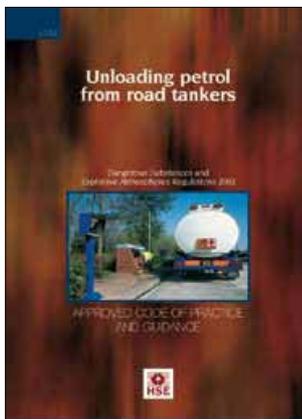


Unloading petrol from road tankers

Dangerous Substances and Explosive Atmospheres
Regulations 2002

Approved Code of Practice and guidance



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This Approved Code of Practice and guidance gives practical advice on the safe unloading of petrol from road tankers. The publication aims to reduce the risks of fire hazards and prevent falls from road tankers unloading petrol from filling stations. Practical guidance is given on preventing overfilling of storage tanks, controlling sources of ignition and dealing with any spillages that may occur during the unloading of petrol from road tankers.

The publication applies to employers and the self-employed at most workplaces in the UK where a dangerous substance, such as petrol, is present or could be present. This includes petrol stations and depots where petrol is unloaded.

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This Code has been approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law.

However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault.

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Notice of approval

By virtue of Section 16(1) of the Health and Safety at Work etc Act 1974 and with the consent of the Secretary of State for Work and Pensions, the Health and Safety Commission has on 8 April 2003 approved the Code of Practice entitled *Unloading petrol from road tankers*.

The Code of Practice gives practical guidance with respect to regulation 6 of the Dangerous Substances and Explosive Atmospheres Regulations 2002 with regard to the safe unloading of petrol from road tankers at premises which require a licence under the Petroleum (Consolidation) Act 1928 and regulation 13(1), (2) and (3) of the Workplace (Health, Safety and Welfare) Regulations 1992 with regard to the prevention of falls from road tankers unloading petrol at filling stations.

The Code of Practice comes into effect on 5 May 2003 which is the date of the repeal of Schedule 12 of the Carriage of Dangerous Goods by Road Regulations 1996.

Signed

Mark Dempsey
Secretary to the Health and Safety Commission

29 April 2003

Introduction

1 The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)¹ are concerned with protection against risks from fire, explosion and similar events arising from dangerous substances used or present in the workplace. It sets minimum requirements for the protection of workers from fire and explosion risks related to dangerous substances and potentially explosive atmospheres. The Regulations apply to employers and the self-employed at most workplaces in the UK where a dangerous substance, such as petrol, is present or could be present. This includes petrol stations and depots where petrol is unloaded.

2 DSEAR revokes, repeals or modifies a large amount of old legislation relating to flammable substances and dusts, including the licensing controls under the Petroleum Consolidation Act 1928. Safety standards will be maintained through a combination of the requirements of DSEAR and ACOPs (Approved Codes of Practice), reflecting good practices in the old legislation.²⁻⁶ DSEAR applies to petrol and therefore duplicates the existing licensing controls. Accordingly DSEAR removes licensing requirements for petrol, except for petrol that is being kept for dispensing into vehicles. These will be the subject of a further review by HSE.

3 This ACOP gives practical guidance with respect to regulation 6 of DSEAR with regard to the safe unloading of petrol from road tankers and regulation 13(1), (2) and (3) of the Workplace (Health, Safety and Welfare) Regulations 1992 ('the Workplace Regulations') with regard to the prevention of falls from road tankers unloading petrol at filling stations.

4 It has been drawn up in consultation with the Petrol Working Group of HSC's Advisory Committee on Dangerous Substances (ACDS), which includes representatives of the industry, including oil companies, supermarkets and independent petrol retailers, local government organisations, including the petrol enforcement authorities, and technical experts from HSE.

5 Operators should also bear in mind that this ACOP addresses the safety aspects of unloading petrol from road tankers, but does not address the associated environmental concerns. Any spill or loss of product also poses a threat to the environment and the potential for environmental harm should be considered. Further guidance on the relevant environmental legislation and pollution prevention advice is available from the relevant environment agency:

- (a) in England and Wales: the Environment Agency (General Enquiry Line: 0845 933 3111);
- (b) in Scotland: the Scottish Environment Protection Agency (01786 457700).

6 This ACOP does not cover the unloading of petrol at major hazard sites, nor at sites where it is intended to store more than 100 000 litres of petroleum, other than filling stations.

7 It is not intended to cover the unloading of liquefied petroleum gas (LPG), compressed natural gas (CNG) or liquid natural gas (LNG) but the same basic principles can, if desired, be applied to the unloading of diesel fuel at filling stations.

8 The focus is on the unloading of petrol, however, the general principles concerning the carriage, loading and unloading of dangerous substances still apply. Thus, operators will also need to comply with the relevant requirements of the Carriage of Dangerous Goods by Road Regulations 1996.⁷

Guidance

9 The main aims of this ACOP are: preventing a fire through preventing the overfilling of the storage tank; controlling sources of ignition during unloading and dealing with any spillages that may occur during the unloading of a petrol tanker; and preventing falls from petrol tankers.

