group I.

Procedure:

The intersection of line 3 III with column 6.1 II gives 6.1 II.

The intersection of line 6.1 II with column 8 I gives 8 I LIQ.

This mixture not further defined has therefore to be classified in Class 8 under:

UN No. 2922 CORROSIVE LIQUID, TOXIC, N.O.S. packing group I.

NOTE 2: *Examples for the classification of mixtures and solutions under a class and a packing group:*

A phenol solution of Class 6.1, (II), in benzene of Class 3, (II) is to be classified in Class 3, (II); this solution is to be classified under UN No. 1992 FLAMMABLE LIQUID, TOXIC, N.O.S., Class 3, (II), by virtue of the toxicity of the phenol.

A solid mixture of sodium arsenate of Class 6.1, (II) and sodium hydroxide of Class 8, (II) is to be classified under UN No. 3290 TOXIC SOLID, CORROSIVE, INORGANIC, N.O.S., in Class 6.1 (II).

A solution of crude or refined naphthalene of Class 4.1, (III) in petrol of Class 3, (II), is to be classified under UN No. 3295 HYDROCARBONS, LIQUID, N.O.S. in Class 3, (II).

A mixture of hydrocarbons of Class 3, (III), and of polychlorinated biphenyls (PCB) of Class 9, (II), is to be classified under UN No. 2315 POLYCHLORINATED BIPHENYLS LIQUID or UN No. 3432 POLYCHLORINATED BIPHENYLS SOLID in Class 9, (II).

A mixture of propyleneimine of Class 3, and polychlorinated biphenyls (PCB) of Class 9, (II), is to be classified under UN No. 1921 PROPYLENEIMINE, INHIBITED in Class 3.

2.1.4 Classification of samples

2.1.4.1 When the class of a substance is uncertain and it is being carried for further testing, a tentative class, proper shipping name and UN number shall be assigned on the basis of the consignor's knowledge of the substance and application of:

(a) The classification criteria of Chapter 2.2; and

(b) The requirements of this Chapter.

The most severe packing group possible for the proper shipping name chosen shall be used.

Where this provision is used the proper shipping name shall be supplemented with the word "SAMPLE" (e.g., "FLAMMABLE LIQUID, N.O.S., SAMPLE"). In certain instances, where a specific proper shipping name is provided for a sample of a substance considered to meet certain classification criteria (e.g., GAS SAMPLE, NON-PRESSURIZED, FLAMMABLE, UN No. 3167) that proper shipping name shall be used. When an N.O.S. entry is used to carry the sample, the proper shipping name need not be supplemented with the technical name as required by special provision 274 of Chapter 3.3.

2.1.4.2 Samples of the substance shall be carried in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

(a) The substance is not considered to be a substance not accepted for carriage by sub-sections 2.2.x.2 of Chapter 2.2 or by Chapter 3.2;

(b) The substance is not considered to meet the criteria for Class 1 or considered to be an infectious substance or a radioactive material;

(c) The substance is in compliance with 2.2.41.1.15 or 2.2.52.1.9 if it is a self-reactive substance or an organic peroxide, respectively;

(d) The sample is carried in a combination packaging with a net mass per package not exceeding 2.5 kg; and

(e) The sample is not packed together with other goods.

2.1.4.3 ***Samples of energetic materials for testing purposes***

2.1.4.3.1 Samples of organic substances carrying functional groups listed in tables A6.1 and/or A6.3 in Appendix 6 (Screening Procedures) of the *Manual of Tests and Criteria* may be carried under UN No. 3224 (self-reactive solid type C) or UN No. 3223 (self-reactive liquid type C), as applicable, of Class 4.1 provided that:

(a) The samples do not contain any:

(i) Known explosives;

(ii) Substances showing explosive effects in testing;

(iii) Compounds designed with the view of producing a practical explosive or pyrotechnic effect; or

(iv) Components consisting of synthetic precursors of intentional explosives;

(b) For mixtures, complexes or salts of inorganic oxidizing substances of Class 5.1 with organic material(s), the concentration of the inorganic oxidizing substance is:

(i) Less than 15 %, by mass, if assigned to packing group I (high hazard) or II (medium hazard); or

(ii) Less than 30 %, by mass, if assigned to packing group III (low hazard);

(c) Available data do not allow a more precise classification;

(d) The sample is not packed together with other goods; and

(e) The sample is packed in accordance with packing instruction P520 and special packing provisions PP94 or PP95 of 4.1.4.1, as applicable.

2.1.5 Classification of articles as articles containing dangerous goods, n.o.s.

NOTE: *For articles which do not have a proper shipping name and which contain only dangerous goods within the permitted limited quantity amounts specified in column (7a) of Table A of Chapter 3.2, UN No. 3363 and special provisions 301 and 672 of Chapter 3.3 may be applied.*

2.1.5.1 Articles containing dangerous goods may be classified as otherwise provided by ADR under the proper shipping name for the dangerous goods they contain or in accordance with this section.

For the purposes of this section "article" means machinery, apparatus or other devices containing one or more dangerous goods (or residues thereof) that are an integral element of the article, necessary for its functioning and that cannot be removed for the purpose of carriage.

An inner packaging shall not be an article.

2.1.5.2 Such articles may in addition contain cells or batteries. Lithium metal, lithium ion and sodium ion cells and batteries that are integral to the article shall be of a type proven to meet the testing requirements of the *Manual of Tests and Criteria*, Part III, sub-section 38.3. For articles containing pre-production prototype lithium metal, lithium ion or sodium ion cells or batteries carried for testing, or for articles containing lithium metal, lithium ion or sodium ion cells or batteries manufactured in production runs of not more than 100 cells or batteries, the requirements of special provision 310 of Chapter 3.3 shall apply.

2.1.5.3 This section does not apply to articles for which a more specific proper shipping name already exists in Table A of Chapter 3.2.

2.1.5.4 This section does not apply to dangerous goods of Class 1, Class 6.2, Class 7 or radioactive material contained in articles. However, this section applies to articles containing explosives which are excluded from Class 1 in accordance with 2.2.1.1.8.2.

2.1.5.5 Articles containing dangerous goods shall be assigned to the appropriate Class determined by the hazards present using, where applicable, the table of precedence of hazard in 2.1.3.10 for each of the dangerous goods contained in the article. If dangerous goods classified as Class 9 are contained within the article, all other dangerous goods present in the article shall be considered to present a higher hazard.

2.1.5.6 Subsidiary hazards shall be representative of the primary hazards posed by the other dangerous goods contained within the article. When only one item of dangerous goods is present in the article, the subsidiary hazard(s), if any, shall be the subsidiary hazard(s) identified by the subsidiary hazard label(s) in column (5) of Table A of Chapter 3.2. If the article contains more than one item of dangerous goods and these could react dangerously with one another during carriage, each of the dangerous goods shall be enclosed separately (see 4.1.1.6).

2.1.6 Classification of packagings, discarded, empty, uncleaned

Empty uncleaned packagings, large packagings or IBCs, or parts thereof, carried for disposal, recycling or recovery of their material, other than reconditioning, repair, routine maintenance, remanufacturing or reuse, may be assigned to UN No. 3509 if they meet the requirements for this entry.