



Office for
Nuclear Regulation

Transporting radioactive material

Guidance on emergency planning and notification for the transport of class 7 goods

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Introduction

1. This guide updates and consolidates earlier guidance from ONR on emergency arrangements for the transport of class 7 goods (radioactive material), including the following documents available on the ONR website; “Transporting radioactive material - Guidance on emergency arrangements”, “Guidance for Consignors and Carriers of Class 7 Dangerous Goods Who Wish to Transport Such Goods into and within Great Britain (GB) via Road and Rail” and “An overview of the responsibilities of parties involved in responding to a transport radiological emergency”.

Why has the guidance changed?

2. The guidance has been revised to aid ONR’s duty holders transporting class 7 goods by road, rail or inland waterway in Great Britain to comply with the requirements of Regulation 24 and Schedule 2 of the Carriage of Dangerous Goods Regulations and Use of Transportable Pressure Equipment Regulations 2009 (as amended on 21st April 2019 by [the Carriage of Dangerous Goods Amendment Regulations 2019](#)). The amended regulations are referred to hereafter as CDG09(19). Regulation 24 and Schedule 2 have been amended in order to implement [European Council Directive 2013/59/Euratom](#), known as the Basic Safety Standards Directive (referred to hereafter as “the directive”). The Government Department with responsibility for policy relating to the transport of class 7 goods by road, rail and inland waterway – the Department for Business, Energy and Industrial Strategy (BEIS) – consulted on the proposed amendments and published its response to the consultation together with draft regulations in 2018. <https://www.gov.uk/government/consultations/revised-requirements-for-radiological-protection-emergency-preparedness-and-response>.

Role of ONR and applicable legislation

3. ONR is the Great Britain (GB) Competent Authority (CA) and Enforcing Authority for the civil carriage of UN class 7 (radioactive material) goods by road, rail and inland waterway. The civil transport of radioactive material in GB is regulated by ONR, mainly through CDG09(19) under Part 3 of The Energy Act 2013. Other legislation is also applicable, including the [Ionising Radiations Regulations 2017](#) (referred to hereafter as the “2017 Regulations”), which are enforced in respect of the transport of radioactive material, and the [Nuclear Industry Security Regulations \(NISR\) 2003](#), which apply to the transport of certain categories of Nuclear Material. CDG09(19) invoke the requirements of the applicable modal regulations including the [European Agreement Concerning the International Carriage of Dangerous Goods by Road \(ADR\)](#), [the European Agreement Concerning the International Carriage of Dangerous Goods by Rail \(RID\)](#) and parts [of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways \(ADN\)](#). ADN only applies in the UK in relation to the training and examination system for safety advisers and the connected issuing and renewal of vocational training certificates. It does not apply to the carriage of dangerous goods by inland waterways in the UK given that there is no physical connection between them and European inland waterways.

Who is this guide for?

4. This guidance is provided to inform anyone involved in the transport of class 7 goods into and within GB via road, rail or inland waterway of the requirements in CDG09(19). This includes consignors, carriers, consignees, freight forwarders, Dangerous Goods Safety Advisers (DGSAs), Radiation Protection Advisers (RPAs), other participants (eg packers, loaders, fillers, and unloaders) and local authorities.
5. **The guidance is limited to the requirements of CDG09(19) for class 7 goods in GB, in particular Regulation 24 and the related Schedule 2 (Radiation Emergencies and Notifiable Events). The document has been formatted to show CDG09(19) in italics and guidance in plain text for ease of reference.**
6. There are other requirements for movements of class 7 goods by sea and air enforced by the Maritime and Coastguard Agency for sea: www.gov.uk/government/organisations/maritime-and-coastguard-agency and the Civil Aviation Authority (CAA) for air: www.caa.co.uk/home/.
7. During storage in-transit at premises or in harbour areas other requirements may also apply through the provisions of the [Radiation \(Emergency Preparedness and Public Information\) Regulations \(REPPIR\)](#). For existing duty holders [REPPIR 2001](#) (REPPIR01) apply until 21 May 2020 and [REPPIR 2019](#) (REPPIR19) from that date forward. For new duty holders REPPIR19 apply from 21 May 2019 onwards. In addition, the Dangerous Goods in Harbour Areas Regulations 2016 (DGHAR) may apply to class 7 goods stored in transit. Please note that REPPIR01, REPPIR19 and DGHAR are normally enforced by the Health and Safety Executive (HSE) (except for nuclear premises).
8. Duty holders based overseas and involved in the transport of class 7 goods by road, rail or inland waterway in GB have the same legal duties as GB based duty holders which cannot be devolved to others. To ensure compliance with GB specific legislation (including Schedule 2 of CDG09(19) and the 2017 Regulations they may need to appoint or consult suitable advisers (DGSA and RPA). In addition they may need to provide documentation both in the language of the driver and English to ensure there is no barrier to cooperation between the carrier and consignor, emergency services, local authorities and ONR in the event of a radiation emergency in GB. It may be appropriate for an overseas carrier or consignor to contract a GB provider to supply aspects of the emergency response and notify relevant bodies to ensure a timely response to transport emergencies.

Who needs an emergency plan and why?

9. Radiation emergencies are situations where prompt action is required to protect members of the public, workers or the environment from serious consequences as a result of the emergency.
10. CDG09(19) require duty holders (both the consignor and the carrier) to have a plan where they have reached the conclusion that a radiation emergency might occur. The emergency plan must detail the arrangements to restrict, so far as is reasonably practicable, the radiation exposure of any person that may be affected by a radiation emergency, before the carriage of

radioactive material takes place. This includes the vehicle crew, the public, attending emergency services and any persons exposed to ionising radiation as a result of a loss of radiation shielding, release of all or part of the contents of a package or an uncontrolled criticality when transporting radioactive material.

11. **Emergency plans are in addition to the “Instructions in Writing” required by ADR or RID (Section 5.4.3 of ADR and RID refers¹) and the contingency plans required by Regulation 13 of the 2017 Regulations. The emergency plans may overlap or reference the statement of actions required of the carrier by the consignor in the transport documents (Section 5.4.1.2.5.2 of ADR and RID refers).**
12. **It is important that [National Arrangements for Incidents involving Radioactivity \(NAIR\)](#) are not claimed as being wholly or partly the plan.** NAIR provides assistance to the police and other emergency services where no radiation expert is otherwise available. In addition, some consignors may be members of the RADS SAFE scheme. RADS SAFE is a private company limited by guarantee that offers mutual assistance in the event of a transport accident involving radioactive materials belonging to a RADS SAFE member. Whilst membership of RADS SAFE alone does not constitute an adequate emergency plan, where the arrangements with RADS SAFE are relevant to the emergency plan they should be referenced in the plan.

Transitional arrangements: When will the changes occur?

13. The amended regulations (CDG09(19)) came into **force** 21 April 2019 and took effect immediately for matters relating to classes of dangerous goods other than class 7. However, the amendments relating to transport radiation emergencies detailed in Schedule 2 will not come into **effect** until 21 April 2020 (referred to as the “relevant day” in CDG09(19)).
14. Until 21 April 2020 anyone involved in transporting class 7 goods must comply with the requirements of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (as amended by the [Carriage of Dangerous Goods and Use of Transportable Pressure Equipment \(Amendment\) Regulations 2011](#)) referred to hereafter as CDG09(11). It should be noted that any test of emergency arrangements carried out between 21 April 2017 and 20 April 2020 under the existing requirements will be considered by ONR to have been carried out under the new requirement to test emergency plans at least every three years, although such tests will not be subject to the requirement to write a report or submit a report of the test to ONR. This allowance has been made to minimise the burden of the change to CDG09(19), eg to avoid tests being repeated unnecessarily or the period between tests being unreasonably shortened.

What has changed?

15. The Carriage of Dangerous Goods Amendment Regulations 2019 have changed the wording of Regulation 24 and completely replaced Schedule 2 of CDG09(11). Duty holders need to consider whether a radiation

¹ ADN Section 5.4.3 also refers, however this part of ADN has not been yet been ratified by UK

emergency may occur, make plans to prevent or mitigate the consequences of such an emergency, provide information and notify relevant authorities there have been changes in the following areas:

- Regulation 4, application of CDG09(19) to inland waterways and the associated references to masters of vessels,
- Regulation 24, title and content,
 - Schedule 2, paragraph 1, new and changed definitions;
 - 2017 Regulations (updated references to The Ionising Radiations Regulations 2017),
 - Category 1 and Category 2 responders (from The Civil Contingencies Act 2004) (CCA),
 - dose consequences,
 - duty holder (consignor or carrier),
 - emergency exposure,
 - emergency services,
 - emergency worker,
 - escort commander,
 - health authority,
 - radiation emergency,
 - relevant local authority,
 - prevailing circumstances,
 - Evaluation and risk assessment to identify whether an emergency plan is needed,
 - Emergency plans; factors that need to be taken into account when preparing an emergency plan including the information that must be included in an emergency plan,
 - The principles and purposes of intervention underlying the emergency plan,
 - Review and testing of the emergency plan,
 - Duties of drivers, escort commanders, masters, carriers and consignors in the event of a radiation emergency,
 - The application of requirements for emergency exposures,

- The disapplication of IRR17 dose limits and application of a dose restriction for emergency workers,
- The application of reference levels to optimise doses in the event of a radiation emergency,
- Examination and onward consignment of packages involved in a radiation emergency,
- Provision of prior information to the public,
- Provision of information in the event of an emergency to those likely to be affected [N.B. This is not a CDG09(19) requirement, but is placed on local authorities through Regulation 22 of REPP19],
- Preparation of a handover report for the recovery authority, and
- Duties of drivers, escort commanders, masters, carriers and consignors in the event of a notifiable event (ie loss or theft of class 7 goods).

Guidance on CDG09(19)

Regulation 4 (Application)

4.—(1A) Part 5 of these Regulations also applies in relation to the carriage of class 7 goods by inland waterway.

16. The scope of CDG09(19) includes the transport of class 7 goods by inland waterway in addition to road and rail transport from 21 April 2020. This change was made mainly to ensure that the directive had been implemented fully in GB.

Regulation 24 (Radiation Emergencies and Notifiable Events)

24.—(1) This Part applies in relation to the carriage of class 7 goods only.

(2) Schedule 2 makes provision in connection with radiation emergencies and notifiable events.

(3) But this Part does not apply to carriage by vehicles or wagons belonging to or under the responsibility of one of the armed forces.

17. This regulation was simplified to ensure that the provisions detailed in Schedule 2 of CDG09(19) apply only to the transport of class 7 goods, except in the case where the transport of class 7 goods is being carried out using road vehicles or railway wagons belonging to, or under the control of, any of the armed forces (which includes Ministry of Defence (MoD) police and any visiting forces).
18. CDG09(19) Regulation 24 and Schedule 2 do not to apply to the armed forces because CDG09(19) implement a directive made under a treaty which does not apply to defence activities.

19. As stated in the explanatory memorandum published alongside the amending regulations http://www.legislation.gov.uk/ukxi/2019/598/pdfs/ukxiem_20190598_en.pdf, where Ministry of Defence (MoD) has exemptions, derogations, or dis-applications from health, safety and environmental protection requirements, MoD maintains arrangements that are, so far as reasonably practicable, at least as good as those required by UK legislation.
20. The purpose of the rest of this regulation is to continue to invoke the requirements of Schedule 2 which place duties upon those involved with the transport of class 7 goods, eg those who consign or carry them, to make proportionate plans for radiation emergencies that may occur during that transport and to notify the relevant persons in the case of a radiation emergency or the loss or theft of class 7 goods.
21. The definitions previously included in Regulation 24 paragraph 4 were expanded and moved into Schedule 2.

Schedule 2 Part 1, Radiation Emergencies, Paragraph 1, Interpretation of Part 1

22. Terms and definitions used in the Schedule were updated and expanded to make reference to, and improve consistency with, associated legislation. Others terms were added, eg, “escort commander”. Some definitions have changed to align more closely with international standards, eg the definition of a radiation emergency now reflects the definition used by the International Atomic Energy Agency (IAEA).

1.— (1) In this Part of this Schedule — “the 2017 Regulations” means the Ionising Radiations Regulations 2017;

23. “the 2017 Regulations” is included to update references to the associated Ionising Radiations Regulations 2017 throughout CDG09(19) in respect of, eg radiation risk assessments, radiation dosimetry requirements for those involved in responding to emergencies and advice on radiation safety.