10 DSEAR provides the overall legal framework for prevention of fires and explosions arising from the storage and use of dangerous substances. Operators should consult the main guidance document for further information. In particular, there is a requirement to conduct a risk assessment covering all work activities involving a fire and explosion risk. The risk assessment should be reviewed and revised whenever there is a change in working procedures.

11 The Workplace Regulations provide the legal framework for ensuring that workplaces meet the health, safety and welfare needs of each member of the workforce including safety issues arising from working at height. The term 'workplace' covers a wide range of premises, including petrol filling stations.

12 This publication is part of a series intended to support DSEAR. Other, more specific, activity-related guidance is available in the following publications:

- (a) General ACOP and guidance (available in Autumn 2003).² This provides an overview of how employers can meet their duties under DSEAR.
- (b) Design of plant, equipment and workplaces.³ This gives practical advice on assessing the risk from, and the design and use of, plant, equipment and workplaces which handle or process dangerous substances. It includes measures for making redundant plant and equipment safe.
- (c) Storage of dangerous substances.⁴ This gives practical advice on the requirements of regulations 5 and 6 to assess the risks from and the control and mitigation measures for places where dangerous substances are stored. It includes the safe disposal of waste materials.
- (d) Control and mitigation measures.⁵ This gives practical advice on the requirements of regulations 5 and 6 to identify the hazards arising from the dangerous substance and put in place adequate ventilation, ignition control and separation measures to control risks.
- (e) Safe maintenance, repair and cleaning.⁶ This gives practical advice on identifying hazards and implementing appropriate control measures and systems of work during maintenance and other similar non-routine activities. It includes advice on hot work and on permit-to-work systems for those activities identified as high risk.

In addition, the free leaflet *Fire and explosion: How safe is your workplace?*⁸ provides a short guide to DSEAR and is aimed at small and medium-sized businesses.

13 Information on DSEAR can also be accessed via HSE's website: www.hse.gov.uk, which is regularly updated.

Layout

Regulations are in *italics*, ACOP material is in **bold** text, guidance material in plain text.

Guidance

Terms used in this ACOP

14 In this ACOP:

- (a) 'maximum working capacity' in relation to a storage tank means not more than 97% of the actual capacity of that tank;
- (b) 'road tanker operator' means:
 - (i) the person who, having a place of business in Great Britain, has the management of the tanker for the time being; or
 - (ii) if no person satisfies the requirements of sub-paragraph (i) above, the tanker driver;
- (c) 'site operator' means the competent person who controls the operation of a site where petrol is to be unloaded; it includes, in the context of this Code, any competent person appointed by the site operator to act on their behalf, eg an employee. It is the responsibility of the site operator to ensure that anyone appointed to act on his or her behalf has the necessary competence to perform the activity safely. Competence is usually gained by a combination of training and experience and is not directly age-dependent.
- (d) 'ullage' means the difference between the maximum working capacity of a storage tank and the quantity of petrol in it at any given time.

Tanker unloading: General duty

15 Everyone involved in the unloading of petrol from a road tanker (whether employer, employee or self-employed) is subject to the Health and Safety at Work Act general duty to ensure, so far as is reasonably practicable, that people, including members of the public, are not exposed to risks to their health and safety. In addition, the Management of Health and Safety at Work Regulations 'the Management Regulations'⁹ require every employer and self-employed person to:

- (a) make a suitable and sufficient assessment of the risks to the health and safety of their employees and any other person(s) who may be affected by their activities;
- (b) implement prevention and protection measures on the basis of Schedule 1;
- (c) have suitable management systems in place; and
- (d) cooperate/co-ordinate with others where there are shared responsibilities.

16 Employers also need to take account of any requirements applying to them in relation to consultation and provision of information under the Safety Representatives and Safety Committees Regulations 1977¹⁰ and the Health and Safety (Consultation with Employees) Regulations 1996.¹¹

17 The Workplace Regulations require employers to avoid, so far as is reasonably practicable, the fall of people or objects that could result in personal injury.

18 DSEAR requires, so far as is reasonably practicable, the elimination and reduction of risks from fires and explosions arising from the transport, storage and use of dangerous substances such as petrol. Regulation 5 of DSEAR requires employers, and the self-employed, to carry out a risk assessment of any such activities that pose a fire and explosion risk. Although the Management Regulations risk assessment (see paragraph 15) will include this type of activity, the DSEAR risk assessment, which is an expansion of the Management Regulations risk assessment, is more detailed and specific to flammable substances.

ACOP

Responsibilities of the road tanker operator

19 Road tankers used for the delivery of petrol must be provided with a means of shutting off all the foot valves in an emergency.

