

Best Practice Guide - Carriage of Dangerous Goods

Relevant Legislation

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG)
European Agreement Concerning the International Carriage of Dangerous Goods by Road 2015 (ADR)

Introduction

Dangerous goods, such as explosives, flammables or corrosives, are inherently hazardous. The CDG Regulations seek to minimise the risk to people, property and the environment, for example by explosion, fire or spillage.

The CDG Regulations are very detailed and complex, and may only apply to a very small number of council services. This policy gives general guidance to allow officers of the council to determine if the services delivered fall within the scope of this legislation. If so, it is likely that more detailed requirements should be incorporated into the operational procedures for the particular service.

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009) apply to the carriage of dangerous goods by road and rail. They place general duties on everyone with a role in the carriage of dangerous goods, and specific duties on those in the transport chain, such as consignors, carriers, loaders or packers.

In order to comply with CDG it is necessary to cross reference and use the information in ADR 2015, which sets out the conditions under which dangerous goods can be carried by road and gives detailed requirements that need to be followed.

Exemptions Under ADR

ADR contains total and partial exemptions for the carriage of dangerous goods, as detailed below:

Exemptions Related to the Nature of the Transport Operation

The requirements of ADR do not apply to:

- carriage of dangerous goods by private individuals where the goods are packaged for retail sale and are intended for their personal or domestic use or for their leisure or sporting activities
- carriage of machinery or equipment not specifically listed in the Dangerous Goods List and which contain dangerous goods in their internal or operational equipment

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- Carriage undertaken by enterprises which is ancillary to their main activity (see *example 1 below*)
- carriage undertaken by, or under the supervision of, the emergency services, in particular by breakdown vehicles carrying vehicles which have been involved in accidents or have broken down and contain dangerous goods
- emergency transport intended to save human lives or protect the environment.

As indicated above, the requirements of ADR do not apply to carriage undertaken by enterprises which are ancillary to their main activity (for example road construction) providing that the amount does not exceed 450 litres per individual packaging and 1000 litres per transport unit.

In the case of Highways Services, vehicles like the hot box, white lining vehicle, tar tankers (used for spreading binder) and road paving machine are exempt provided they are dedicated machines specifically designed for road construction. However, the bulk storage tanker (cartem) used for storing binder in the depot or a tanker transporting diesel or gas oil to a depot would not be.

Exemptions Related to Special Provisions

This exemption applies when a relevant special provision appears in the Dangerous Goods List against the entry for that article or substance

Special provisions of ADR exempt partially or totally the carriage of specific Dangerous Goods from the full requirements of ADR. The exemption applies when a relevant special provision appears in the dangerous goods list against a particular article or substance. These special provisions mainly apply to suppliers and haulers. In this authority some Services transport common substances such as LPG, Petrol and Diesel/Gas Oil which do not meet the exemption criteria as they are not contained in an inner and outer packaging.

Exemptions Related to Dangerous Goods Packed in Limited Quantities

If a 'limited quantity' code LQ1-LQ29 appears in the Dangerous Goods List, then that article or substance is exempted from the requirements of ADR, but only if:

- it meets packaging and marking requirements; and
- the prescribed maximum quantities per inner packaging, and per package, are not exceeded

When the code LQ0 appears in the Dangerous Goods List, the substance or article is not exempted from any requirements of ADR (unless otherwise specified). This exemption is aimed at haulage companies who carry pallets of single or mixed loads in small quantities. This exemption does not apply to the transport of large gas cylinders or jerry cans of fuel.

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Exemptions Related to Quantities Carried per Transport Unit

ADR assigns dangerous goods to a transport category. This appears in the Dangerous Goods List which is reproduced below:

Transport category	Max total quantity per transport unit
0	0
1	20
1A	50
2	333
2A	500
3	1000
4	unlimited

The exemption will apply when either:

- The dangerous goods carried in the transport unit are all in one transport category and the quantity carried does not exceed the value in column 2 of the above chart or
- Where the dangerous goods carried in the transport unit are in more than one transport category and the total quantity carried does not exceed the value calculated in accordance with ADR (chapter 1.1.3.6.4).

Examples of Dangerous Goods carried in the transport unit (vehicle) which are all in one transport category:

Example 1

A small number of fuel cans containing Gas oil or Diesel* are being transported in a wagon or pickup. They will be used on site by the driver or persons in his gang to fuel small plant such as a water pump, vibrating compactor or generator.