“Category 1 responder” has the meaning given in Part 1, 2 or 2A of Schedule 1 to the Civil Contingencies Act 2004;

“Category 2 responder” has the meaning given in Parts 3, 4 and 5 of Schedule 1 to the Civil Contingencies Act 2004;

24. “Category 1” and “Category 2” responders, as defined by the CCA which governs emergency preparedness and response for most other types of emergency, are referenced to improve consistency with the definitions. More information on the responsibilities of responders has been provided by the UK Government and is available at:

<https://www.gov.uk/guidance/preparation-and-planning-for-emergencies-responsibilities-of-responder-agencies-and-others>.

25. The UK Government has stated an intention to develop a national plan for radiation emergencies, which would include transport radiation emergencies, in paragraph 26 of the published [response](#) to its consultation on the amendment to CDG09.

“dose consequences” means the consequences to an individual of being exposed to a specific quantity of ionising radiation as the result of a radiation emergency;

26. “dose consequences” is a term introduced in CDG09(19) meaning the radiation dose to persons as a consequence of a radiation emergency which may be compared with the newly introduced dose “reference levels” and “specific reference levels” for the purpose of prioritising actions under the emergency plan.

“duty holder” means:

(a) a consignor; or

(b) a carrier;

27. “duty holder” is a new term that has been introduced in CDG09(19), and means both the consignors and carriers that have duties under CDG09(19). Where there is a duty placed upon the consignee or named roles such as driver, master etc, these are specifically referred to in the relevant part of CDG09(19).

“emergency exposure” means an exposure to ionising radiation of an employee engaged in any activity of, or associated with, the response to a radiation emergency or potential radiation emergency in order—

(a) to bring help to endangered persons;

(b) to prevent exposure of a large number of persons; or

(c) to save a valuable installation or goods;

whereby one of the individual dose limits referred to in regulation 12 of the 2017 Regulations could be exceeded;

28. An “emergency exposure” is the radiation dose received by an employee in responding to an actual or potential radiation emergency where the dose limits specified in the 2017 Regulations could be exceeded, but only for one or more of the specific purposes stated in Schedule 2. (These are to bring help to endangered persons, prevent exposure of a large number of persons or to save a valuable installation or goods). It is not the dose received by employees or others as a direct result of an event which leads to the radiation emergency; these doses are the subject of Regulation 24 of the 2017 Regulations.

29. The relevant dose limits that need to be considered for this purpose are those referred to in Regulation 12 of the 2017 Regulations applicable to employees over 18 years of age and include effective dose, equivalent dose to the lens of the eye, skin dose and extremity dose. In this case effective dose will normally mean the sum of the effective dose from external radiation and the committed effective dose from inhalation, absorption or ingestion of radioactive material.

“emergency services” means those police, fire and ambulance services that are likely to be required to respond to a radiation emergency;

30. “emergency services” are limited to those likely to respond to a radiation emergency, ie the police, fire and ambulance services. Other emergency responders may be involved depending on the circumstances of the emergency, eg, Her Majesty’s Coastguard but for the purposes of CDG09(19) they are not specifically referred to as emergency services.

“emergency worker” means—

- (a) a Category 1 responder who has a defined role in an emergency plan;*
- (b) a person employed, whether or not by a duty holder, to assist in the transition from emergency state; or*
- (c) any other person or organisation that is identified in an emergency plan as having a role in providing assistance in the handling of a radiation emergency;*

31. An “emergency worker” is a person who might be exposed to radiation as a result of taking action in response to an emergency either because they have a defined role in the emergency plan as a Category 1 responder, or have been identified in the plan to assist in the handling of the emergency. Persons specifically employed for the purpose of assisting in making the transition from an emergency situation to a recovery situation may also be considered emergency workers. An emergency worker may be subject to emergency exposure.

Category 1 responding organisations are those at the core of the response to most emergencies and consist of the emergency services, local authorities and NHS bodies. Category 1 responders are subject to the full set of civil protection duties under CCA.

Category 2 responding organisations consist of the HSE, ONR, transport and utility companies. Category 2 responders do not tend to lead joint planning work but would be heavily involved in an incident that affects their own sector. Category 2 responders have a lesser set of duties under CCA than category 1 responders including co-operating and sharing relevant information with other Category 1 and 2 responders.

32. Members of the public, persons without a defined role in the emergency plan and workers not specifically employed for the purpose of assisting in the transition from an emergency situation cannot be considered “emergency workers”.

“escort commander” means a person who is responsible for the escort of a package;

33. “escort commander” is a newly defined role which has been included to recognise its use in the case of transport by the Civil Nuclear Constabulary and where the Ministry of Defence (MoD) have decided to apply CDG09(19) requirements to defence activities and where non-exempt activities are undertaken. There is no expectation that this role will be used by other duty holders since the roles assigned to the escort commander in Schedule 2 are equally assigned to drivers, masters, carriers or consignors.

“health authority” means—

- (a) *in relation to England, a clinical commissioning group established under section 14D of the National Health Service Act 2006;*
- (b) *in relation to Wales, a local health board established under section 11 of the National Health Service (Wales) Act 2006; and*
- (c) *in relation to Scotland, a health board established under section 2 of the National Health Service (Scotland) Act 1978;*
34. “health authority” is defined for the purpose of identifying which NHS Health provider should be consulted by the consignor and carrier when carrying out an assessment of the circumstances and consequences following the occurrence of a radiation emergency, or following an event which could give rise to a radiation emergency. The health authority in the area where the emergency or the event took place must be consulted as they would need to provide treatment facilities for radioactively contaminated casualties or persons otherwise exposed to radiation as a result of the emergency (eg as a result of high radiation dose rates from unshielded radioactive material or damaged shielding).
- “ionising radiation” means the energy transferred in the form of particles or electromagnetic waves of a wavelength of 100 nanometres or less, or a frequency of 3×10^{15} hertz or more, capable of producing ions directly or indirectly;*
- “radiation emergency” means a non-routine situation or event arising during the carriage of class 7 goods that necessitates prompt action to mitigate the serious consequences—*
- (a) *of a hazard resulting from that situation or event;*
- (b) *of a perceived risk arising from such a hazard; or*
- (c) *to one or more of the following:*
- (i) *human life;*
- (ii) *health and safety;*
- (iii) *quality of life;*
- (iv) *property;*
- (v) *the environment;*
35. “radiation emergency” means an unexpected situation arising during the carriage of class 7 dangerous goods that requires prompt (urgent) action to protect members of the public, workers or the general population from radiation exposure or risks to their health and safety as a result of the situation. A radiation emergency may involve a loss of radiation shielding, release of all or part of the radioactive contents of a package or an uncontrolled criticality.
36. Examples of how a radiation emergency may occur are:
- As a consequence of a road traffic or railway accident,
 - loss of radiation shielding or failure to correctly configure the radiation shielding of a package,

- an uncontrolled criticality,
 - release of all or part of the radioactive contents of a package,
 - a mechanical failure in the package or packaging, eg loss of integrity of seals designed to stop ingress of water or egress of contamination,
 - incorrect packing, loading or filling of the package,
 - a failure to follow the correct loading plan for a consignment of multiple packages or an accident which redistributes the packages, or
 - an unforeseen event.
37. CDG09(19) require a more detailed level of planning for radiation emergencies involving class 7 goods than the 2017 Regulations require in respect of contingency planning for radiation accidents during the transport of radioactive material, although there may be significant overlap between emergency plans made under CDG09(19) and the contingency plans made under the 2017 Regulations.
38. Emergency plans are required by CDG09(19) to be “adequate” and therefore should be proportionate to both the likelihood of a radiation emergency and its potential consequences. Eg, a lesser degree of planning will be required for consignments of special form sources (an indispersible solid or sealed capsule of radioactive material) in “Type B” packages than for consignments of multiple “Type A” packages containing large amounts of unsealed radioactive material.

Serious consequences of a radiation emergency

39. The definition of a radiation emergency includes serious consequences that might arise from exposure to radioactive material including consequences to human life, health and safety, quality of life, property and the environment. In most cases there are no serious radiological consequences at or below a threshold of an effective radiation dose of 1 mSv to any individual over a period of one year following the radiation emergency. The impact table (Table 1, below) provides descriptions of the impact at different dose levels against all the factors identified in the definition of a radiation emergency with the exception of perceived risk.
40. In the impact table (Table 1, below) the rows denote impact and the columns denote descriptors. Impacts are categorised as being either: minor, moderate, significant or catastrophic. Descriptors are the factors which would be impacted by a radiation emergency as defined and include human life, health and safety, quality of life, property and the environment. The impact table provides qualitative descriptions of what the impact would be in the context of each of these factors. Eg, a catastrophic impact on property is described as the asset value being completely lost. Dose ranges are identified which relate to each of the impact levels identified.
41. The impact table (Table 1, below) is provided to enable duty holders to compare the results of their radiation risk assessment with dose values to determine other types of serious consequences (eg to human life, health and safety, quality of life, property and the environment) without further

explicit assessment of those consequences. Since assessment using this low exposure threshold will ensure that all events with serious consequences will be identified for the purpose of the hazard evaluation, events below this threshold will not be a radiation emergency. Further assessment of the additional factors identified in the definition is not necessary as any event that would require prompt action from considerations of human life, health and safety, quality of life, property, and the environment is bound by the radiological consequences.

42. The degree of planning required should reflect the potential impact of the radiation emergency as summarised in the impact table. No further planning in addition to the contingency plans for the 2017 Regulations or relevant parts of ADR and RID is required where the dose consequence cannot realistically exceed 1 mSv to any individual (including committed effective dose). The most detailed planning will be required where doses are potentially much greater than 1 mSv to any individual. The likelihood of a radiation emergency occurring should also help determine the level of planning required; eg an emergency that has a high likelihood of occurring should attract a higher degree of planning than an emergency with a low likelihood of occurring.

Table 1: Impact of an emergency

	Descriptors					
	Impact descriptor and effective dose to any individual	Human life (acute exposure / deterministic effects)	Health & Safety (cancer induction)	Quality of life	Property	Environment
Impact	Catastrophic (>1 Sv)	Death and life changing consequences. Severe deterministic effects possible.	Possibility of life changing consequences because of significant (>5%) increased risk of cancer induction.	Complete reconstruction of life activities needed.	Asset value completely lost.	Exclusion zones increase and heavy restrictions extended to farther distance.
	Significant (>100–1000 mSv)	Moderate deterministic effects possible.	Possibility of life-changing consequences increases because of small (0.5–5%) increased risk of cancer induction.	Initial reconstruction and continued interruption of normal life activities.	Major depreciation in asset value.	Exclusion zones of environmental areas and heavy restrictions.
	Moderate (>10–100 mSv)	No potential for deterministic effects below threshold dose.	Possibility of life changing consequences increases because of very small (0.5%) increased risk of cancer induction.	Enforced prevention of normal activities.	Actual or potential depreciation in asset value.	Restricted or temporary loss of environmental growth or produce.
	Minor (>1–10 mSv)	No potential for deterministic effects below threshold dose.	Minimal impacts and unlikely to have life changing consequences	Potential for self-imposed restrictive changes in normal activities.	Assumed depreciation in asset value.	Reluctance to use environmental areas for produce.

43. Consignors and carriers will need to consider whether the dose likely to be received by any person in the event of a radiation emergency involving a package or consignment of packages would exceed 1 mSv (including committed effective dose). Advice from the appointed DGSA and RPA will be essential in most cases as a calculation of potential doses is required to enable the consignor or carrier to determine the extent of planning required. DGSA and RPA advice to duty holders should be informed by the IAEA assumptions (Appendix 1 of IAEA Publication [SSG-26](#)) made about the doses to persons in the event of an accident involving a package. These assumptions underlie the design basis of competent authority approved and non-approved packages, including their ability to withstand routine, normal or accident conditions in transport as defined in the applicable modal regulations.
44. It should be noted that IAEA assumes that in a “median accident” involving a single Type A package with its maximum allowable contents, a dose of 50 mSv may be received by persons in the close vicinity of the package over a period of 30 minutes. Different assumptions may be made for consignments of packages that are designed to withstand accidents during transport (Type B and Type C packages) or those designed only to withstand routine conditions (eg, Type A, industrial and excepted packages). The number and type of packages in a consignment will also need to be considered because, as stated above, the IAEA assumptions are limited to the consequences of an accident involving a single package.

Prompt Action

45. Any initiating event that leads to a radiation emergency will require prompt action to be taken to mitigate the consequences. The need for prompt action is key to the definition and therefore consideration is only necessary of those events that require specific steps to be taken as soon as is reasonably practicable for the purpose of mitigating the serious consequences. Eg, prompt action would usually need to be taken to mitigate hazards such as fires, explosions, radiation releases or irradiation events.