20 Where petrol is to be delivered using a pump on-board the tanker, the pump and its associated equipment must be suitable for the purpose, properly installed and regularly maintained.

21 Road tanker operators must have a procedure in place to deal with spillages that occur during petrol delivery. Tanker drivers should be trained to implement that procedure if necessary.

Responsibilities of the site operator

22 Every storage tank and, if relevant, each storage tank compartment should have a suitable means of measuring the quantity of fuel inside it.

Guidance

23 The measuring device should have been tested and calibrated at the time of installation to ensure accuracy, and be checked at regular intervals for damage and correct operation. Each device, including any dipstick, should be marked with the identity of the tank it is calibrated for.

24 Manual dipping can be as accurate as automatic gauging if properly carried out, providing an adequate indication of tank contents. It is important that each tank has its own calibrated dipstick, not to be used for other tanks. It may be necessary to prevent the dipstick striking the bottom of the tank to avoid damage from repeated dipping.

25 To avoid confusion when converting imperial measurements to metric (which could increase the risk of overfilling the storage tank), it is advisable for the measuring device to be calibrated in litres. If not, take care in conversion.

ACOP

26 Any opening for a dipstick in a storage tank should be kept closed and locked at all times, when it is not being actively used. Dipsticks located in fill pipes should be removed before petrol is delivered.

Guidance

27 An opening for a dipstick may release petrol vapour into the atmosphere. This creates a fire and explosion hazard in the immediate area; therefore, such openings should be closed when not in use, particularly during petrol delivery.

28 Any dipsticks in fill pipes should be removed before petrol is delivered, as the forces caused by the flowing petrol can spin the dipstick very rapidly, causing damage to the dipstick and/or the storage tank.

ACOP

29 Adequate information about the ullage of each storage tank at the site should be available, at the time of delivery, to any tanker driver who is to unload petrol there.

Guidance

30 Before petrol is unloaded from a tanker into a storage tank, the site operator should ensure there is enough ullage space in the tank to take the quantity being delivered, otherwise there is a serious risk of spillage. If there is insufficient ullage space, do not attempt the delivery.

31 Where the site operator assists the tanker driver to unload, the ullage space should be measured before unloading takes place. The measurement should be recorded and the site operator and tanker driver should agree that the ullage space is adequate to take the load. If more than one tank is to be filled, take particular care to identify the separate tanks, ullage spaces and loads.

32 Where unloading is to take place under the sole control of the tanker driver, the site operator must still provide recorded details to the tanker driver of the ullage space available in each of the relevant tank or tanks and a means for the tanker driver to verify the ullage. Ullage should be measured and recorded as close to the expected delivery time as possible.

33 The ullage information provided for the tanker driver should be in writing and the form in Appendix 2 is recommended for this purpose, although alternative formats giving equivalent information would be acceptable.

ACOP

34 Where any storage tank is connected to another by means of a siphon pipe, that first tank should, unless it is fitted with a suitable overflow prevention device, be isolated from any other tank by a suitable valve or valves before any petrol is unloaded into that first tank.

35 The filling point of each storage tank should be uniquely identified (including grade) and indicate the maximum working capacity of the tank to which it is associated.

36 The filling point cap should remain closed and secured against interference from unauthorised persons at all times, other than when the filling point is being used for the unloading of petrol into the associated storage tank or for other appropriate activities.

Guidance

37 There will be situations where the cap needs to be removed for purposes other than delivering petrol into the tank. For example:

- (a) maintenance, tank and line testing;
- (b) checking the performance of the vapour recovery system;
- (c) returning petrol to the tank after it has been dispensed for the purpose of measuring the accuracy of the dispensers;
- (d) transferring petrol between storage tanks when a leak on one of the tanks is suspected etc.

ACOP

38 Where there is more than one vapour recovery point, they should be uniquely identified by reference to the storage tank or tanks they serve.

39 Safe and adequate illumination should be provided where necessary to enable unloading to be carried out safely.

Guidance

40 Adequate illumination should be provided for unloading outside daylight hours, including at the tanker unloading point. Artificial illumination may also be necessary at sites where natural light is obstructed in some way. A luminance of 100 lux or more at ground level would normally be considered adequate. Site operators need to bear in mind that a tanker driver who considers the available light insufficient to do the job safely may refuse to make the delivery.

ACOP

41 Suitable means of communication should be available to enable the tanker driver or site operator to make direct contact with the emergency services.

Guidance

42 This could be by fixed telephone, provided it is readily available to both the site operator and the tanker driver during deliveries and its location is clear to both. They also both need to be aware of the procedures to be followed to contact the emergency services.

ACOP

43 A switch, which is capable of cutting off the power supply to all fuel dispensers at the site, should be provided. The switch should be fitted with a device to prevent unauthorised resetting. On sites where tanker drivers are delivering fuel without the assistance of the site operator, the switch needs to be readily available to them.

