

Chapter 1.5

General provisions concerning radioactive material

1.5.1 Scope and application

- △ 1.5.1.1 The provisions of this Code establish 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 transport of radioactive material. These provisions are based on the IAEA *Regulations for the Safe Transport of Radioactive Material*, 2018 Edition, IAEA Safety Standards Series No. SSR-6 (Rev.1), IAEA, Vienna (2018). Explanatory material can be found in *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material* (2018 Edition), Safety Standard Series No. SSG-26 (Rev.1), IAEA, Vienna (2019).
- △ 1.5.1.2 The objective of this Code is to establish provisions that shall be satisfied to ensure safety and to protect people, property and the environment from harmful effects of ionizing radiation during the transport of radioactive material. This protection is achieved by requiring:
- .1 containment of the radioactive contents;
 - △ .2 control of external dose rate;
 - .3 prevention of criticality; and
 - .4 prevention of damage caused by heat.
- △ These provisions are satisfied firstly by applying a graded approach to contents limits for packages and conveyances 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.
- 1.5.1.3 The provisions of this Code apply to the transport of radioactive material by sea, including transport which is incidental to the use of the radioactive material. Transport 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, transport 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 the provisions of this Code that are characterized by three general severity levels:
- .1 routine conditions of transport (incident-free);
 - .2 normal conditions of transport (minor mishaps); and
 - .3 accident conditions of transport.
- 1.5.1.4 The provisions of this Code do not apply to any of the following:
- .1 radioactive material that is an integral part of the means of transport;
 - .2 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;
 - .3 radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;
 - .4 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;
 - .5 radioactive material in consumer products which have received regulatory approval, following their sale to the end user;
 - .6 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 2.7.2.2.1, or calculated in accordance with 2.7.2.2.1 and 2.7.2.2.3 to 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 2.7.2.2.4; and

- .7 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 2.7.1.2.

1.5.1.5 Specific provisions for the transport of excepted packages

1.5.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles or empty packagings as specified in 2.7.2.4.1 shall be subject only to the following provisions of parts 5 to 7:

- △ .1 the applicable provisions specified in 5.1.1.2, 5.1.2, 5.1.3.2, 5.1.5.2.2, 5.1.5.2.3, 5.1.5.4, 5.1.5.5, 5.2.1.7, 5.4.1.5.7.1.6.1 and .2, 5.4.1.5.7.1.9, 7.1.4.5.9, 7.1.4.5.10, 7.1.4.5.12, 7.8.4.1 to 7.8.4.6 and 7.8.9.1,
- △ .2 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 .1 and .2 above apply only as relevant and in addition to those relating to the main class or division.

- △ 1.5.1.5.2 Excepted packages shall be subject to the relevant provisions of all other parts of this Code.

1.5.2 Radiation protection programme

1.5.2.1 The transport 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.

1.5.2.2 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 restrictions 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 transport and other activities.

1.5.2.3 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 provisions in 1.5.2.2, 1.5.2.4 and 7.1.4.5.13 to 7.1.4.5.18. Programme documents shall be available, on request, for inspection by the relevant competent authority.

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

- .1 is likely to be between 1 and 6 mSv in a year, a dose assessment programme via workplace monitoring or individual monitoring shall be conducted; or
- .2 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.

1.5.3 Management system

1.5.3.1 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 this Code, as identified in 1.5.1.3, to ensure compliance with the relevant provisions of this Code. Certification that the design specification has been fully implemented shall be available to the competent authority. The manufacturer, consignor or user shall be prepared:

- .1 to provide facilities for inspection during manufacture and use; and
- .2 to demonstrate compliance with this Code 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.

1.5.4 Special arrangement

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

- △ 1.5.4.2 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 this Code is impracticable and that the requisite standards of safety established by this Code have been demonstrated through means alternative to the other provisions of this Code, 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 transport shall be at least equivalent to that which would be provided if all the applicable provisions in this Code had been met. For international consignments of this type, multilateral approval shall be required.

1.5.5 Radioactive material possessing other dangerous properties

1.5.5.1 In addition to the radioactive and fissile properties, any subsidiary hazard of the contents of a 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 transport, in order to be in compliance with all relevant provisions for dangerous goods. (See also special provision 172 and, for excepted packages, special provision 290.)

1.5.6 Non-compliance

- △ 1.5.6.1 In the event of non-compliance with any limit in the provisions of this Code applicable to dose rate or contamination,
- .1 the consignor, carrier, consignee and any organization involved during transport who may be affected, as appropriate, shall be informed of the non-compliance:
 - .1 by the carrier if the non-compliance is identified during transport; or
 - .2 by the consignee if the non-compliance is identified at receipt;
 - △ .2 the consignor, carrier, or consignee, as appropriate, shall:
 - .1 take immediate steps to mitigate the consequences of the non-compliance;
 - .2 investigate the non-compliance and its causes, circumstances and consequences;
 - △ .3 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
 - △ .4 communicate to the relevant competent authority(ies) on the causes of the non-compliance and the corrective or **preventive** actions taken or to be taken;
 - .3 The communication of the non-compliance to the consignor and relevant 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.