Perceived Risk

46. A perceived risk could give rise to an emergency if prompt action is required to prevent or mitigate serious consequences arising from it, eg, a road traffic accident involving a vehicle displaying class 7 placards could result in people taking actions such as “self-evacuation”, resulting in harm to themselves or others. Where the actual or potential emergency is limited to perceived risk alone, ie there is no dose consequence in excess of 1 mSv, the emergency planning for this situation may be limited to ensuring that information about the event and the actual risks are shared as quickly and accurately as possible with the persons likely to be affected.

“*relevant local authority*”—

(a) *in relation to an occurrence in London, means the London Fire Commissioner;*

(b) *in relation to an occurrence in an area where there is a metropolitan county fire and rescue authority, means that authority;*

- (c) *in relation to an occurrence in the Isles of Scilly, means the Council of the Isles of Scilly;*
 - (d) *in relation to an occurrence in any other area in England, means the county council for that area or, where there is no county council for that area, the district council for that area;*
 - (e) *in relation to an occurrence in Scotland, means the council for the local government area; and*
 - (f) *in relation to an occurrence in Wales, means the county council or county borough council for that area.*
47. “Relevant local authority”; local authorities have a duty to make arrangements to supply information in the event of a radiation emergency in their area, including as a result of a radiation emergency (REPP19 Regulation 22).
48. Relevant local authorities are defined in CDG09(19) mainly for the purpose of identifying the authority to be notified of an event or radiation emergency and for consultation in the consignor’s and carrier’s emergency plans. CDG09(19) place a duty on local authorities to set reference levels for radiation doses to be used in the event of a radiation emergency and specify from whom the local authority should seek advice in setting those levels.

The following websites may be helpful in identifying the relevant local authority in England and Wales:

<https://www.gov.uk/local-planning-emergency-major-incident>
<https://www.gov.uk/guidance/local-resilience-forums-contact-details>

and through the Scottish resilience partnerships in Scotland
<https://www.readyscotland.org/ready-government/resilience-division/>

(2) In this Part of this Schedule any reference to an effective dose means the sum of the effective dose to the whole body from external radiation and the committed effective dose from internal radiation.

(3) For the purposes of this Part of this Schedule, a person assists in the handling of a radiation emergency if the person takes any steps that it is reasonable to take in the prevailing circumstances to reduce or prevent exposure.

(4) For the purposes of sub-paragraph (3), “prevailing circumstances” include—

- (a) the weather;*
- (b) the time at which the emergency occurred;*
- (c) the distribution of the local population;*
- (d) the nature and contents of the package involved in the emergency;*
- (e) the stability of the contents of that package;*

(f) *the local geography and ecology;*

(g) *any other hazards;*

(h) *the relative importance of the emergency in relation to other calls that are being made upon the emergency services.*

49. “Prevailing circumstances” identifies a range of factors that may influence a person’s actions in response to a radiation emergency. Eg in the case of weather conditions, strong winds or rain will affect the ability to restrict the dispersion of radioactive material which has been released as a result of an event. Traffic conditions, the condition of the roads and the remoteness or otherwise of the location of the event may also affect any decision on what actions are reasonable to take to reduce or prevent exposure.

Schedule 2, paragraph 2, Evaluation and risk assessment

2. Where a duty holder carries out work involving the carriage of any package containing ionising radiation for the first time, that duty holder must comply with the provisions of regulation 8 of the 2017 Regulations as if that duty holder were an employer.

50. Under the 2017 Regulations, employers involved in the transport of radioactive materials have an existing duty to carry out a radiation risk assessment for that activity. This includes consideration of radiation accidents and making appropriate contingency plans. In addition, separate requirements to make emergency plans for road and rail transport radiation emergencies have been put in place under a range of transport specific legislation; these were consolidated in CDG09(19). Some duty holders have already demonstrated relevant good practice by using their radiation risk assessments to inform their arrangements for a radiation emergency and integrated these emergency plans with the contingency plans required by the 2017 Regulations. Such approaches reduce duplication in documentation and will streamline emergency responses.
51. To ensure such relevant good practices are applied across all sectors transporting class 7 goods, CDG09(19) now makes an explicit link between the risk assessment and emergency planning, specifically requiring those transporting class 7 goods (consignors or carriers) to carry out a radiation risk assessment and implement the findings.
52. The Approved Code of Practice for the Ionising Radiations Regulations 2017 (HSE publication L121 “Work with Ionising Radiation” Second edition) provides detailed guidance in paragraphs 70 and 71 on the matters that should be considered in the risk assessment, as well as what the assessment will help the employer decide. Further guidance on undertaking, recording and implementing the findings of risk assessments are provided in paragraphs 62–84 of L121 (available to download free <http://www.hse.gov.uk/pubns/priced/l121.pdf>) and in other guidance from HSE (www.hse.gov.uk/humanfactors/resources/risk-assessment.htm).
53. In the process of undertaking a radiation risk assessment under the 2017 Regulations, duty holders should identify whether a radiation emergency as defined in CDG09(19) could occur during the transport of class 7 goods and if so, make an adequate plan to deal with such emergencies. If the duty

holder reaches the conclusion that no radiation emergency could occur then there is no requirement for an emergency plan. Subsequent material changes to the transports of class 7 goods undertaken will necessitate an update to the risk assessment, and may trigger the need for a new emergency plan.

Schedule 2, paragraph 3, Emergency Plans

3.—(1) *Before the carriage of a package begins, the duty holder must make an adequate emergency plan designed to secure, so far as is reasonably practicable, the restriction of exposure to ionising radiation and the health and safety of persons who may be affected by a radiation emergency identified by the duty holder's assessment under regulation 8(1) of the 2017 Regulations.*

(2) But sub-paragraph (1) does not apply if the duty holder's assessment reveals no radiation emergency may arise during the carriage of a package.

(3) When preparing an emergency plan, the duty holder must take into account:

(a) the steps the duty holder has taken in accordance with regulation 8(3) of the 2017 Regulations; and

(b) any variable factors which might affect the severity of the emergency.

54. The factors that need to be taken into account when preparing an emergency plan have been made more explicit in CDG09(19) Schedule 2 and now also specify the information that must be included (Schedule 2, Part 1, paragraph (3)(5)).
55. If the risk assessment and evaluation required by CDG09(19) Schedule 2, Part 1, paragraph 2 shows that a radiation emergency could arise, the CDG09(19) duty holders must make adequate emergency plans to prevent or mitigate the consequences of the emergency. This applies to all radiation emergencies that are identified, although the degree of planning required should be proportionate to the potential impact of those radiation emergencies. The plans may complement or incorporate aspects of the contingency plans made under Regulation 13 of the 2017 Regulations. As stated in paragraph 53, above, an emergency plan is **not required** where the risk assessment and evaluation has identified that an emergency cannot occur.
56. ONR expects that emergency plans will describe the following:
- That notifications must be made as soon as practicable including contacting the Police (Tel. 999 or 112), the consignor (a 24 hour telephone number is recommended for this purpose) and where appropriate, the relevant Fire and Rescue body (also Tel. 999 or 112).

- The actions required, including actions to minimise the exposure of the driver or master to ionising radiation, how the driver will identify any potential damage to the package(s), including loss of shielding or leakage of the radioactive contents, and actions the driver or master should take in such situations, including when and how to use any protective equipment provided.
- How to prevent the situation from getting worse, eg, where it is safe and appropriate to control fire / heat, restrict access to the scene of the radiation emergency, and not to approach or move significantly damaged packages.
- The actions required to protect the public including the setting up of temporary barriers to prevent public access to the emergency scene, where equipped and safe to do so, and remaining upwind of the event where there may be a significant airborne release of radioactive material from a package.
- The actions needed to protect the emergency services on their arrival at the scene, including to provide details of the event and information in the transport documentation including the radioactive material being carried, the form it takes (special form, solid, liquid, gas), the amount of radioactive material present (in units of Becquerels, Bq), the number of packages and any other relevant safety information about the goods (eg packages containing asbestos or other hazardous material).
- Any actions needed to ensure the radioactive materials remain secure without compromising the emergency response or the safety of the driver, master or crew. This should include what to do if the vehicle (road or rail) or the vessel is damaged to the extent that it is vulnerable eg where there are broken windows or doors are not lockable.
- The actions to be taken by the consignor including arrangements to provide advice to the emergency services and make particular notifications.
- How to obtain specialist advice and support where damage to a package(s) is suspected and to inform the need for further notifications to ONR and other relevant regulators from the consignor(s), the appointed DGSA and / or RPA in particular emergency situations.
- Duty holders, in association with a suitable DGSA, should consider what arrangements need to be in place to protect the health and safety of persons from any subsidiary hazards, (eg explosive, chemical, biological or other) which the package or consignment might present.

Adequate emergency plan

57. To be considered adequate, an emergency plan must contain the information in CDG09(19) Schedule 2, Part 1, paragraph 3 and be effective in meeting the principles and purposes in CDG09(19) Schedule 2, Part 1, paragraph 4. The test required by CDG09(19) Schedule 2, Part 1, paragraph 5 for plans that are to be used on more than one occasion, will also demonstrate whether the plan is adequate.

58. CDG09(19) duty holders should seek advice on radiation protection from a suitably qualified and experienced person(s), as appropriate, at all relevant stages of the emergency planning process to ensure that the plan is adequate. This may include an RPA as defined in the 2017 Regulations and / or other experts in addition to the appointed DGSA.
59. In preparing the emergency plan, duty holders should take account of arrangements and documentation already prepared for compliance with the requirements of Regulation 8(3) of the 2017 Regulations to prevent radiation accidents, limit their consequences and provide information, instruction, training and equipment necessary to restrict exposure to ionising radiation.
60. Duty holders must take into account any variable factors which may affect the consequences of a radiation emergency and consider their impact on planning assumptions. This is to ensure the scope of the emergency plan is sufficiently flexible to accommodate a range of potential scenarios in order to restrict exposure to ionising radiation and to secure the health and safety of persons who may be affected by the radiation emergency so far as is reasonably practicable.
61. The variable factors duty holders may need to take into account include, eg: the activity of class 7 goods, the number and distribution of packages in the consignment (noting that this will change if multiple deliveries are being made), prevailing conditions such as weather, traffic, remoteness of location, accessibility of the site of the event, and road or rail conditions. The emergency plan should allow for the provision of possible reductions in staffing levels, eg at night, weekends or during holidays etc or where the ability of the duty holder's personnel to attend the site of a radiation emergency might be reduced; and the possibility that multiple factors may occur together.

(4) The emergency plan must—

(a) contain the information specified in sub-paragraph (5); and

(b) be drawn up having regard to the principles and purposes set out in paragraph 4.

(5) The information is—

(a) the name or position of the person authorised to set emergency procedures in motion;

(b) the name or position of the person in charge of and coordinating the mitigatory action;

(c) for conditions or events which could be significant in bringing about a radiation emergency, a description of the action which should be taken to control the conditions or events and to limit their consequences, including a description of the safety equipment and resources available;

(d) the arrangements for limiting the risks to persons likely to be affected by a radiation emergency including how warnings are to be given and the actions persons are expected to take on receipt of a warning;

(e) the arrangements for providing early warning of the incident to the relevant local authority in which the radiation emergency has occurred, the type of information which should be contained in an initial warning and the arrangements for the provision of more detailed information as it becomes available;

(f) the arrangements for providing assistance to the relevant local authority with mitigatory action;

(g) the arrangements for providing information about the incident to the GB Competent Authority;

(h) the arrangements for emergency exposures including the dose levels which have been determined as appropriate for the purposes of putting into effect the emergency plan;

(i) the arrangements in relation to doses or reference levels as required by paragraph 9(1); and

(j) the arrangements which the duty holder, or their agent, considers may assist in the transition from a radiation emergency to a situation where no further intervention is required.