Guidance

44 Where there is already an externally located petrol pumps isolation switch that is readily accessible to the tanker driver when unloading petrol, there is no need to provide an additional isolation switch.

ACOP

45 A suitable fire extinguisher appropriate for fighting petrol fires should be provided and be readily accessible to the tanker driver and the site operator when unloading petrol.

Guidance

46 Fire extinguishers need to be suitable for fighting petrol fires and have a minimum test fire rating of 144B, as defined in British Standard BS EN 3-1: 1996.¹²

ACOP

47 The site operator must have a procedure in place to deal with any spillages that occur during delivery of petrol. Site staff must be trained to implement that procedure if necessary. A sufficient amount of dry sand or other suitable absorbent material should be provided in a suitable receptacle, to soak up spillages of petrol.

Guidance

48 Enough dry sand should be available to soak up likely spills. Other suitable material can be used instead of sand, but it needs to have similar absorbency. The material needs to be kept dry and stored in a suitable container and be readily accessible. Any material used to soak up petrol will be heavily contaminated and considered special waste under the Special Waste Regulations 1996.¹³ Duties concerning its safe disposal can be found in the Environmental Protection Act 1990.¹⁴

49 In addition, regulation 8 of DSEAR requires that employers should ensure that foreseeable accidents, incidents and emergencies are identified, and that appropriate emergency arrangements are taken to ensure the safety of employees and others present at the site. Further information about arrangements to deal with emergencies is available in the ACOP and guidance material supporting DSEAR.²⁻⁶

ACOP

50 Any hoses belonging to the site used for unloading petrol, including vapour recovery, should be in good condition, fitted with appropriate connectors, electrically conductive and inspected regularly. Worn or damaged hoses should be replaced.

Guidance

51 The site operator must ensure that any hoses provided by the site for tanker drivers to use are in good condition and subjected to a programme of electrical continuity testing.

ACOP

52 The site operator must determine the extent of the hazardous zone around the road tanker unloading area.

Guidance

53 The site operator must determine where potential sources of ignition need to be controlled. This will require the identification and classification of the hazardous areas at the tanker stand and fill pipes. If hazardous zones or potential spills from unloading extend to the dispensing areas, then the site, or parts of the site, will need to be closed during petrol deliveries.

54 Detailed information on hazardous area classification and zoning can be found in the ACOP and guidance material supporting DSEAR.²⁻⁶

ACOP

55 Where appropriate, written instructions should be made available to a tanker driver to bring to their attention any matters which are material to the safe unloading of petrol at the site.

Guidance

56 Special precautions might be needed for the delivery of petrol at particular sites. These might include:

- (a) closure of the site to the public during deliveries;
- (b) special measures to control spillages;
- (c) no deliveries outside set hours;
- (d) specified entry and exit routes for the road tanker;
- (e) prohibition of certain activities (eg use of the carwash) during deliveries etc.

Some of these instructions may need to be provided in advance via the tanker operator.

ACOP

57 The site operator should ensure that:

- (a) the information as to the ullage of each storage tank into which a delivery was to be made, in accordance with paragraphs 29-33; and**
- (b) the information as to the amount of petrol delivered to each tank in accordance with paragraph 67(b) is preserved and readily available for a period of six months. The record may be preserved in any suitable manner including electronic.**

58 In any case where a tanker driver may be required to unload petrol at the site without the assistance of the site operator, suitable and effective means of preventing an overfill should be provided for each storage tank.

Guidance

59 An overfill prevention device or a high-level alarm would satisfy this requirement. Information about the presence of this equipment at a site will need to be provided in advance via the tanker operator. See also paragraph 64(a)(ii).

60 The overfill prevention device and high level alarm should be fit for purpose, sufficiently accurate and have an appropriate level of safety integrity. It is very important that these devices are regularly maintained and are, therefore, subject to an appropriate maintenance regime. These devices need to meet the specific requirements of DSEAR and also appropriate international standards such as IEC 61508 (functional safety of electrical, electronic or programmable electronic safety-related systems).¹⁵

ACOP

61 Petrol should not be unloaded at a site unless:

(a) Where the tanker driver is assisted

the site operator is present to assist during the operations and, in particular, to ensure, so far as is reasonably practicable:

- (i) that no source of ignition is present in the hazardous areas associated with petrol unloading;**
- (ii) the safety of any person who may be affected by a spillage of petrol during unloading; and**
- (iii) that no other vehicle can collide with the tanker.**

Guidance

At some sites the tanker may park on the highway to unload. In these cases it will be necessary to alert other road users by means of warning signs or cones.