Gas oil or Diesel is assigned a transport category 3, which permits carriage of up to 1000 litres per transport unit (vehicle) without most of the carriage regulations applying. For example, there is no requirement for orange-coloured plates or placards, or for the driver to hold a Driver Training Certificate ("VTC standards"), or for a transport document or instructions in writing ("Tremcard"). However, it will still be necessary to comply with the packaging requirements. In particular, Diesel or Gas oil must be carried in suitable UN approved packaging, for example UN approved jerrycans or drums.

(* Note: Gas oil or Diesel with a flashpoint above 100°C is not considered dangerous for carriage so is not covered by the carriage regulations).

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Example 2

A small number of fuel cans containing petrol are being transported in a van. They will be used on site by the driver or persons in his gang to fuel small plant such as a Chainsaw, Hedge cutter or a Strimmer.

Petrol is assigned a transport category 2, which permits carriage of up to 333 litres per transport unit (vehicle) without most of the carriage regulations applying (see example 1). However, it will still be necessary to comply with the packaging requirements.

Example 3

A number of small LPG cylinders are being transported in a pickup. They will be used on site by the driver or persons on site to replenish the exhausted supply.

LPG is assigned a transport category 2, which permits carriage of up to 333 kg per transport unit (vehicle) without most of the carriage regulations applying (see example 1). In particular, LPG must be carried in suitable UN approved packaging, for example UN approved Gas Cylinders.

Examples of Dangerous Goods Carried in the Transport Unit (Vehicle) which Are of Mixed Transport Categories:

ADR states that where dangerous goods of different transport categories are carried in the same transport unit, the sum of:

- the quantity of substances and articles of transport category 1 multiplied by "50",
- the quantity of substances and articles of transport category 1 referred to in Note a to the table in 1.1.3.6.3 multiplied by "20";
- the quantity of substances and articles of transport category 2 multiplied by "3", and
- the quantity of substances and articles of transport category 3,

Shall not exceed "1000".

Example 4

A 7.5t wagon is fitted with a tank for carrying diesel/gas oil. The maximum capacity of the tank is 1000 litres. The wagon is used to visit various construction sites in order to top up generators and other plant. In addition, the wagon is also carrying 6 number 19 kg propane cylinders which are also used to replenish existing site supplies.

Therefore, using the working example:

6 x 19 kg gas cylinders (category 2)	= 114 x 3	= 342 (total for category 2)
1000 litres gas oil (category 3)	= 1000	= 1000 (total for category 3)
	= 1000 + 342	= 1342 (total load)

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In order to maintain a partial exemption from the regulations the maximum permitted load must be no more than 1000, therefore, the vehicle breaches the exemption rule and the full scope of the regulations must be applied.

Example 5

A van is being used to transport 5 number 47 kg and 2 number 19 kg gas cylinders to site to replenish stocks used by the road paving gang. The pickup is also carrying 4 number 25 litre jerrycans filled with diesel for site plant. For mixed loads of category 2 and 3 items the basic equation is as example 1.

Therefore, using the working example:

5 x 47 kg gas cylinders (category 2)	= 235	
2 x 19 kg gas cylinders (category 2)	= 38	
235 + 38	= 273 x 3	= 819 (total for category 2)
4 x 25 litres jerrycans (category 3)		= 100 (total for category 3)
	= 819 + 100	= 919 (total load)

In this example the vehicle maintains its partial exemption from the regulations as the 1000 total load has not been exceeded.

If either of these conditions applies, the dangerous goods may be carried in packages on a single transport unit, and the main requirements of ADR will not apply.

Classification of Dangerous Goods

Dangerous goods covered by each UN Class are defined on the basis of their properties, for example:

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

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Regulations - General Requirements

General Training

Employers involved in the carriage of dangerous goods by road have to ensure that their employees who have any responsibility for such carriage are appropriately trained. Examples include loaders, unloaders and drivers who do not require specialised driver training. The training must include:

- awareness of the general requirements of ADR;
- function-specific training, covering the detailed requirements of ADR and other modes of transport; and
- safety training, covering the hazards and dangers presented by dangerous goods and awareness of safe handling and emergency response procedures commensurate with the degree of risk of injury or exposure arising from an incident involving carriage of dangerous goods.