62. The minimum information to be included in the emergency plan is specified in CDG09(19) Schedule 2, Part 1, paragraph 3(5).
63. The plan should identify who in the organisation has the authority to declare a radiation emergency and who is responsible for leading and coordinating the duty holder's response. In the case of transport events then the driver, master or escort commander will be the most appropriate person to declare a radiation emergency, however there should be contingency arrangements in case they are incapacitated or otherwise unable to take action. The consignor and carrier will both have a role in coordinating the response and therefore will need to ensure it is clear who is leading the response and that their plans are integrated so that a radiation emergency declared by one party applies to both. There will be times when the nominated persons are not available and appropriate arrangements should be included for these circumstances. It is recommended that the names or positions, roles, and contact details of authorised personnel (eg an emergency telephone directory) are included in annexes to the emergency plan. This approach enables the re-issue of an annex when names, roles or contact details change rather than revision of the whole plan.
64. CDG09(19) Schedule 2 Part 1, paragraph 3(5)(c) specifies the key components of the emergency plan which must be drawn up in accordance with the principles and purposes of emergency plans set out in paragraph 4 of the same Schedule. The plan should cover the range of potential radiation emergencies and the degree of planning should be proportionate to the potential impact of an event, including:
- The identification of events with the potential to cause a radiation emergency;
 - The potential consequences of these events;

- The intended strategy for dealing with these events should they come about, including the planning assumptions which have been made (eg the maximum number of persons that may be affected);
 - Details of supporting procedures and documents in place to support the emergency plan;
 - Details of the personnel who have roles to play in the emergency response, and their responsibilities;
 - Details of the facilities and communication equipment available to support the emergency response;
 - Details of the availability and function of special emergency equipment including fire-fighting materials, and damage control and repair items;
 - Details of the availability and function of other relevant resources.
65. CDG09(19) Schedule 2, Part 1, paragraph 3(5)(d) requires the plan to include arrangements for limiting risks to persons likely to be affected by a radiation emergency and the arrangements for providing warnings. In the case of radiation emergencies during transport, these arrangements will mainly be for the driver, master or escort commander to carry out in the initial stages of the event followed by the initiation of suitable responses by carrier or consignor personnel. The actions to be taken should be planned in accordance with the principles and purposes of emergency plans set out in CDG09(19) Schedule 2, Part 1, paragraph 4. This should also include the arrangements to secure, so far as is reasonably practicable, the restriction of exposure to ionising radiation and the health and safety of personnel who have a role in responding to the emergency.
66. CDG09(19) Schedule 2, Part 1, paragraph 3(5)(e) and (f) require the plan to include arrangements for providing early warnings to the local authority in whose area the radiation emergency has occurred, the information to be included in the warning and how assistance is to be provided to the local authority.
67. The emergency plan must establish the system for managing information in the event of a radiation emergency. This should ensure that necessary information can be identified and communicated to people at the scene, the local authority, the emergency services and other organisations identified in the plan as having a role to play and requiring information. This should include the arrangements for alerting responding organisations and relevant authorities, including when this should be done (see guidance below on Schedule 2, Part 1, paragraph 6).
68. These arrangements will be highly dependent on the scope of the transport operation being undertaken. If all transports take place within a single or small number of local authority areas then the arrangements may be specific to them. If however transport operations embrace a large number of local authority areas or follow variable routing for security purposes, then the arrangements will likely need to be more generic in nature and may need to rely on the responding emergency services identifying the relevant local authority to the CDG09(19) duty holder.

69. The type of information the local authority will require will include, eg, information on the nature and extent of the radiological hazard, the number of packages involved, and the consignor and carrier contact details. The initial notification could be made using a standard format.
70. It is expected that CDG09(19) duty holders should provide proactive assistance to the local authority (and other responders), eg in regard to their knowledge and understanding of the packages, their contents and the risks arising from full or partial release of the contents or loss of radiation shielding.
71. CDG09(19) Schedule 2, Part 1, paragraph 3(5)(g) requires the emergency plan to detail the arrangements for providing information to the Competent Authority. The contact details for ONR (the GB Competent Authority for civil transport of class 7 goods) are currently as follows;

To notify ONR in the event of a radiation emergency:

Telephone:

+44 (0)151 922 5911	08:30 – 17:00 Monday to Friday and
+44 (0)151 922 9235	all other times.

The +44 country code is provided for overseas carriers and consignors transporting class 7 goods in GB. These contact numbers should be checked against the ONR website <http://www.onr.org.uk/notify-onr.htm> whenever plans are reviewed as the arrangements for notifications may change from time to time.

CDG09(19) Schedule 2, Part 1, paragraph 3(5)(h) requires the emergency plan to include arrangements for emergency exposures and dose levels referred to in CDG09(19) Schedule 2, Part 1, paragraph 7(1). These should include:

The liaison arrangements with other employers (eg the consignor, carrier, contractors and emergency services likely to attend the scene of a radiation emergency) need to reach agreement on the dose level(s) for the purposes of undertaking protective actions at the scene of the emergency. This includes:

- The different emergency exposure dose levels that may be required relevant to the radiation emergencies that may occur; and
- The arrangements for managing emergency exposures during a radiation emergency to ensure compliance with the requirements of Schedule 2 paragraph 7(1).

72. CDG09(19) Schedule 2, Part 1, paragraph 3(5)(i) requires the emergency plan to include arrangements to implement the requirements of CDG09(19) to keep doses below a 100 mSv reference level.
73. CDG09(19) Schedule 2, Part 1, paragraph 3(5)(j) requires the emergency plan to include arrangements to give effect to the requirements of CDG09(19) for transition to the “recovery phase”. CDG09(19) Regulation 24 and Schedule 2 only apply to emergency situations and notifiable events; they do not apply to existing exposure situations, which includes the

'recovery phase' following an event. The recovery phase is subject to the 2017 Regulations, [the Radioactive Contaminated Land regime](#), the Environmental Permitting Regulations in England and Wales and the Environmental Authorisations (Scotland) Regulations 2018 in Scotland. CDG09(19) does however require that arrangements must be made to assist in transitioning effectively to the recovery phase. These arrangements should include, eg, the circumstances under which the transition from an emergency situation to the recovery situation can take place and the detailed information about the nature of the event and its situation status that will need to be included in the "handover report" that is required under CDG09(19) Schedule 2, Part 1, paragraph 12.

(6) In a case in which Category 1 or Category 2 responders form part of an emergency plan, each duty holder must give such information to those responders as will enable them to perform the functions which are allocated to them by the plan.

74. Where Category 1 or Category 2 responders have a role in the consignor's and / or carrier's emergency plans, information must be provided in advance to enable them to perform their roles effectively. This may include eg: general information about the nature of the class 7 goods, the types of packages and their expected responses in accident conditions; and the arrangements for the consignor, carrier or their agent to attend the scene. The information provided to responders should also include radiation protection arrangements to enable their exposure to ionising radiation to be restricted so far as is reasonably practicable.

(7) Each duty holder must ensure that any employee who may be involved with or may be affected by the arrangements in the emergency plan is or has been provided with:

(a) suitable and sufficient information, instruction and training, and

(b) any equipment necessary to restrict that employee's exposure to ionising radiation including, where appropriate, the issue of suitable dosimeters or other devices.

75. Employees with a role in the consignor's and / or carrier's emergency plan must be provided with suitable and sufficient information, instruction, training and equipment (including personal protective equipment and dosimetry) necessary to allow them to perform their roles effectively and to enable their exposure to ionising radiation to be restricted, so far as is reasonably practicable.
76. Consignors and carriers must ensure that relevant information, instruction and training are kept up to date and subject to regular review to ensure that they remain current. Training should be repeated at an appropriate frequency and competencies maintained. The keeping of training records should be suitable to identify who has been trained, the nature of the training and when refresher training is needed. Duty holders should have arrangements in place to ensure that new employees are given suitable and sufficient information, instruction and training. When there are material changes to the emergency arrangements, eg, the introduction of new equipment or following revision of the arrangements, employees are likely to require further information, instruction and training.

77. The equipment necessary to restrict employees' exposure in a radiation emergency will normally include provision of suitable dose meters to assess the dose they receive as a consequence of the emergency. Where employees are already provided with dose meters under the 2017 Regulations for their routine work, the carrier and consignor should consider whether to make available additional dose meters to be used in the event of a radiation emergency for the purpose of assessing and recording the dose as a consequence of the emergency separately from their dose from routine work. The practicability of making available additional dose meters in the circumstances of a radiation emergency should be considered as part of the emergency planning process.

(8) Each duty holder with an obligation to prepare an emergency plan in accordance with this paragraph in relation to the carriage of a package must cooperate with any other person who is a duty holder in respect of that package so as to enable each of those duty holders to fulfil their obligations under these Regulations.

78. Each CDG09(19) duty holder with responsibility for preparing an emergency plan, ie carriers and consignors, has a duty under CDG09(19) Schedule 2, Part 1, paragraph 3(8) to cooperate with each other (and any other CDG09(19) duty holders) in the preparation of their plans to enable each other to comply with the requirements of Schedule 2.
79. In the case of premises where storage in transit of class 7 goods will take place, eg berths, rail or road depots and airport cargo sheds, CDG09(19) duty holders should cooperate with the operators of those premises. The operators are required to prepare emergency or contingency plans under other legislation (eg, the 2017 Regulations, REPP19, the Dangerous Goods in Harbour Areas Regulations 2016 (DGHAR) or the CAA Licensing of Aerodromes Publication (CAP168)) for the accumulated radioactive material on their premises. The CDG09(19) duty holders' emergency plans continue to be required for their own packages and consignments during storage in transit, so it is essential that these plans are aligned with those of the operators.

Schedule 2, Part 1, paragraph 4, Principles and purposes of emergency plans

4.—(1) The principles of intervention to which each duty holder is to have regard when drawing up an emergency plan are—

(a) the necessity for the plan to respond to the particular characteristics of a given radiation emergency as those characteristics emerge;

(b) the necessity to optimise protection strategies to ensure that the proposed response, as a whole, is predicted to do more to mitigate the radiation emergency and facilitate transition from that emergency than to increase its duration or consequence, taking into account—

- (i) the health risks arising from exposure to ionising radiation as a result of the radiation emergency, in both the long and the short term;*

(ii) the economic consequences of the radiation emergency;

(iii) the effects of the disruption, both on the premises and the area immediately surrounding it, and on the public perception of the effects of the radiation emergency;

(c) the necessity of avoiding, so far as possible, the occurrence of serious physical injury to any person;

(d) the necessity of ensuring that an appropriate balance is struck between the expected harms and benefits of any particular protective measure so as to maximise the benefit of that measure.

80. An emergency plan should be made to provide clear instructions to all those with responsibilities for implementing the plan including, as appropriate, the driver, master, escort commander, carrier, consignor and emergency responders. In the case of transport events then the driver, master or escort commander will be the most appropriate person to declare a radiation emergency, however there should be contingency arrangements in case they are incapacitated or otherwise unable to take action.

Principles

81. The CDG09(19) duty holder should have arrangements in place to promptly assess and anticipate the characteristics of a radiation emergency and to respond accordingly. The emergency plans should enable a dynamic response to the particular characteristics of the radiation emergency as they emerge. Application of the regulatory requirements for training, provision of equipment and managing information in the event of a radiation emergency will help in achieving this.
82. Protection strategies should be optimised and require a balance to be struck between the expected benefits and detriments of introducing particular protective actions, so that the margin of benefit over detriment is maximised. This applies to all consequences of implementing protective actions, including radiation health risks, wider health risks (including psychological impact); consequential injuries; economic consequences; social and environmental factors. The aim is that the implemented strategy should provide the best outcome possible for the affected population, taking account of all the wider consequences.
83. Economic consequences (eg costs involved for the local population if they need to be evacuated or environmental harm resulting from a particular protection strategy) must be taken into account as part of the detriment. Remedial measures can affect the radioactive waste arising from a radiation emergency, and handling such waste may also contribute to costs.

Purposes

(2) The purposes of intervention to which the duty holder is to have regard when drawing up an emergency plan are—

(a) to reduce or stop the release of radiation;

(b) to reduce the exposure to individuals and to the environment resulting from the release of ionising radiation;

(c) if necessary, to ensure that provision is made for the medical treatment of those affected by the release of ionising radiation;

(d) to prioritise the implementation of the plan in relation to a person exposed to dose consequences in excess of the reference level set out in paragraph 9(1).

84. When developing emergency plans, duty holders must consider how the plan will be applied to prevent or reduce the release of radioactive material and to control exposure to external ionising radiation. The primary purposes of an intervention to prevent or mitigate serious consequences of a radiation emergency are:

- Where the radiation shielding of the package or consignment has been compromised, to reduce the radiation dose rate so far as is reasonably practicable or to the level normally expected for that type of package or consignment.
- Where a package has been damaged and there has been, or may be, a release of radioactive material, to prevent or reduce any further release so far as is reasonably practicable.
- Preventing or reducing so far as is reasonably practicable the external and internal irradiation of persons as a result of the emergency, due to direct irradiation from radioactive material or from radioactive material that has been released to the environment.
- To provide for the medical treatment of exposed persons where necessary. This will normally be led by the emergency services attending the scene.
- Prioritising protective actions in the plan for those persons most at risk or subject to the highest exposures as a result of the emergency, especially those likely to receive doses above the reference levels.

The emergency plan(s) should describe the measures and arrangements to achieve these.

Schedule 2, Part 1, paragraph 5, Review and testing of emergency plans

5.—(1) *If an emergency plan is to be used in relation to carriage on more than one occasion, each duty holder must, at suitable intervals not exceeding three years—*

(a) review and, where necessary, revise the plan; and

(b) test the plan, taking reasonable steps to arrange for all those with a role in the emergency plan to participate in the test to such extent necessary to ensure that the test is effective.