ACOP

- (iv) The site operator should also where necessary, having regard to the requirements of sub-paragraphs (i) and (ii) above, direct the tanker driver to cease the unloading of petrol and to ensure that all filling points, other than those of the tanks being filled, are closed.**
- (v) The site operator should be present until delivery is complete and all caps and covers disturbed during delivery have been safely replaced.**

(b) Where the tanker driver is unassisted

the site operator should ensure that suitable and sufficient means have been provided to prevent any likely escape of petrol reaching:

- (i) any part of the site which is open to the public; and**
- (ii) anywhere off-site, especially where there is a risk of petrol entering drains or basements.**

Guidance

62 Where a filling station can remain open to the public during unloading, then either the site operator must be present and fulfil the obligations set out in paragraph 61 or, if the site operator is not present, there must be adequate safeguards to prevent petrol escaping off-site or to a part of the site open to the public. This could be by designing the site in such a way that petrol escaping from the fill point would quickly encounter a separator or an on-site spillage retention system.

63 If the full requirements of paragraph 61 cannot be met then the site should be closed to the public when unloading takes place.

ACOP

Responsibilities of the tanker driver

64 Petrol should not be unloaded from a road tanker at a site:

(a) unless the contents of any single compartment of its tank do not exceed the ullage of the storage tank into which the compartment is to be unloaded, except:

- (i) where the tanker driver is assisted**
 - the storage tank is fitted with means of preventing an overfill; or
 - the road tanker is fitted with means for continuously measuring the amount of petrol being unloaded from its tank;

or

- (ii) where the tanker driver is unassisted**
 - the storage tank is fitted with means of preventing an overfill; and
 - the road tanker is fitted with means for continuously measuring the amount of petrol being unloaded from its tank, being means other than the use of a dipstick;

and

(b) if another dangerous substance such as LPG is being unloaded from another tanker at the same time.

65 Where petrol is being unloaded from a road tanker at a site, no more than two of the tanker's compartments (including any containing diesel) should be unloaded at the same time, unless justified by a site-specific risk assessment.

Guidance

66 Any risk assessment undertaken as a result of the requirements of paragraph 65 must ensure that it takes into account any limitations to the number of compartments that may be unloaded at the same time, as stipulated in any authorisation issued by the local authority or Scottish Environment Protection Agency on vapour recovery. The findings of such a risk assessment cannot override the conditions of such an authorisation.

ACOP

67 Before unloading petrol at a site a tanker driver should:

- (a) examine any written instructions made available to him, as noted in paragraphs 55-56, and ensure that they have been complied with;**
- (b) verify that the appropriate storage tank may safely receive the quantity, and grade, of petrol to be unloaded;**
- (c) verify that any means of communication provided in accordance with paragraphs 41-42 is in working order;**
- (d) verify that a fire extinguisher and absorbent material have been provided in accordance with paragraphs 45-46 and 47-48 respectively;**
- (e) ensure that the requirements of paragraphs 58-61 have been complied with;**
- (f) ensure all hoses are in good condition;**

ACOP

- (g) connect the hoses in the following order:
 - (i) any vapour recovery hose (tanker end first);
 - (ii) any hose which is to be used for the unloading of petrol (underground tank first);

and ensure all hose connections are secure.

Guidance

68 Delivery should not proceed if any of these conditions is not fulfilled.

ACOP

69 Except where it has to be used to drive pumps or other appliances for unloading the vehicle, the road tanker's engine shall be shut off during unloading operations.

Guidance

70 On-board pumps are sometimes used to unload diesel from road tankers carrying petrol in other compartments. These pumps should not be used to unload diesel at the same time as petrol is being unloaded.

ACOP

71 During the course of unloading petrol at a site a tanker driver should:

- (a) oversee the unloading operation so as to ensure, so far as it is reasonably practicable, that no petrol overflows from the storage tank concerned or escapes from any hose or hose connection;
- (b) ensure that all filling points, other than those of the tanks being filled, remain closed;
- (c) cease to unload the petrol immediately if there is reason to believe that any means for measuring the amount of petrol unloaded from the road tanker is faulty;
- (d) where unloading petrol without the assistance of the site operator, ensure, so far as it is reasonably practicable, that no source of ignition is present in the areas associated with petrol unloading, or, in the event of failure to prevent the presence of such ignition source, cease to unload petrol immediately.

72 Following the unloading of petrol but before leaving the site, the tanker driver should ensure that:

- (a) any hose referred to in paragraph 67(g) has been disconnected, in the following order:
 - (i) any hose which has been used for the unloading of petrol (road tanker end first);
 - (ii) any vapour recovery hose (vapour recovery point end first);
- (b) all caps on the filling points into which deliveries have been made are closed and secured;
- (c) all access covers which were disturbed during the unloading of petrol have been properly replaced; and
- (d) information concerning the amount of petrol delivered to each tank is recorded and provided to the site operator.

Guidance

Additional requirements for pumped deliveries

73 Where petrol is to be unloaded from a road tanker by means of an on-board pump, additional precautions are necessary. The responsibility is divided between the road tanker operator, the site operator and the tanker driver.