Competence including evidence of relevant training should be maintained for all staff and verification obtained for new staff. Refresher courses must also be arranged to take account for changes in the law.

Driver Training

The drivers of vehicles detailed below must hold a certificate ('VTC' or vocational training certificate) issued by the Department for Transport stating that they have attended appropriate training courses and passed an examination on the requirements to be met during carriage of dangerous goods:

- vehicles with a permissible maximum mass exceeding 3.5 tonnes carrying dangerous goods
- tank vehicles
- vehicles carrying Class 1 dangerous goods.

The main objectives of the training (which must include theoretical courses, individual practical exercises and appropriate refresher and specialist training) are to:

- make drivers aware of hazards arising in the carriage of dangerous goods
- give them basic information to minimise the likelihood of an incident taking place
- enable them to take necessary measures for their own safety and that of the public and the environment, to limit the effects if an incident does occur.

Drivers of vehicles carrying dangerous goods must, on request, produce their VTC to the police or any goods vehicle examiner. Drivers not requiring a VTC are still covered by the general training requirements of ADR.

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All carriers of loads exceeding the load threshold set out in 1.1.3.6 of ADR must ensure their drivers have received appropriate training and hold a valid Driver Training Certificate in accordance with the Carriage Regulations.

Safety Obligations

ADR 1.4 requires that anyone involved in the carriage of dangerous goods by road must:

- act to avoid damage/injury from, and minimise the effects of foreseeable dangers; and
- when there is an immediate risk to public safety, notify the emergency services and give them the necessary information.

When dangerous goods are being consigned for a third party, the third party has to inform the consignor in writing that the goods are dangerous and make available all the necessary information and documentation.

ADR 1.4 places specific duties on three principal classes of duty holder:

- consignors
- carriers
- consignees

In addition it also places duties on other participants, including (but not limited to) loaders, packers, fillers and operators of tank containers and portable tanks. ADR 1.4 identifies certain instances where the relevant duty holder does not personally have to carry out the required actions, but can rely on information provided by other participants in the carriage of dangerous goods.

Regulations - Specific Requirements

Appoint a Dangerous Goods Safety Adviser

ADR requires every organisation whose activities include the carriage of dangerous goods by road, and related loading (but not unloading), or filling, to appoint one or more dangerous goods safety advisers (DGSA's). Their overall duty is to make sure that carriage of dangerous goods and related activities are conducted in accordance with requirements and in the safest possible way. They advise on, and ensure compliance with ADR requirements for:

- identification of dangerous goods;
- equipment used in connection with carriage and loading;
- training of employees and maintenance of training records; and
- emergency procedures to be taken in the event of any accident or incident that may affect safety.

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DGSAs are also responsible for preparing for management an annual report on relevant aspects of the carriage of dangerous goods by the organisation, and for ensuring that an accident report is prepared whenever an incident involving the carriage of dangerous goods affects people, property or the environment.

DGSAs have to be capable of performing their duties. They must undergo training, sit an examination and hold a vocational training certificate (valid for five years) to become a DGSA.

The requirement to appoint DGSAs does not apply to organisations:

- whose activities involve the carriage of dangerous goods in quantities per transport unit below those referred to in ADR (specifically section 1.1.3.6); or
- whose main or secondary activity is not the carriage or loading of dangerous goods, but which occasionally engage in the domestic carriage or related loading of dangerous goods posing little danger or risk of pollution.

It is therefore important that Services comply with the above statements to ensure that the Council does not fall within the full scope of the ADR regulations and the requirement to employ a DGSA.

Report Accidents Involving Dangerous Goods

ADR requires a carrier to report accidents involving the carriage of dangerous goods to the Department for Transport, using the model form in ADR. Such incidents are where:

- dangerous goods were released; or
- there was an imminent risk of loss of product and personal injury; or
- material/environmental damage estimated to exceed €50 000 occurred.

A guidance note, 'Notification of occurrences involving dangerous goods', is available from the Department of Transport.

Not to Carry Certain Dangerous Goods

Carriers must not accept for carriage by road any goods which ADR prohibits, for example, 'substances of Class 3 which are liable to form peroxides easily...' shall not be accepted for carriage'. All such articles and substances have 'carriage prohibited' against their entries in the Dangerous Goods List.