(2) *A review required under sub-paragraph (1)(a) must take into account—*

(a) changes occurring in the carriage of packages to which the plan relates;

(b) changes within the emergency services concerned;

(c) new knowledge or guidance, whether technical or otherwise, concerning the response to radiation emergencies;

(d) any material change to the assessment on which the plan was based since it was last reviewed or revised; and

(e) any relevant information derived from a report or review of the consequences of any radiation emergency.

(3) The test of a plan must take into account any lessons learned from—

(a) past emergency exposure situations, whether arising during the carriage of packages on behalf of the consignor or by the carrier; and

(b) the United Kingdom's participating in emergency exercises at national and international level.

(4) The test of the plan must be sufficient to test the ability to implement the plan in question but the duty holder must consider the extent of the testing required taking into account—

(a) the length of time since the last test;

(b) the extent of testing undertaken on the last occasion; and

(c) any revisions made by the review required under sub-paragraph (1)(a).

(5) After completion of the test required by sub-paragraph (1)(b), the duty holder must prepare a report on the outcome of the test within 28 days of the conclusion of the test.

(6) A report made under sub-paragraph (5) must be sent to the GB Competent Authority within 28 days of its preparation.

85. CDG09(19) require the review, revision and testing of radiation emergency plans by duty holders (consignors and carriers) where they are to be used on more than one occasion. ONR's expectation continues to be that tests should be carried out approximately annually and CDG09(19) places a maximum interval of three years for the review and testing of plans. **Duty holders should note that there is no facility within CDG09(19) for ONR to extend the period between tests beyond this maximum interval.**

86. Testing should be proportionate to the risks involved in the transport operation and duty holders should be able to justify their approach to testing. The same degree of planning, review and testing is not required for all class 7 goods and package types, but is dependent on the risk assessment and the potential for serious consequences of an event.

Review and revision

87. Reviewing the emergency plan should ensure that the requirements of the appropriate parts of CDG09(19) Schedule 2, Part 1, paragraph 3 continue to be met and that the plan still aligns with the principles and purposes in CDG09(19) Schedule 2, Part 1, paragraph 4.
88. The review should be recorded, even in the case where no revisions are made or planned. Any revisions that are made should be highlighted and those with responsibilities or roles in the plan advised of the changes and if necessary provided with the relevant information, instruction and training to implement them.
89. A review of the emergency plan should take into account any factors which may affect the emergency plan or its implementation, eg:
 - Material changes to: the class 7 goods carried (eg, different radionuclides, fissile material, non-fissile material or changes in the physical form of the material carried), the package type (eg, Excepted, Industrial, Type A, Type B, or Type C), loading plans, conveyance, transport mode and routing.
 - Changes in the emergency services with a role in the plan, eg contact details or reorganisation of areas of responsibility.
 - Advances in technical knowledge, eg new or more effective means of mitigation.
 - Any material change to the evaluation and risk assessment required by Schedule 2, Part 1, paragraph 2.
 - Information from a report or review of the consequences of a relevant road, rail or inland waterway radiation emergency that has occurred in GB or abroad.
 - Relevant information from a report on the outcome of previous tests of the emergency plan, prepared in accordance with CDG09(19) Schedule 2, Part 1, paragraph 5(5).

Testing

90. When planning a test of the emergency arrangements, duty holders should consider the extent of the testing required to assess the sufficiency of the plan taking into account the interval since the last test, any revisions made to the plan in the interim and the extent of testing on the last occasion(s), eg annual testing over a three year period could be used to test different aspects of the plan and demonstrate compliance with the requirements for testing.
91. Testing methods for emergency arrangements may include a desktop exercise, ie discussing the actions to be taken in the event of different emergency scenarios with individuals or groups with roles in the emergency plan. Alternatively testing may include a full or partial simulation at a suitable site involving some or all of the following: a vehicle, simulated package, driver, emergency equipment, emergency services, consignor, competent

advice and specialist support providers (DGSA or RPA). The use of different initiating events in subsequent tests will vary the scenario and the conditions for the response. There is considerable benefit to be gained from making the test more challenging by adding additional challenges to the central initiating event. Additional challenges such as coincident events, extreme weather or loss of essential services or equipment etc will help identify further lessons and subsequent improvements to the plans and arrangements. **It is important to note that testing should not take place out on public roads and should not involve packages containing radioactive material. Emergency services and the Competent Authority should only be involved with their express prior agreement.**

92. There may be benefits to be gained from testing the consignor's and carrier's emergency plans (or parts of these plans) at the same time. These benefits include ensuring that both emergency plans are compatible with one another and offer potential financial savings by avoiding duplicating aspects of the testing.
93. A debriefing following a test should be carried out in an open and blame-free atmosphere. This should allow any issues implementing the emergency plan to be identified, the reasons for the problems to be discussed and solutions to be considered, so appropriate improvements can be made.
94. To demonstrate that the plan will be implemented effectively and efficiently in the event of a real radiation emergency, testing must be sufficient to demonstrate that:
 - The plan meets the principles and purposes of an emergency plan set out in CDG09(19) Schedule 2, Part 1, paragraph 4 and the appropriate sections of CDG09(19) Schedule 2, Part 1, paragraph 3;
 - The plan is realistic and practicable as an effective response to a radiation emergency that will protect members of the public, workers and the environment from additional exposure to ionising radiation or other health and safety consequences of the emergency;
 - The plan and any supporting documentation are available to all those with a role in its implementation and include up to date contact names and telephone numbers of all relevant persons;
 - Emergency equipment is available and in good working order; and
 - Drivers, masters, escort commanders, other responders and support staff, eg, those employees of the consignors and carrier remote from the scene with a role in responding to the emergency, will undertake their roles effectively.

Report on the outcome of the test

95. CDG09(19) includes a requirement for the duty holders (consignors and carriers) to prepare a report on the outcome of their tests within 28 days of the test being completed and to send this report to the relevant Competent Authority (ONR in the case of the civil carriage of class 7 goods) within a further 28 days (ie within a maximum of 56 days from the completion of the test).

96. The minimum content of the report should:
- Include an overview of the exercise, including the scenario, format of the exercise (desktop or simulation eg) and the organisations involved;
 - Highlight the strengths and weaknesses of the emergency plan as shown by the exercise, focussing on areas where the plan was insufficient, or could not be implemented;
 - Highlight areas where the carrier’s and consignor’s emergency plans were not aligned (especially where both plans were tested together); and
 - Include any lessons identified and recommendations to resolve these, along with any associated action plan (containing assigned action owners and proposed timescales).
97. The detail and length of the report should be proportional to the extent of the test of the emergency plan.

Evaluation of testing

98. ONR may assess the test(s) and make a judgement as to whether the test of the plan was adequate. ONR will consider the relevant requirements of CDG09(19) and the points set out in guidance above.

Schedule 2, Part 1, paragraph 6, Duties of drivers, escort commanders, masters, carriers and consignors in the event of a radiation emergency

99. The requirements for notification in Schedule 2, Part 1, paragraph 6 in CDG09(19) have been expanded to include “masters” and “escort commanders” in order to fully implement Directive requirements in respect of inland waterways and accommodate the MoD application of requirements respectively. In the case of emergencies, notification requirements have been simplified to require notification of the “emergency services” rather than as previously “the fire and rescue authority” in England and Wales and, “the chief officer of the Scottish Fire and Rescue Service” in Scotland.
100. Notification to the relevant local authority has been added to reflect their role in setting reference levels during the event and to enable delivery of their public information function required under REPPiR. In many cases, the relevant local authority will be best identified by the emergency services attending the scene, especially where the event is in a remote location or where routing varies for security issues or in response to road or rail incidents other than a radiation emergency.
101. The requirement to notify has also been amended to only require notification “as soon as reasonably practicable” rather than “immediately” in order to enable the person(s) with the role of initiating the emergency plan to prioritise their immediate actions and to recognise the fact that this person may be incapacitated or otherwise unable to take action as a result of the event.

Driver, escort commander, or master

6.—(1) *The driver or escort commander of a vehicle or train, or the master of a vessel, carrying class 7 goods, in the event of a radiation emergency, or the occurrence of an event which could lead to such an emergency, involving those goods:*

(a) must, as soon as reasonably practicable, notify the following—

(i) the emergency services;

(ii) the relevant local authority;

(iii) the consignor; and

(iv) the carrier;

(b) must initiate the emergency plan; and

(c) if a radiation emergency occurs, must assist in the handling of that radiation emergency.

102. The driver, escort commander or master must notify the emergency services (telephone 999 or 112), the consignor and carrier, and the relevant local authority. They must initiate the emergency plan and assist in the handling of the radiation emergency, which in practice will be to assist in any intervention in connection with the emergency.

Carrier

(2) If the carrier of any class 7 goods becomes aware of the occurrence of a radiation emergency, or the occurrence of an event which could lead to a radiation emergency, involving those goods, the carrier—

(a) must, as soon as reasonably practicable, immediately notify the following of the event—

(i) the emergency services and the relevant local authority, unless the driver, escort commander or master has already done so; and

(ii) the GB Competent Authority; and

(b) if a radiation emergency occurs, must assist in the handling of that radiation emergency.

103. The carrier must notify the emergency services (telephone 999 or 112) and relevant local authority if the driver, escort commander or master has not done so. They should likewise notify the consignor and the relevant Competent Authority (ONR in the case of the civil carriage of class 7 goods). The carrier must assist in any interventions made in connection with the radiation emergency.

104. As soon as practicable the carrier must arrange for examination of the load to determine whether contamination has arisen. If not already ascertained, the examination should include an assessment of the radiation dose rates to confirm whether or not the radiation shielding of the package or consignment has been affected by the event. It should be noted that this

may occur even where there is no visible damage to the outside of the package, eg if the contents of the package have moved. Assessment of contamination or radiation dose rates requires that suitable and calibrated monitoring equipment is used by persons trained in their use.

105. If contamination has arisen then the carrier must arrange for the safe disposal of any part of the load that has been contaminated and for the decontamination of the vehicle, train or vessel.

Consignor

(3) If the consignor of any class 7 goods becomes aware of the occurrence of a radiation emergency, or the occurrence of an event which could lead to a radiation emergency, involving those goods, the consignor—

(a) must, as soon as reasonably practicable, notify the following of the event—

(i) the emergency services, unless the driver, escort commander, master or carrier has already done so;

(ii) the relevant local authority, unless the driver, escort commander, master or carrier has already done so;

(iii) the GB Competent Authority, unless the carrier has already done so;

(b) must give the GB Competent Authority details of the relevant event; and

(c) if a radiation emergency occurs, must assist in the handling of that radiation emergency.

(4) The consignor must also notify the GB Competent Authority that the emergency plan is initiated, even if no action is taken pursuant to that plan.

(5) The carrier of any class 7 goods which are involved in a radiation emergency must, as soon as reasonably practicable—

(a) arrange for the examination of the load to determine whether any contamination has occurred; and

(b) if contamination has occurred—

(i) arrange for the safe disposal of any part of the load which has been contaminated; and

(ii) arrange for the decontamination of the vehicle, train or vessel.

106. The consignor must notify the emergency services (telephone 999 or 112) and relevant local authority if the driver, escort commander, master or carrier has not already done so. In addition, they must notify the relevant Competent Authority (ONR in the case of civil carriage of class 7 goods) if the carrier has not and in any case provide the relevant Competent Authority with details of the event and whether the emergency plan has been initiated. The consignor must assist in any intervention in connection with the radiation emergency.

107. Consignors have important related duties under Schedule 2, Part 1, paragraph 10 to ensure that any package involved in a radiation emergency is not carried unless:
- They or their agent has examined the package(s) as damage to shielding or release of radionuclides may not always be evident from a visual examination of the package(s). The agent or consignor will need to have sufficient understanding of the contents and package design to make a judgement about its condition (or access to such advice and expertise).
 - The consignor has issued a certificate to the effect that the package(s) complies with the requirements of CDG09(19). The certificate may be issued in electronic or hard copy format but must be able to be produced by the carrier during onward transport.
108. The consignor cannot devolve responsibility for certification of the package but can choose to issue a certificate based upon an examination by their agent and their knowledge and understanding of a package and its contents.
109. In exceptional circumstances the emergency services may, in association with the relevant Competent Authority (ONR in the case of civil carriage of class 7 goods), direct the goods to be taken to the nearest appropriate safe place or allow the carriage to be undertaken by breakdown vehicles carrying vehicles which have been involved in accidents or have broken down and contain dangerous goods (ADR and RID paragraph 1.1.3.1 (d)).