ACOP

74 Where petrol is to be unloaded from a road tanker using an on-board pump, the road tanker, the storage tank and any associated equipment must be suitable for pumped deliveries.

Guidance

75 Where pumped deliveries are to be made at a site, both the site operator and the road tanker operator should consider the activity in their risk assessments.

76 The road tanker operator must ensure that the tanker, pumps and any associated equipment have been designed and certified for use, in the hazardous areas that may exist during unloading.

77 The site operator should ensure that:

- (a) all tanks, valves, pipework etc are suitable for pumped deliveries;
- (b) suitable means are available to avoid spills out of vent pipes or dispensers; and
- (c) each storage tank into which a pumped delivery is to be made is fitted with an overfill prevention device that can be interlocked with the road tanker pump. It should be set to operate before the maximum working capacity of the tank is reached.

78 The tanker driver must ensure that any interlocks between the road tanker and the storage tank are in place before delivery commences.

ACOP

Prevention of falls

79 To prevent falls from road tankers, the need for routine access to the top of a road tanker during normal operation should be eliminated, where possible. If this cannot be achieved, then both a safe means of access onto the tanker top and a safe place of work on the tanker top should be provided.

80 Routine access onto the top of road tankers can be avoided by introducing bottom-loading and discharge systems, foot valves and venting systems that can be operated from ground level and measuring systems that avoid the use of dipsticks from the top of the tanker.

Guidance

81 If the need for tanker top access cannot be eliminated, the site and tanker operators should jointly carry out a sufficient and suitable risk assessment and agree the control measures required, bearing in mind the hierarchy in paragraph 83.

Guidance

82 The risk assessment should consider, for example, the height, frequency of access, tasks to be performed, equipment and personal protective equipment (PPE) needed, exposure to the elements and experience, fitness, training and supervision of the individuals concerned.

83 The following hierarchy of control measures for the prevention of falls from tankers is based on the general principles of the Management Regulations, Schedule 1:

- (a) Eliminate the need for routine access.
- (b) Provide a fixed gantry with safe means of access and integral secure fencing to enclose the tanker top working positions.
- (c) Provide walkways and working platforms to the tanker barrel, together with integral fencing and access ladders or steps.
- (d) Provide purpose designed mobile steps with integral secure fencing at the top.
- (e) Provide fall arrest systems and/or personal restraint systems.

Appendix 1 Extracts from relevant regulations

Note: Only the relevant parts of the legislation are reproduced here and some of the extracts are incomplete for reasons of clarity.

Extract from: Workplace (Health, Safety and Welfare) Regulations 1992

Regulation

13 The Workplace Regulations

Regulation 13 Falls or falling objects

(1) *So far as is reasonably practicable, suitable and effective measures shall be taken to prevent any event specified in paragraph (3).*

(2) *So far as is reasonably practicable, the measures required by paragraph (1) shall be measures other than the provision of personal protective equipment, information, instruction, training or supervision.*

(3) *The events specified in this paragraph are -*

- (a) *any person falling a distance likely to cause personal injury;*
- (b) *any person being struck by a falling object likely to cause personal injury.*

**Extracts from: The Dangerous Substances and Explosive Atmospheres
Regulations 2002**

Regulation

**Regulation 6 Elimination or reduction of risks from
dangerous substances**

6. - (1) Every employer shall ensure that risk is either eliminated or reduced so far as is reasonably practicable.

(2) In complying with his duty under paragraph (1), substitution shall by preference be undertaken, whereby the employer shall avoid, so far as is reasonably practicable, the presence or use of a dangerous substance at the workplace by replacing it with a substance or process which either eliminates or reduces the risk.

(3) Where it is not reasonably practicable to eliminate risk pursuant to paragraphs (1) and (2), the employer shall, so far as is reasonably practicable, apply measures, consistent with the risk assessment required by regulation 5(1) and appropriate to the nature of the activity or operation -

- (a) to control risks, including the measures specified in paragraph (4); and
- (b) to mitigate the detrimental effects of a fire or explosion or the other harmful physical effects arising from dangerous substances, including the measures specified in paragraph (5).

(4) The following measures are, in order of priority, those specified for the purposes of paragraph (3)(a) -

- (a) the reduction of the quantity of dangerous substances to a minimum;
- (b) the avoidance or minimising of the release of a dangerous substance;
- (c) the control of the release of a dangerous substance at source;
- (d) the prevention of the formation of an explosive atmosphere, including the application of appropriate ventilation;
- (e) ensuring that any release of a dangerous substance which may give rise to risk is suitably collected, safely contained, removed to a safe place, or otherwise rendered safe, as appropriate;
- (f) the avoidance of -
 - (i) ignition sources including electrostatic discharges; and
 - (ii) adverse conditions which could cause dangerous substances to give rise to harmful physical effects; and
- (g) the segregation of incompatible dangerous substances.