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Package Dangerous Goods in Accordance with ADR

General

ADR requires packers and consignors of dangerous goods to package them in accordance with the requirements of ADR. General packaging requirements are set out in ADR 4.1.1, with additional requirements for the use of intermediate bulk containers (IBCs). The requirements apply to new, reused, reconditioned or remanufactured packagings and to new, reused, repaired or remanufactured IBCs, and to new or reused large packagings.

Principally, dangerous goods must be packed in good quality packagings ('packagings' includes IBCs, large packagings and pressure receptacles), strong enough to withstand the shocks and loadings normally encountered during carriage.

Mixed Packing

Different dangerous goods, or dangerous goods and other goods, may be packed together in combination packagings provided that they do not react dangerously with each other, and the requirements of any relevant mixed packing provisions are complied with. Mixed packing provisions are given in column 9b of the Dangerous Goods List and explained in ADR 4.1.10.

Packages - Marking and Labelling

Every organisation whose activities include the packing or consigning of dangerous goods by road has to comply with the marking and labelling requirements of ADR. Every package, where appropriate, has to be clearly and durably marked with the letters 'UN' followed by the UN number of the dangerous goods; and the label(s) indicated in the Dangerous Goods List and described in ADR must be fixed to each package of dangerous goods.

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In addition:

- Special provisions indicated in column 6 may vary or add to the basic labelling requirement.
- If two or more dangerous goods are packed together, the outer packaging has to be labelled or marked once for each of the dangerous goods.
- A further label ('model number 11' orientation arrows) has to be applied in certain circumstances and there are additional marking provisions for Classes 1, 2 and 7, as well as special labelling provisions for Classes 4.1/5.2, 6.2 and 7.

Vehicles – Marking and Placarding

Every organisation whose activities include the loading, consigning or carriage of dangerous goods by road, or filling of dangerous goods into specified equipment for carriage by road has to make sure that any vehicle, container, etc displays the appropriate placards, as well as the applicable marks, orange-coloured plates, and hazard identification numbers (HINs) or emergency action codes (EACs).

Placards have to correspond to the labels required in columns 5 and 6 of the Dangerous Goods List and have to be fixed to the outside surface of vehicles, containers, etc. Placards not relating to the dangerous goods being carried (or to residues of them) have to be removed or covered.

Further special requirements are set out in ADR 5.3, including requirements for primary and additional orange-coloured plates.

Domestic Journeys and EACs

Where dangerous goods are being carried:

- by road;
- in tanks or in bulk; and
- with the transport unit registered in GB and the whole of the journey taking place in GB, the loader, filler, consignor and carrier must display the appropriate EACs, not HINs.

Orange-coloured plates must be displayed where:

- a transport unit or tank-vehicle is carrying one dangerous good in a tank, or in bulk in either the transport unit or in a single container; or
- where a transport unit or tank vehicle is carrying more than one dangerous good in a tank, or in bulk in either the transport unit or a tank vehicle with more than one tank or container.

Where dangerous goods are being carried in tanks, a telephone number must be displayed where information on the dangerous goods being carried can be obtained at any time. Provided certain conditions are met, the information that has to appear on

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placards and orange-coloured plates (including the telephone number) may appear on hazard warning signs instead.

Carrying and Retaining Documentation

The driver and vehicle crew have to make sure that the documents specified in ADR and described under 'Documentation' are carried on the vehicle, where applicable. Those who carry or consign dangerous goods by road have to make sure that the transport document accompanies each consignment, and a carrier must retain a written record of all the information in any transport document for three months after the journey finishes.

Construct and Test Packagings and Packages in Accordance with ADR

ADR requires that anyone packing, manufacturing, reconditioning, or distributing a packaging or package which is intended to be used for the carriage of dangerous goods has to make sure that it is manufactured/reconditioned/tested/marked in accordance with the requirements of ADR. There are particular requirements governing pressure receptacles (see 'Construct, Test and Use Pressure Receptacles in Accordance with ADR' below).

Any manufacturer or subsequent distributor of a packaging used for the carriage of dangerous goods by road has to make sure that the information required by ADR is provided to the consignor and the packer before the packaging is presented for carriage:

Construct, Test and Use Tanks in Accordance with ADR

'Old' tanks (those constructed before the Carriage Regulations came into force) can continue to be used for the remainder of their lives, as long as they comply with Schedule 1, which requires tanks to be:

- safe and suitable for purpose;
- inspected according to a suitable written scheme by an approved inspection body.