Assessment and Report of consequences of the emergency and effectiveness of the emergency plan

(6) In addition, in the event of a radiation emergency occurring, or on the occurrence of an event which could give rise to a radiation emergency, the carrier and the consignor—

(a) as soon as reasonably practicable, must make a provisional assessment of the circumstances and consequences of such an emergency, and for this purpose must consult—

(i) the emergency services;

(ii) the health authority in the area within which the radiation emergency or event took place;

(iii) the relevant local authority in the area within which the radiation emergency or event took place;

(iv) the National Health Commissioning Board and Public Health England, Public Health Wales or Health Protection Scotland (depending where the radiation emergency or event took place); and

(v) any other person, body or authority which has functions under the carrier or the consignor's emergency plan;

(b) as soon as reasonably practicable and in any event within 12 months beginning with the date on which the plan was initiated, or such longer period as the GB Competent Authority may agree, must make a full assessment of the consequences of the emergency and the effectiveness of the emergency plan put into effect as a result of the emergency; and

(c) within 28 days of the completion of the assessment made under paragraph (b), must make a report of the findings of the assessment and retain a copy of that report for at least 50 years from the date on which it is completed.

(7) The carrier and the consignor must provide the GB Competent Authority with a copy of the report made under sub-paragraph (6)(c) within the period of 28 days beginning with the date on which it was completed.

(8) For the purposes of this paragraph “initiate the emergency plan” means take such steps as it is reasonable and practicable to take in order to put into effect the actions that have been planned for in the emergency plan.

110. CDG09(19) require consignors and carriers to make a **provisional assessment** of the circumstances and consequences of a radiation emergency. In doing so the consignor and carrier must consult the relevant bodies including the emergency services, the relevant local and health authorities, Public Health England (PHE), Public Health Wales (PHW) or Health Protection Scotland (HPS), and others with functions in the emergency plan.
111. A **full assessment** must be made within 12 months of the radiation emergency, unless the relevant Competent Authority (ONR in the case of civil carriage of class 7 goods) agrees a different period.
112. A **report** of the assessment findings must be made within 28 days of the completion of the **full assessment** and the **report** retained for a period of 50 years. A copy of the **report** must be provided to the relevant Competent Authority within 28 days of its completion. This report should include details of any emergency exposures, medical surveillances and treatment received by emergency workers. Any information relating to emergency exposures, medical surveillances or treatment should be kept for the same period of time as the dose records of those personnel.

Schedule 2, Part 1, paragraph 7, Emergency Exposures: employees

113. Emergency exposures are defined in Schedule 2, Part 1, paragraph 1.

7.—(1) Where an emergency plan provides for the possibility of any employee receiving an emergency exposure, each employer must, in relation to the employer’s employees—

- (a) identify those employees who may be subject to emergency exposure;*
- (b) provide those employees with appropriate training in the field of radiation protection and such information and instruction as is suitable and sufficient for them to know the risks to health created by exposure to ionising radiation and the precautions which should be taken;*

- (c) *provide such equipment as is necessary to restrict the exposure of such employees to ionising radiation;*
 - (d) *make arrangements for medical surveillance by an appointed doctor or employment medical advisor to be carried out without delay in the event of a radiation emergency in respect of those employees who receive emergency exposures;*
 - (e) *make arrangements with an approved dosimetry service for—*
 - (i) *dose assessments to be carried out without delay in the event of a radiation emergency in respect of those employees who receive emergency exposures, and a dose assessment made for the purposes of this paragraph must, where practicable, be made separately from any other dose assessment relating to those employees; and*
 - (ii) *the results of the dose assessments carried out under subparagraph (i) to be notified without delay to the employer and the GB Competent Authority;*
 - (f) *make arrangements, in respect of dose assessments to be carried out and notified pursuant to paragraph (e), to notify the results of such assessments without delay to the appointed doctor or employment medical adviser who is carrying out medical surveillance on the employee to whom the assessment relates; and*
 - (g) *identify those employees who are authorised, in the event of a radiation emergency, to permit any employee referred to in paragraph (a) to be subject to an emergency exposure and provide employees who are so authorised with appropriate training.*
114. The requirements of Schedule 2, Part 1, paragraph 7 only apply where a duty holder has identified, as a result of the risk evaluation undertaken to comply with Schedule 2, Part 1, paragraph 2, that doses in excess of the relevant dose limits in the 2017 Regulations for **employees** aged over 18 years of age could be incurred, and where appropriate provision has been made in the emergency plan.
115. **If the assessment does not identify that doses may exceed the relevant dose limits then the application of emergency exposures may be unnecessary, however if the conclusion of the assessment is uncertain then it is preferable to make arrangements in advance rather than attempt to implement the requirements at the time of a radiation emergency.**
116. Decisions regarding the use of emergency exposures for employees and the emergency dose levels that should apply are an important part of emergency plan development. Duty holders should address these issues in an integrated way so that emergency exposure and dose level decision-making informs the process of developing the intervention strategy rather than these being considered as a last resort in the management of a radiation emergency. Emergency exposure arrangements provide the framework within which to manage the exposures of emergency workers so that even if these exceed normally permitted levels they can still be justified

as being as low as reasonably practicable in the circumstances. Appropriate emergency management arrangements should ensure that emergency responders who are involved in dealing with the emergency are not put at any unnecessary risk from exposure to ionising radiation.

117. Duty holders should seek expert advice on radiation protection in respect of all matters relating to emergency exposures, including training of employees, provision of equipment, provision of dosimetry, medical surveillance, and evaluation of relevant emergency exposure dose levels. Duty holders should also have arrangements for providing advice on radiation protection to employers of other emergency workers, such as the emergency services.
118. Where an event occurs which could lead to authorisation of emergency exposures, the consignor and carrier will require expert advice on radiation protection to be available as the radiation emergency develops. Arranging for the necessary expert advice to be available should form part of the emergency plans. Such experts may be the duty holder's appointed DGSA, RPA or they may be other individuals with suitable qualifications and experience. Emergency services and other responders should be able to obtain expert advice from the consignor and / or carrier as appropriate.
119. The management framework for controlling the exposure of emergency workers should contain the following elements:
 - pre-planning – identifying emergency workers who may need to receive emergency exposures; ensuring they are prepared for the task by provision of training and equipment; making arrangements for medical surveillance and dosimetry that would be required; naming those who would take charge of managing emergency exposures; and specifying limiting dose levels for emergency exposures;
 - implementation – checking that those who have agreed to receive emergency exposures are fit to be exposed and are properly equipped and instructed; managing the exposure of the emergency workers; ensuring that the limiting dose levels are not exceeded except in extreme situations (eg to save lives); and assessing the doses that may be received in the emergency exposure;
 - documenting the emergency exposures – ensuring that dose records are made and kept by approved dosimetry services; providing copies to affected employees; and making the consignors and carriers report of the circumstances of emergency exposures and resulting actions.
120. In the event that emergency exposures are necessary, the employer (consignor, carrier, emergency service or other responding organisation) will need to have appointed people in charge of managing the exposure to ionising radiation of emergency workers whom they employ. One vital function of such people is to authorise emergency workers to receive emergency exposures (see Schedule 2, Part 1, paragraph 7(1)(g)). Such persons will need appropriate training.

(2) The duty holder must notify the GB Competent Authority of the dose levels which they have determined are appropriate to be applied in respect of an employee identified for the purposes of sub-paragraph (1)(a) in the event of an emergency.

(3) A notification under sub-paragraph (2) must be given—

(a) in relation to transport of class 7 goods by road, rail or inland waterway which is to be carried out once only, at least 28 days before the transport is carried out, or within such shorter time as the GB Competent Authority may agree;

(b) in relation to any other transport of class 7 goods by road, rail or inland waterway, at least 28 days before the transport is first carried out, or within such shorter time as the GB Competent Authority may agree.

(4) Where the carrier and the consignor together determine that a dose level notified under sub-paragraph (2) is no longer appropriate to be applied in respect of an employee for the purposes of sub-paragraph (1)(a) in the event of such an emergency, and that a revised dose level is to be determined, the duty holder must, at least 28 days before formally determining the revised dose level, or within such shorter time as the GB Competent Authority agrees, notify the GB Competent Authority of the revised dose level which the operator considers is appropriate to be applied.

(5) In any case where, in the opinion of the GB Competent Authority, the dose levels for emergency exposure notified pursuant to sub-paragraph (2) or (4) are too high, the carrier and the consignor must, if directed to do so by the GB Competent Authority, substitute such other dose level or levels as the GB Competent Authority considers appropriate.

(6) Where an emergency plan is initiated, each employer must ensure—

(a) that no employee of that employer who is under 18 years of age, no trainee or apprentice under 18 years of age, and no female employee who is pregnant or breastfeeding is subject to an emergency exposure;

(b) that no other employee of that employer is subject to an emergency exposure unless—

(i) that employee has agreed to undergo such exposure;

(ii) the requirements of sub-paragraph (1)(a) to (f) have been complied with in respect of the employee; and

(iii) that employee has been permitted to be so by an employee authorised for that purpose under sub-paragraph (1)(g); and

(c) that no employee of that employer involved in implementing an emergency plan is exposed to a dose of ionising radiation in excess of the dose level determined in accordance with sub-paragraph (2), (4) and (5).

(7) The requirement imposed on the employer under sub-paragraph (6)(a) in respect of a female employee who is pregnant or breastfeeding does not apply until that employee has notified the employer in writing of that fact or until the date from which the employer ought reasonably to have been aware of that fact.

(8) The requirement imposed by sub-paragraph (6)(c) does not apply in respect of an exposure of any employee who—

(a) being informed about the risks involved in the intervention, agrees to undergo an exposure greater than any dose level referred to in that paragraph for the purpose of saving human life; and

(b) is permitted to undergo such exposure by an employee authorised by the employer under sub-paragraph (1)(g) to give such permission.

121. Each employer must identify all of their employees who may need to receive emergency exposures in their emergency plan. This may be by name, or by position or role (such as driver, escort commander, or firefighter eg). If this is by position or role, then all individuals having that position or role must be known, trained and willing to undertake it.
122. Certain persons are prohibited from work involving emergency exposures. These include those listed in Schedule 2, Part 1, paragraph 7(6) (ie employees and trainees or apprentices under 18 years of age, and female employees who are either pregnant or breastfeeding). In other cases, consideration should be made as to whether an individual is suitable, taking account of medical advice where appropriate.
123. It is not necessary for those identified as potentially needing to receive emergency exposures to be designated as classified persons under Regulation 21 of the 2017 Regulations. Radiation emergencies are considered to be so rare that they do not in themselves give rise to a duty to designate classified persons under that regulation. However persons designated as classified persons for their normal work may also be identified as potentially needing to receive emergency exposures.
124. Paragraph 86 of the Approved Code of Practice to the 2017 Regulations recommends that doses received by employees who would not normally be exposed to ionising radiation in the course of their work should be restricted to the same level as the dose limits which apply to members of the public. It should be noted that the guidance in that paragraph is not applicable in the case of radiation emergencies and should not be seen as preventing particular individuals being identified for roles in an emergency response.

Information, instruction and training

125. The information, instruction and training provided to employees who may need to receive emergency exposures must be sufficient for them to undertake their role in response to a radiation emergency. This training is in addition to that provided for those employees who are affected by emergency plans required by Schedule 2, Part 1, paragraph 3(7)(a). The degree of training should be comprehensive enough to achieve this, be proportional to the level of dose they may need to receive and be periodically refreshed. In order to monitor training requirements and to enable demonstration of compliance with this requirement, duty holders should keep records of all such training.
126. The responsibility for provision of information, instruction and training rests with the individual's employer. The training requirements for those involved in direct interventions close to any source of radiation during a radiation

emergency are intended to be relevant, detailed and continuing. Other training provided may be on-the-day briefings, either orally or via some pre-prepared written information. The duty lies with the emergency services or other responding organisation to provide training for their own employees.

Equipment

127. Emergency workers will need equipment to enable them to deal with the event and to restrict their exposure to ionising radiation, eg remote handling tools may be necessary to recover sealed radioactive sources or to manoeuvre additional shielding into place in high radiation dose rates. Equally, employees may need to wear personal protective equipment to enable them to work in areas containing high levels of radioactive contamination. Suitably tested and calibrated electronic personal dosimeters, radiation dose rate and contamination monitors, suitable for the class 7 goods being carried, should also be made available.
128. Equipment provided for those employees with potential to receive an emergency exposure for the purposes of Schedule 2, Part 1, paragraph 7(1)(c) is in addition to that provided for other employees who may be involved with or affected by the arrangements in the emergency plan under Schedule 2, Part 1, paragraph 3(7)(b). Arrangements for the issue of equipment to employees receiving emergency exposures should be described in emergency plans.
129. Emergency services and other responding organisations may need advice on the suitability of personal protective equipment to be worn by emergency workers. They should seek advice from suitable experts such as their own appointed RPA and liaise with carriers and consignors when they are developing their emergency plans.

