



**The Chartered
Institute of Logistics
and Transport**

Sample DGSA Examination Paper 2 with Solutions

NOTE TO CANDIDATES

1. Answers to questions must be given in the space provided below each question.
2. In your answers use of the following are permitted:

ADR	ADR Agreement 2023
CDGRR	European Communities (Carriage of Dangerous Goods by Road and use of Transportable Pressure Equipment) Regulations consolidated version updated to 7 th June 2023
3. All answers **must** be in blue or black ink.
4. If you need extra space, write ‘continued’ and finish your answer in the space provided at the end of this booklet. Make sure you mark any continuation with the question number.
5. Rough work, not intended to be read by the marker, should be scored out.
6. You may use the abbreviations ADR, CDGRR as well as PG for Packing Groups and SP for Special Provisions. You may use the abbreviation DGL for the Dangerous Goods List, Table A
7. No unauthorised material may be brought into the examination room.
8. No talking or other means of communication between candidates is allowed during the examination. Any candidate found to be doing so will be subject to instant dismissal from the examination room.
9. All queries should be directed to an invigilator.
10. You may not leave the examination room during the first 30 minutes or last 15 minutes of the examination unless you are ill. In this case, let an invigilator know and s/he will make sure the correct procedure is followed.
11. You must hand your booklet to an invigilator before leaving.
12. Booklets must not be removed from the examination room under any circumstances.

Note: When you use a reference document to find your answer, you must include the following information – **the document title and, as appropriate, the relevant paragraph numbers, sub-paragraph numbers, section, regulation, and schedule.** However, you do not need to include the words “paragraph” or “sub-paragraph” before the reference.

Marks may be lost nevertheless if relevant details for the references are omitted.

Dangerous Goods Safety Adviser

Examination Paper 2

Duration 120 minutes, 70 Marks

Pass Mark 46 Marks

SECTION A

IS COMPULSORY AND ALL QUESTIONS MUST BE ANSWERED.

SECTION B

THERE IS A CHOICE OF TWO QUESTIONS. YOU MUST ANSWER EITHER CASE STUDY 2 OR CASE STUDY 3.



The Chartered
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and Transport

DANGEROUS GOODS SAFETY ADVISER EXAMINATION
EXAMINATION BOOKLET

PAPER TWO

Date:

Time: 14.00 to 16:00

PLEASE ENSURE THAT YOUR EXAMINATION NUMBER IS FILLED IN
BELOW.

Examination Number



Seat Number



Date of Birth

Examination Centre

Section B Case Study:

NOTES

1. You are required to complete the section above in **BLOCK CAPITALS**.
2. You must sign the examination booklet in the box provided.
3. You must not detach any sheets from the examination booklet.

For Marker' use only Marks
Awarded

Section A	Section B	Total Marks
1	2	

Marker's initials _____ Principal Marker's initials _____
For CILTI use only Script checker's initials _____

Section A

Compulsory Case Study 1

Mendit Fast Ltd supplies a variety of substances, mixtures and articles to the motor vehicle trade.

- (a) **Batteries, wet, non-spillable, form a significant part of the company's trade. State the Class, UN number and classification code assigned to these articles.**

Solution: Class 8. (1 mark) UN 2800. (1 mark) classification code C11. (1 mark)

(4)

Reference(s):	<i>2023 ADR: The Dangerous Goods List, Table A, columns (1), (2), (3a) and (3b) and Table B, Chapter 3.2 (1 mark)</i>
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- (b) **Some of the articles it supplies are replacement air bag modules on behalf of car manufacturers. The sales manager notes that these could be SAFETY DEVICES, PYROTECHNIC articles, UN 0503 of Class 1.4G or SAFETY DEVICES, electrically operated UN 3268 of miscellaneous dangerous goods of Class 9. The manager asks you as the company's DGSA to help them understand the difference between the two classifications. What would you advise?**

Be as precise and as fulsome as you can in your advice.

Is there any difference in your advice when the air bags are being carried as replacements and when they are installed in a car?

Solution: The entry in the Dangerous Goods List for UN 0503, class 1.4G has Special Provisions 235 assigned to it and the entry for UN 3268 class 9 has Special provision 280 assigned to it. They both have the same Special Provision 289 assigned to them. (1 mark)

Special Provision 235 suggests that the air bag inflators as life saving devices are dangerous goods of Class 1.4G if they have Class 1 explosives in them even if they also contain dangerous goods of other classes. (2 marks)

On the other hand, Special Provision 280 explains that air bag inflators with substances of Class 1 when carried as component parts are dangerous goods and may be transported under UN 3268 if they have been tested in accordance with Test Series 6 (c) of Part 1 of the Manual of Tests and Criteria. (2 marks).