(5) The following measures are those specified for the purposes of paragraph (3)(b) -

- (a) the reduction to a minimum of the number of employees exposed;
- (b) the avoidance of the propagation of fires or explosions;
- (c) the provision of explosion pressure relief arrangements;
- (d) the provision of explosion suppression equipment;
- (e) the provision of plant which is constructed so as to withstand the pressure likely to be produced by an explosion; and
- (f) the provision of suitable personal protective equipment.

Regulation

6
DSEAR

(6) The employer shall arrange for the safe handling, storage and transport of dangerous substances and waste containing dangerous substances.

(7) The employer shall ensure that any conditions necessary pursuant to these Regulations for ensuring the elimination or reduction of risk are maintained.

(8) The employer shall, so far as is reasonably practicable, take the general safety measures referred to in Schedule 1, subject to those measures being consistent with the risk assessment and appropriate to the nature of the activity or operation.

Regulation

7
DSEAR

Regulation 7 Places where explosive atmospheres may occur

7.- (1) Every employer shall classify places at the workplace where an explosive atmosphere may occur into hazardous or non-hazardous places in accordance with paragraph 1 of Schedule 2 and shall classify those places so classified as hazardous into zones in accordance with paragraph 2 of that Schedule; and that Schedule shall have effect subject to the notes at the end of that Schedule.

(2) The employer shall ensure that the requirements specified in Schedule 3 are applied to equipment and protective systems in the places classified as hazardous pursuant to paragraph (1).

(3) Where necessary, places classified as hazardous pursuant to paragraph (1) shall be marked by the employer with signs at their points of entry in accordance with Schedule 4.

(4) Before a workplace containing places classified as hazardous pursuant to paragraph (1) is used for the first time, the employer shall ensure that its overall explosion safety is verified by a person who is competent in the field of explosion protection as a result of his experience or any professional training or both.

(5) The employer shall ensure that appropriate work clothing which does not give rise to electrostatic discharges is provided for use in places classified as hazardous pursuant to paragraph (1).

(6) This regulation is subject to the transitional provisions in regulation 17(1) to (3).

Regulation

8
DSEAR

Regulation 8 Arrangements to deal with accidents, incidents and emergencies

8. - (1) Subject to paragraph (4), in order to protect the safety of his employees from an accident, incident or emergency related to the presence of a dangerous substance at the workplace, the employer shall ensure that -

(a) procedures, including the provision of appropriate first-aid facilities and relevant safety drills (which shall be tested at regular intervals), have been prepared which can be put into effect when such an event occurs;

Regulation

- (b) *information on emergency arrangements, including -*
 - (i) *details of relevant work hazards and hazard identification arrangements, and*
 - (ii) *specific hazards likely to arise at the time of an accident, incident or emergency,*

is available;

- (c) *suitable warning and other communication systems are established to enable an appropriate response, including remedial actions and rescue operations, to be made immediately when such an event occurs;*
- (d) *where necessary, before any explosion conditions are reached, visual, or audible, warnings are given and employees withdrawn; and*
- (e) *where the risk assessment indicates it is necessary, escape facilities are provided and maintained to ensure that, in the event of danger, employees can leave endangered places promptly and safely.*

(2) *Subject to paragraph (4), the employer shall ensure that information on the matters referred to in paragraph (1)(a), (c) to (e) and the information required by paragraph 1(b) is -*

- (a) *made available to relevant accident and emergency services to enable those services, whether internal or external to the workplace, to prepare their own response procedures and precautionary measures; and*
- (b) *displayed at the workplace, unless the results of the risk assessment make this unnecessary.*

(3) *Subject to paragraph (4), in the event of an accident, incident or emergency related to the presence of a dangerous substance at the workplace, the employer shall ensure that -*

- (a) *immediate steps are taken to -*
 - (i) *mitigate the effects of the event,*
 - (ii) *restore the situation to normal, and*
 - (iii) *inform those of his employees who may be affected; and*
- (b) *only those persons who are essential for the carrying out of repairs and other necessary work are permitted in the affected area and they are provided with -*
 - (i) *appropriate personal protective equipment and protective clothing; and*
 - (ii) *any necessary specialised safety equipment and plant,*

which shall be used until the situation is restored to normal.