Medical surveillance

130. Arrangements for medical surveillance need to be made in advance by appointing a doctor under the 2017 Regulations or an “Employment Medical Adviser”. No medical examinations need however take place unless an emergency exposure has actually been received. Employees already designated as “classified persons” will be subject to medical surveillance under Regulation 25 of the 2017 Regulations. Medical surveillance may only be carried out by appointed doctors or employment medical advisers, and should include special medical surveillance of any emergency worker who has received an emergency exposure. The nature of the medical surveillance for each individual should take account of the level and nature of the emergency exposure and that individual’s state of health. Any individual who has received, as a result of the radiation emergency, an effective dose of ionising radiation in excess of 100 mSv in a year, or an equivalent dose of at least twice any relevant dose limit specified in the 2017 Regulations, or in other cases if the appointed doctor (or employment medical adviser) considers this to be necessary in the circumstances, should undergo a special medical examination. The special medical examination may involve counselling the individual and lead to setting restrictions on further exposure.
131. Regulation 25(2) of the 2017 Regulations requires that employers arrange for health records to be kept in respect of employees who are subject to

medical surveillance. Such records are not required for non-classified persons who receive emergency exposures, but employers may find it is useful to keep a record of the medical surveillance that has been conducted using a health record. If so, such a health record would normally be kept until the person to whom it relates has or would have attained the age of 75 years, but in any event not less than 30 years from when the record was made. Confidential clinical information should not be recorded in the health record. Note that the Data Protection Act 2018 contains data protection requirements relevant to any such health records, including the right of data subjects to see their health records.

Dose assessments

132. Employees who normally work with ionising radiation may already be subject to personal dose monitoring and if designated as classified workers will also have a personal dose record maintained by a dosimetry service approved under the 2017 Regulations. Where practicable any doses received by classified workers as emergency workers should be assessed separately from their routine doses and be recorded separately in the dose record. Employers should be aware that in a radiation emergency, there may be significant exposure from routes not covered by the arrangements for routine dosimetry. Eg, classified persons may be monitored routinely for exposure only to external radiation, whereas during an emergency exposure they may also receive exposure to internal radiation. In such cases the employer should make suitable arrangements in advance with appropriate approved dosimetry service(s) in addition to the one(s) used for the routine dosimetry.
133. Other non-classified employees who are identified as potentially needing to receive emergency exposures and may not be subject to routine personal dose monitoring or medical surveillance include:
 - employees who would only be exposed to ionising radiation during a radiation emergency, such as vehicle, train or vessel crew;
 - employees of contractors, such as breakdown recovery;
 - employees of the emergency services;
 - employees of other responders such as care assistants for those living in an affected area or employees involved in evacuation of persons from the scene.
134. It may not be practicable, necessary or reasonable to provide all these responders with dose meters routinely for use in case of a radiation emergency. In such cases retrospective arrangements may be made to ensure that dose assessments can be undertaken with an approved dosimetry service, with follow-up medical surveillance as necessary.
135. Arrangements for the issue of additional dose meters should be described in emergency plans. Arrangements for dose assessments must be made with an approved dosimetry service, and arrangements need to be in place for the service to notify immediately the results of those assessments to the employer and the relevant Competent Authority (ONR in the case of civil carriage of class 7 goods).

Notification of dose assessments to the relevant doctor

136. Arrangements must be put in place to ensure that dose assessments of emergency workers are provided to the relevant doctor (appointed doctor or employment medical adviser) who carries out the medical surveillance.

Employees authorised to permit emergency exposures

137. When a radiation emergency occurs, there must be a person in authority who can permit employees to receive emergency exposures:
- The consignor and carrier must each identify who is authorised to take such decisions for their own employees – these persons are likely to be someone in a senior position within each organisation who is suitably trained, experienced and will be available in the event of a radiation emergency;
 - In the case of the emergency services and other responders – this is likely to be the person in charge, and decisions should be taken in consultation with the authorised person(s) for the consignor and / or carrier.
138. It is important to note that people authorised to permit emergency exposures must themselves be employed by the employer concerned. It follows, eg, that the emergency services must authorise one of their own employees for this function, and cannot rely on someone employed by the consignor or carrier.
139. The person authorised must be provided with appropriate training, which is separate from, although related to the training provided for employees who may need to receive emergency exposures. The training to authorise emergency exposures needs to include an understanding of the effects of high doses of ionising radiation and the risk this entails of deterministic effects (where the severity of the effect is related to the radiation dose, eg radiation erythema). Such people need to be clear as to the restrictions which apply to employees who may need to receive emergency exposures. The training should stress the importance of monitoring radiation dose rates and of optimising doses so far as reasonably practicable.
140. In a radiation emergency the person(s) authorised by the consignor and / or carrier to permit emergency exposures are unlikely to be located close to the scene of the event. It is likely that the management of the exposure may therefore have to be delegated to a person close to the event (eg the driver, master or escort commander). This person would also need to be suitably trained and experienced to undertake this delegated role.

Notification of dose levels for emergency exposures

141. Consignors and carriers must set appropriate dose levels for emergency workers and notify the relevant Competent Authority (ONR in the case of the civil carriage of class 7 goods) of these levels (or revised levels) 28 days before transport of class 7 goods is carried out for the first (or only) time. Dependent on circumstances the relevant Competent Authority may agree a shorter period than 28 days. If the notified dose levels are considered to be

excessively high then the duty holder may be directed by the relevant Competent Authority to reduce them.

142. The levels chosen for emergency exposures should make allowance for such personal protective equipment as is provided for use in the event of a radiation emergency (see Schedule 2, paragraph 7 (1)(c)). Eg, if emergency workers are to wear breathing apparatus, which provides uncontaminated air from an independent source, it may safely be assumed that there will be no inhalation of radioactive material during the intervention, and hence the internal dose from this exposure route may be disregarded. With other types of respiratory protective equipment however, it may not be appropriate to assume there will be no inhalation of radioactive substances. In such cases, an appropriate protection factor should be used.
143. As described above (paragraphs 32 and 122) certain persons are not permitted to be emergency workers. Other employees who are permitted must voluntarily agree to be ready to undergo such exposures.
144. In the event of a radiation emergency, and when an emergency plan is being implemented, each employer must put into effect all the arrangements that have been made in respect of emergency exposures for their employees. In particular, and except in circumstances described in Schedule 2, Part 1, paragraph 7(8)(a), no employee should be exposed to a dose of ionising radiation greater than the dose level notified to and agreed with the relevant Competent Authority (ONR in the case of civil carriage of class 7 goods) and this dose should not be greater than 500 mSv (as per Schedule 2, Part 1, paragraph 8).
145. Prevention of pregnant or breastfeeding employees from receiving emergency exposures depends on the employee informing the employer of her condition. Regulation 15 of the 2017 Regulations requires employers of female employees to ensure that they are informed about the possible risks and the importance of informing their employer in writing as soon as they are aware of their pregnancy. This is particularly important where a female employee has been identified under Schedule 2, Part 1, paragraph 7(1)(a) as someone who may be subject to emergency exposures.
146. During a radiation emergency, events may not coincide with earlier predictions. In particular, people may be in dire circumstances and in danger of death, and the only way to save their life would be for them to be rescued by emergency workers. In saving these people, the emergency workers may be placed in a situation where they would receive doses of ionising radiation in excess of the dose levels identified in the emergency plan for emergency exposures. In such circumstances, emergency workers who agree to receive doses in excess of these dose levels may be permitted to do so by the person authorised to permit emergency exposures. Emergency workers should only be permitted to receive doses in excess of the dose levels for emergency exposures when the benefits to others outweigh the risks they will incur. Radiation protection advice is likely to be particularly valuable in such decision making, and the consignor, carrier and relevant emergency services should be in a position to obtain this advice promptly when needed.
147. The employer may consider that it would be prudent to make a record signed by the employees agreeing to receive, and by the employees permitting them to receive, doses above the dose levels, confirming that the individuals concerned were informed about the risks involved in the

intervention before agreeing to undergo an emergency exposure, and including the circumstances that justified such exposures in terms of saving human life. Any such records should be made as soon as possible after the event while the information and circumstances are still fresh in people's minds.

148. Any employee who receives an emergency exposure must have that dose recorded in their dose record.

(9) Where an employee has undergone an emergency exposure, the employer must ensure that the dose of ionising radiation received by that employee is assessed by an approved dosimetry service and that the dose assessed is recorded separately in the dose record of that employee or, where no dose record exists, in a record created for the purpose of this sub-paragraph complying with the requirements to which it would be subject if it were a dose record.

149. Arrangements with an approved dosimetry service must be made under Schedule 2, Part 1, paragraph 7(9). If an employee receives an emergency exposure, and that employee does not normally work with ionising radiation and therefore has no dose record, then their employer must set up a dose record for them. Whether the employee does or does not have a dose record the employer must make arrangements with an approved dosimetry service to make and keep a record of dose from an emergency exposure.

(10) An employer must, at the request of that employer's employee in circumstances where a dose record has been created for the purposes of sub-paragraph (9) and on reasonable notice being given, obtain from the approved dosimetry service and make available to the employee a copy of the record of the dose relating to that employee.

150. Employers must make their dose records available to those employees who have been subject to emergency exposures (Schedule 2, Part 1, paragraph 7(10)). This provision allows employees to obtain personal dose monitoring information from the employer, and extends to emergency workers the right enjoyed by classified persons and others under the 2017 Regulations.

(11) In the event of a report being made under paragraph 6(6)(c) relating to the circumstances of an emergency exposure and the action taken as a result of that exposure, an employer must keep such a report (or copy of that report) until the person to whom the report relates has or would have attained the age of 75 years but in any event for at least 30 years from the termination of the work which involved the emergency exposure.

(12) In this paragraph—

(a) "appointed doctor", "approved dosimetry service", "dose assessment", "dose record" have the meanings given by the 2017 Regulations;

(b) "medical surveillance" means medical surveillance carried out in accordance with the 2017 Regulations.

Schedule 2, Part 1, paragraph 8, Disapplication of dose limits

8.— (1) *Regulation 12 of the 2017 Regulations does not apply to an emergency worker, where that emergency worker—*

(a) is engaged in preventing the occurrence of a radiation emergency; or

(b) is acting to mitigate the consequences of a radiation emergency.

(2) *An emergency worker may be exposed to an effective dose not exceeding 500 mSv whilst they are undertaking the activities set out in subparagraph (1).*

151. Disapplication of the normally applicable radiation dose limits during an emergency intervention was implicit in the previous version of CDG (CDG09(11)), although no constraint was placed on the dose that might be received. The amended regulations make this disapplication explicit to remove any doubt that the limits appearing in the 2017 Regulations do not apply to emergency exposures meeting the relevant criteria. The amended regulations also place constraints on the maximum dose that an emergency worker may receive and introduce a structure of controls for optimisation below those levels.
152. Paragraph 8 therefore provides for the explicit disapplication of dose limits where necessary to respond to prevent the occurrence of a radiation emergency or mitigate the consequences of a radiation emergency.
153. A procedure for the disapplication of dose limits should be written into emergency plans. The procedure should enable the person(s) making decisions on whether to invoke disapplication to be identified by their role, state how they will be advised and whom they must inform. The person(s) will be post holder(s) identified by their role or job title and must be suitably trained to undertake the required tasks.
154. It would not be appropriate to implement this facility where the actions necessary to respond to or prevent a radiation emergency can, with suitable and appropriate management (and the time to do so) be maintained within the normal dose limits. Dose limits may only be disappplied in relation to radiation emergencies. Dose limits may not be disappplied in relation to events which could not lead to a radiation emergency.
155. Although the dose limits from the 2017 Regulations may be disappplied to allow radiation emergencies to be addressed, the whole body effective dose for emergency workers is still restricted to a maximum of 500 mSv, in line with the requirements in REPIR and relevant international good practice.

Re-application of dose limits

156. Once help has been provided to endangered persons, exposure has been prevented to other persons and / or valuable installation or goods have been saved, emergency exposures are no longer justifiable and the 2017 Regulations dose limits will again apply. Every effort should be made to re-apply the dose limits in the 2017 Regulations as early as sensible to assist

with ensuring exposures to radiation are kept as low as is reasonably practicable.