Tanks constructed after the Carriage Regulations came into force ('new' tanks) will have to comply with the ADR construction and use of tanks requirements.

Transport Unit

Any carrier carrying dangerous goods by road has to make sure that the transport unit complies with the relevant requirements of ADR:

- A transport unit loaded with dangerous goods must not include more than one trailer or semi-trailer.
- Transport units carrying dangerous goods have to be placarded and marked
- They must carry appropriate fire-fighting equipment:

Finally, every transport unit carrying dangerous goods has to be equipped with:

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- for each vehicle, at least one chock of a size suited to the weight of the vehicle and the diameter of the wheels
- two self-standing warning signs
- a suitable warning vest or warning clothing for each member of the vehicle crew (high visibility)
- a pocket lamp (see also ADR) for each member of the vehicle crew;
- a respiratory protective device conforming to additional requirement S7 (see ADR) - if this additional requirement applies according to the Dangerous Goods List; and
- the personal protection equipment necessary to take the additional and/or special actions referred to in the written instructions required by CDG and specified in ADR (see 'Documentation').

Documentation

The carrier and every vehicle crew member have to make sure that the applicable requirements of ADR are met, namely, that (in addition to the documents required under other regulations) the following documents are carried on the transport unit:

- copies of the main text of any applicable special agreements
- permit authorising transport operation
- transport documents
- container packing certificate
- instructions in writing
- driver's training certificate when ADR requires this, and
- certificate of approval for each transport unit

The instructions in writing prescribed in ADR have to be kept in a readily identifiable form in the driver's cab, and the carrier has to make sure that the drivers concerned understand and are capable of carrying out these instructions properly.

In the event of an accident or emergency involving the carriage of dangerous goods, the driver of the transport unit has to take all reasonable steps to ensure written instructions are complied with. Different types of documents should be separated to prevent confusion.

Carriage

The carrier and every vehicle crew member have to make sure that the applicable requirements of ADR are met. These requirements relate to:

- attendance;
- carrying passengers;
- ability to use fire-fighting equipment;
- opening of packages containing dangerous goods;
- use of lighting apparatus that contains a flame or produces sparks;
- prohibition of smoking inside or near vehicles, during loading and unloading;

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- shutting off the vehicle engine during loading and unloading; and
- applying parking brakes

Carry Dangerous Goods in Vehicles that Comply with ADR

Any carrier of dangerous goods by road has to make sure that the vehicles used comply with the applicable construction, equipment and approval requirements set out in ADR Part 9. Part 9 need not apply to vehicles constructed before 1 January 1997, although the carrier still has to make sure that the vehicle is suitable for the safe carriage of the dangerous goods in question.

Application of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009

In accordance with current legislation and the Council's Corporate Health and Safety Policy Statement, where applicable, heads of service within the Council must devise and implement procedures to ensure the following objectives are achieved:

- Decide whether the products to be transported fall within the scope of CDG 2009
- If so, identify the quantities of each product to be transported and decide whether the full regulations apply or whether the goods fall under one or more of the various exemptions.
- If the products are not subject to any of the exemptions then Management must apply the full scope of the regulations for example:
 - appointment of a Dangerous Goods Safety Advisor
 - Drivers trained to VTC standards
 - Vehicle marking and displaying placards
 - Transport documentation
 - Correct type and number of fire extinguishers
- Where exemptions apply to products then Management must ensure that all remaining relevant sections of the regulations are applied for example:
 - Ensure relevant exemptions are not exceeded (if so, all CDG 2009 applies)
 - Risk & COSHH assessments and SDS for the products being transported
 - General driver training
 - Ensuring products are stored in UN approved containers
 - First aid kit
 - Fire extinguishers
- Management must ensure that regular monitoring takes place to ensure continued compliance.

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The Health and Safety Team is available to provide further guidance and advice on any proposed procedures.

Prior to publication/implementation all proposed procedures must be discussed with the lead contact Health and Safety Officer via the appropriate Directorate/Divisional Safety Group. This step is necessary to verify that there is no variance with the legislation on which the policy is based.