(4) *Paragraphs (1) to (3) shall not apply where -*

- (a) *the results of the risk assessment show that, because of the quantity of each dangerous substance at the workplace, there is only a slight risk to employees; and*
- (b) *the measures taken by the employer to comply with his duty under regulation 6(1) are sufficient to control that risk.*

Schedule 1

Schedule 1 General safety measures

Regulation 6(8)

1. *The following measures are those specified for the purposes of regulation 6(8).*

Workplace and work processes

2. *Ensuring that the workplace is designed, constructed and maintained so as to reduce risk.*

3. *Designing, constructing, assembling, installing, providing and using suitable work processes so as to reduce risk.*

4. *Maintaining work processes in an efficient state, in efficient working order and in good repair.*

5. *Ensuring that equipment and protective systems meet the following requirements—*

- (a) *where power failure can give rise to the spread of additional risk, equipment and protective systems must be able to be maintained in a safe state of operation independently of the rest of the plant in the event of power failure;*
- (b) *means for manual override must be possible, operated by employees competent to do so, for shutting down equipment and protective systems incorporated within automatic processes which deviate from the intended operating conditions, provided that the provision or use of such means does not compromise safety;*
- (c) *on operation of emergency shutdown, accumulated energy must be dissipated as quickly and as safely as possible or isolated so that it no longer constitutes a hazard; and*
- (d) *necessary measures must be taken to prevent confusion between connecting devices.*

Organisational measures

6. *The application of appropriate systems of work including—*

- (a) *the issuing of written instructions for the carrying out of the work; and*
- (b) *a system of permits to work with such permits being issued by a person with responsibility for this function prior to the commencement of the work concerned,*

where the work is carried out in hazardous places or involves hazardous activities.

**Regulation 6(8)
DSEAR**

Appendix 2 Petroleum delivery form

Address of Premises:

The site operator and tanker driver should complete this form before the delivery into the storage tank begins

Storage tank number, letter, or number and letter	Ullage	Quantity of petrol to be delivered	Grade of petrol to be delivered	Road tanker carrying tank compartment	
				No	Quantity

Signature of site operator Date and time

Signature of driver Date and time

References and further reading

References

- 1 *Dangerous Substances and Explosive Atmospheres Regulations 2002* SI 2002/2776 The Stationery Office 2002 ISBN 0 11 042957 5
- 2 *Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice L138* HSE Books 2003 ISBN 0 7176 2203 7 (available in Autumn 2003)
- 3 *Design of plant, equipment and workplaces. Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L134* HSE Books 2003 ISBN 0 7176 2199 5
- 4 *Storage of dangerous substances. Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L135* HSE Books 2003 ISBN 0 7176 2200 2
- 5 *Control and mitigation measures. Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L136* HSE Books 2003 ISBN 0 7176 2201 0
- 6 *Safe maintenance, repair and cleaning procedures. Dangerous Substances and Explosive Atmospheres Regulations 2002. Approved Code of Practice and guidance L137* HSE Books 2003 ISBN 0 7176 2202 9
- 7 *The Carriage of Dangerous Goods by Road Regulations 1996* SI 1996/2095 The Stationery Office 1996 ISBN 0 11 062926 4
- 8 *Fire and explosion: How safe is your workplace? A short guide to the Dangerous Substances and Explosive Atmospheres Regulations* Leaflet INDG370 HSE Books 2002 (single copy free or priced packs of 5 ISBN 0 7176 2589 3)
- 9 *Management of health and safety at work. Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and guidance L21* (Second edition) HSE Books 2000 ISBN 0 7176 2488 9
- 10 *Safety representatives and safety committees L87* (Third edition) HSE Books 1996 ISBN 0 7176 1220 1
- 11 *A guide to the Health and Safety (Consultation with Employees) Regulations 1996. Guidance on Regulations L95* HSE Books 1996 ISBN 0 7176 1234 1
- 12 *BS EN 3-1:1996 Portable fire extinguishers. Description, duration of operation, class A and B fire test* British Standard Institution
- 13 *The Special Waste Regulations 1996* SI 1996/972 The Stationery Office 1996 ISBN 0 11 054565 6
- 14 *Environmental Protection Act 1990 Ch43* The Stationery Office 1990 ISBN 0 10 544390 5
- 15 *BS EN 61508-1:2002 Functional safety of electrical/electronic/programmable electronic safety-related systems. General requirements* British Standard Institution

Further reading

Dispensing petrol: Assessing and controlling the risk of fire and explosion at sites where petrol is stored and dispensed as a fuel HSG146 HSE Books 1996
ISBN 0 7176 1048 9

Guidance for the design, construction, modification and maintenance of petrol filling stations The Institute of Petroleum and APEA 1999 ISBN 0 85293 217 0
(known as 'the Blue Book')

Model Code of Safe Practice Part 21: Guidelines for the control of hazards arising from static electricity (Second edition) The Institute of Petroleum 2002
ISBN 0 85293 356 8

Offloading procedures for split compartment deliveries of petrol between service station tanks The Institute of Petroleum 2001 ISBN 0 85293 353 3

The storage of flammable liquids in tanks HSG176 HSE Books 1998
ISBN 0 7176 1470

Unloading of petrol into storage at service stations Process Guidance Note
PG 1/14 Environment Agency 1996 ISBN 0 11 753349 1

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