Schedule 2, Part 1, paragraph 9, Reference levels

9.— (1) *The carrier and consignor must ensure the emergency plan prioritises keeping doses below a 100 mSv reference level or the emergency specific reference level if applicable.*

(2) *Where the response to a radiation emergency is underway, specific reference levels, to optimise the response, may be determined by the relevant local authority in whose area the radiation emergency has taken place and in whose area the response is taking place.*

(3) In determining a specific reference level under sub-paragraph (2), the relevant local authority must take advice from the person coordinating the response to the radiation emergency.

157. Reference levels relate to the whole body effective dose that could be received during the response to a radiation emergency and include the committed effective dose from any related intake of radionuclides.
158. The overriding requirement is for the emergency plan to prioritise keeping doses below an overall reference level of 100 mSv or where a radiation emergency-specific reference level has been set below that level. The effective dose is that which may be received as a result of the emergency as an acute dose or over a period of a year as a result of the radiation emergency. It is not sufficient to simply keep doses below the reference level, optimisation should be applied in all cases to restrict doses so far as is reasonably practicable to minimal levels.
159. Where it is practicable to do so, the local authority in whose area the event is occurring may set lower reference levels to further limit doses to responders. These emergency specific reference levels should be set in the range of 20–100 mSv (effective dose). Different levels may be set for different responders to reflect their role in the response. This is because there will be different opportunities to optimise doses, eg fire service personnel involved in rescue of persons from the scene or persons involved in recovering packages will likely need to receive higher doses than police or ambulance workers.
160. In setting these levels the local authority must take the advice of the person(s) coordinating the response to the radiation emergency with the competency to do so who should have been identified in the emergency plan (see paragraph 63 above).
161. There are no overall reference levels specified in CDG09(19) in relation to other types of exposure such as extremity, skin or lens of the eye doses, nor is there a requirement to set specific emergency reference levels for these doses.

Schedule 2, Part 1, paragraph 10, Packages involved in a radiation emergency

10— *A package which has been involved in a radiation emergency must not be carried or caused to be carried, unless—*

(a) the consignor or the consignor's agent has examined the package; and

(b) the consignor has issued a certificate indicating that the consignor is satisfied the package complies with the requirements of these Regulations.

162. When considering whether a package that has been involved in a radiation emergency remains compliant with CDG09(19), the consignor or consignor's agent should consider whether there has been any:
- damage to the package that might result in contamination levels in excess of those allowed for that type of package and contents,
 - damage to the radiation shielding of the package that could have affected the radiation dose rate on the outside of the package,
 - ingress of water into the package that could have, eg, dispersed the contents, changed radiation dose rates or affected the criticality safety index for the package.
 - movement or redistribution of the contents that could have changed the radiation dose rates from the package, and
 - labelling on the package remains compliant or can be corrected prior to onward carriage.

Further information on this aspect is provided in paragraphs 108 and 109 above.

163. There is neither a prescribed format nor specified contents for the certificate required to authorise onward movement of packages involved in a radiation emergency. For the certificate to be considered adequate it should state that it is being issued by the consignor (not on the consignor's behalf, by the carrier or by any other person such as the DGSA or RPA) and should contain a clear and unambiguous statement that the consignor confirms that the package is compliant with the relevant requirements of CDG09(19) and is suitable for onward carriage.
164. If the consignee and / or final destination of the package needs to be changed as a result of the radiation emergency then the consignor should amend or replace the transport document to reflect this.

Schedule 2, Part 1, paragraph 11, Prior information

11.—(1) *The GB Competent Authority must make available to the public information about the nature and effect of a radiation emergency.*

(2) The information to be provided under sub-paragraph (1) must include—

(a) basic facts about radioactivity and its effects on persons and on the environment;

(b) the consequences of a radiation emergency;

(c) emergency measures envisaged to alert, protect and assist the general public in the event of an emergency;

(d) appropriate information on action to be taken by the general public in the event of a radiation emergency; and

(e) the authority or authorities responsible for implementing the emergency measures and actions referred to in paragraphs (c) and (d).

165. The duty to provide prior information to the public has been taken from the consignor and carrier in CDG09(19) and placed upon ONR. The duty to identify the members of the public that might be affected by a radiation emergency has been removed and the information will instead be made available to the public online by ONR. This represents a significant change from CDG09(11) and was made because of the difficulty faced by consignors and carriers in identifying those members of the public likely to be affected by a radiation emergency. The prior information will be published separately from this guidance by ONR in order that it may be updated or revised when necessary without the need to amend this guidance.
166. In the case of premises, where equivalent requirements in REPIR apply, it is relatively straightforward for the operator to target those that might be affected by a radiation emergency occurring on their premises. In contrast, in the case of transport radiation emergencies, it will often be extremely difficult to target who might be affected, eg given the length of the routes taken or the need for reasons of security or traffic conditions to change those routes at short notice. As such the Directive's requirement to provide prior information is being achieved generically by ONR rather than made a duty required of relevant transport duty holders.

Provision of information in the event of an emergency to those likely to be affected

167. In the event of a radiation emergency, the local authority has a duty to supplement the generic prior information provided by ONR with further specific information targeted to those who are likely to be affected by an emergency occurring in its geographical area of responsibility.
168. This duty arises under Regulation 22 of REPIR19. There is no specific provision in the CDG09(19) for the local authority to provide information to the public in the event of a radiation emergency. The "Duty of local authority

to supply information to the public in the event of an emergency” applies to all radiation emergencies (including transport emergencies) occurring in their geographical area.

Schedule 2, Part 1, paragraph 12, Duty to provide handover report to the authority responsible for recovery following a radiation emergency

12.—(1) *The consignor of class 7 goods involved in a radiation emergency must—*

(a) prepare a handover report; and

(b) provide a copy of the handover report to the recovery authority.

(2) *For the purposes of this paragraph “handover report” means a report about a radiation emergency which—*

(a) includes the details of the incident giving rise to the emergency;

(b) states whether the emergency plan was initiated and if so, state the actions (if any) taken by the driver, the escort commander, the carrier, the master and the consignor to assist in the handling of the radiation emergency;

(c) states whether any part of the load involved in the emergency was contaminated and if so, state the steps taken by the consignor to arrange for—

(i) the safe disposal of the relevant part of the load; and

(ii) the decontamination of the relevant vehicle, train or vessel;

(d) states any anticipated effects of the radiation emergency on the environment;

(e) includes any other information which the consignor considers may assist in the transition from an emergency state.

(3) *The consignor must consult the carrier of the relevant class 7 goods when preparing the handover report.*

(4) *The consignor must prepare the handover report and deliver it to the recovery authority as soon as reasonably practicable after the completion of the examination required by paragraph 6(5).*

(5) *In this regulation, “recovery authority”—*

(a) in relation to a radiation emergency occurring in England, means the Secretary of State;

(b) in relation to a radiation emergency occurring in Wales, means the Welsh Ministers;

(c) in relation to a radiation emergency occurring in Scotland, means the Scottish Ministers.

169. The arrangements required by CDG09(19) for emergencies do not extend to the recovery phase as this is deemed from a legal perspective to be an “existing exposure situation”. Other requirements of CDG09(19) and the modal texts (ADR, RID and ADN) will nevertheless continue to apply, eg in regard to the packaging and transport of material from the scene. Similarly other regulations enforced by ONR for the practice of transporting radioactive material, such as the 2017 Regulations, will also apply.
170. In addition, requirements from other regulatory regimes will also apply during the recovery phase, eg the Radioactive Contaminated Land regime, the Environmental Permitting Regulations in England and Wales and the Environmental Authorisations (Scotland) Regulations 2018 in Scotland. Under these regulations arrangements must be made to assist in transitioning effectively to the recovery phase.
171. The timing of the transition to the recovery phase will be determined by the emergency services responding to the radiation emergency in consultation with the local authority, and not by the carrier or consignor. This decision will be made under CCA responsibilities for category 1 responders applying the supporting administrative arrangements and [guidance](#).
172. Consignors are nevertheless required to make plans to support this transition, eg in regard to the sharing of relevant information via a handover report (see paragraph 73) prepared for the recovery authority.
173. The handover report must be prepared by the consignor in consultation with the carrier and should highlight any risk of environmental contamination in the area in which the event has occurred. This follows on naturally from the associated requirement to examine the load to determine whether contamination has arisen. If there are judged to be risks of environmental contamination that the emergency response is unlikely to address, the carrier should ensure these risks are properly highlighted in the report.
174. The handover report must include:
- Details of the event which gave rise to the radiation emergency.
 - Whether an emergency plan was implemented, including what actions were taken by the driver, master or escort commander and the consignor and / or carrier.
 - Whether there was any contamination and if so whether arrangements have been made to safely dispose of the material and if decontamination of the vehicle, train or vessel was required and carried out.

- Whether there may be any expected effects on the environment as a result of the emergency.
 - Any other information the consignor considers might assist the recovery authority.
175. The consignor must provide the report to the relevant recovery authority as soon as reasonably practicable after completing the examination of the load required by Schedule 2, Part 1, paragraph 6(5).
176. The recovery authority will be appointed during the course of the radiation emergency response reflecting where the event took place. The recovery authority will be the either the Secretary of State, Welsh or Scottish Minister of the department which will be involved in leading the recovery phase. Eg the Department for Environment, Food and Rural Affairs (DEFRA) would be likely to lead the recovery phase following an emergency which resulted in contamination of the environment in England.

Schedule 2, Part 2: paragraph 13, Duties of drivers, carriers and consignors in the event of a notifiable event

- 13.—***(1) The driver of a vehicle or train, or the master of a vessel, carrying class 7 goods who discovers, or has reason to believe, that a notifiable event has occurred in relation to the vehicle, train or vessel must, as soon as reasonably practicable, notify—*
- (a) the police; and*
 - (b) the consignor.*
- (2) If the carrier of any class 7 goods becomes aware of the occurrence of a notifiable event in relation to those goods the carrier must, as soon as reasonably practicable, notify—*
- (a) the police, if the driver, escort commander or master has not already done so; and*
 - (b) the GB Competent Authority.*
- (3) If the consignor of any class 7 goods becomes aware of the occurrence of a notifiable event in relation to those goods the consignor must, as soon as reasonably practicable, notify—*
- (a) the police, unless the driver, the escort commander, the carrier or the master has already done so; and*
 - (b) the GB Competent Authority, unless the carrier has already done so.*
- (4) If a notifiable event occurs the carrier must ensure that, as soon as reasonably practicable, a report is made to the GB Competent Authority.*
- (5) The report required under sub-paragraph (4)—*

(a) must be in a form approved by the GB Competent Authority; and

(b) must contain all relevant information which the GB Competent Authority has communicated to the carrier that it considers necessary.

(6) In this paragraph, “notifiable event” means the theft or loss of the class 7 goods being carried.”

177. In addition to setting requirements for radiation emergencies, the amended regulations also include requirements to notify the loss or theft of class 7 goods.
178. Notification is required whenever a driver, master, carrier or consignor becomes aware of the loss or theft of class 7 goods being carried.

Driver of a vehicle or train, escort commander or master of a vessel carrying class 7 goods

179. The driver, escort commander or master must notify the local police force (Tel. 999 or 112) and the consignor of the loss or theft as soon as is reasonably practicable. They should notify the carrier to ensure they are aware of the event in case they need to take action.

Consignor and carrier

180. The carrier must, as soon as is reasonably practicable notify the police (if the driver, escort commander or master has not already done so) and the relevant Competent Authority (ONR for the civil carriage of class 7 goods via Tel. +44 (0)203 028 0064 or email onr.incidents@onr.gov.uk). Likewise the consignor must notify the police and relevant Competent Authority if no others have done so. The +44 country code is provided for overseas carriers and consignors transporting class 7 goods in GB. These contact numbers should be checked on the ONR website <http://www.onr.org.uk/notify-onr.htm> as the exact arrangements may change from time to time.

Report of loss or theft to GB Competent Authority

181. The carrier must, as soon as is reasonably practicable provide a report to the relevant Competent Authority (ONR for the civil carriage of class 7 goods) of the loss or theft. The report should be made to ONR using the form available on the ONR website <http://www.onr.org.uk/notify-onr.htm> which when completed should be emailed to onr.incidents@onr.gov.uk.

The description of the event in the report should include:

- Whether loss or theft is suspected.
- The nature of the class 7 goods lost or stolen (including the radionuclide(s), physical form, individual and total activity) and the number and type of packages involved.
- Where and when the loss or theft is believed to have taken place; and whether from a vehicle, train, vessel or during storage in transit.

- Contact details of the notifier and their role (driver, escort commander, master, carrier or consignor) and organisation.
- The identity of the consignor, carrier and consignee.
- Whether other relevant regulators have been informed, eg environmental regulators in England, Scotland or Wales and the Health & Safety Executive.
- Other information as specified by ONR.