Therefore, the air bag inflators may be transported as components of UN 3268 if they have been so tested. Otherwise, they must be transported as UN 0503. (1 mark)

As Special Provision 289 applies to both of these UN numbers, air bag inflators of UN 0503 or UN 3268 may be transported by installed in the cars may be transported without the application of the ADR. (1 mark)

(8)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, column (6), and Table B, Chapter 3.2. Special Provisions 235, 280 and 289 in 3.3.1, Chapter 3,3, (1 mark)</i>
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(c) **The following consignment is to be dispatched on a 5 tonne maximum permissible gross mass delivery van:**

- **5 x 25 litre drums of non-viscous flammable paint of Class 3, UN 1263, packing group III**
- **4 x 25 litre jerricans of a degreasant called trichloroethylene, UN 1710**

Would the driver need a valid ADR driver training certificate? Explain your answer as fully as you can.

Solution: *'5 L' appears in the Dangerous Goods List, Table A, column (7a) for both the UN 1263 Packing Group III and the UN 1710, indicating that 5 litres is the maximum quantity allowed per inner packaging for the Limited Quantities allowances to apply. Hence the Limited Quantities allowances cannot apply to this consignment. (2 marks)*

We now turn to paragraph 1.1.3.6 to see if the exemptions with respect to the size of the load apply to this consignment. Establish that UN 1263, Class 3. Packing Group III is a Transport Category 3 substance (1 mark) while UN 1710, Class 6.1, PGIII is a Transport Category 2 substance. (1 mark)

Using the formula in subparagraph 1.1.3.6, the 100 litres of UN 1710 is multiplied by 3 to give a number of '300' (1 mark) while the 125 litres of UN 1263, packing group III, is multiplied by 1 to give a number of '125'. (1 mark) These two numbers are added together to give a total number of '425'. (1 mark)

As this total number is less than the threshold of '1000', the provisions of paragraph 1.1.3.6 apply and therefore the driver does not need to have a driver training certificate. (2 marks)

(10)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, columns (7a) and (15), Chapter 3.2 and 3.4.1, 1.1.3, 1.1.3.6.1, 1.1.3.6.2, 1.1.3.6.3 and 1.1.3.6.4. (1 mark)</i>
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(d) **Many of the packaged goods loads that are carried on the company's vehicles require the vehicles to be marked with reflectorized orange-coloured plates, because of the amounts of dangerous goods they are carrying.**

(i) **What are the minimum dimensions of these plates (ignoring any exemptions)?**

Solution: *40 cm base x 30 cm high with a 15 mm wide black border. (2 marks: 1 mark for 40 cm x 30 cm and 1 mark for 15 mm border)*

(ii) Where should they be displayed?

Solution: One at the front and one at the rear of the vehicle. (1 mark)

(iii) What should happen to the plates once the packaged dangerous goods have been unloaded?

Solution: They should be removed or covered up. (1 mark)

(5)

Reference(s):	2023 ADR: 5.3.2.1.1, 5.3.2.1.8 and 5.3.2.2.1 (1 mark)
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(e) (i) What is the minimum total capacity of fire extinguishers that should be carried in a 5 tonne vehicle?

Solution: 8 kg (1 mark)

(ii) What is the minimum capacity of a fire extinguisher for fighting a fire in the engine or cab of the vehicle?

Solution: 2 kg (1 mark)

(iii) What is the minimum capacity of at least one other fire extinguisher that should be carried in the vehicle?

Solution: 6 kg (1 mark)

(iv) What details should be inscribed on the fire extinguishers?

Solution: The extinguishers shall be marked with a mark of compliance with a standard recognised by the Competent Authority and a date (month, year) of the next recurrent inspection or of the maximum permissible period of use, if applicable. (1 mark)

(5)

Reference(s):	2023 ADR: The Dangerous Goods List, Table A, column (19), Chapter 3.2; 8.1.4.1, 8.1.4.2, 8.1.4.3 and 8.1.4.4. (1 mark)
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(f) (i) One of the drivers of a large vehicle carrying dangerous goods asks their manager for a helper to accompany them to unload. Is this permissible? Explain your answer as fully as you can.

Solution: Yes, provided the helper has received training in the carriage of dangerous goods appropriate to their responsibilities and duties in accordance with Chapter 1.3. (1 mark)

- (ii) A friend of the helper who works at the company next door to Mendit Fast Ltd. asks the driver setting out with a full load of dangerous goods deliveries for a lift home. Is this permissible? Explain your answer as fully as you can.

Solution: No, because the friend would be deemed to be a passenger and the carriage of passengers is not allowed. (1 mark)

(3)

Reference(s):	2023 ADR: 1.3.1, 1.3.2, 8.2.3, 3, and 8.3.1 (1 mark)
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Go to Section B

**THERE IS A CHOICE OF TWO QUESTIONS IN SECTION B.
YOU MUST ANSWER EITHER CASE STUDY 2 OR CASE
STUDY 3.**

Section B

Case Study 2

A company wishes to use fixed tanks (tank-vehicles or road tankers) to carry hot ammonium nitrate liquid (hot aqueous solution of 85% concentration) from Vienna in the German speaking country of Austria to Barcelona, Spain. As part of the journey, the tank-vehicles will need to pass through some road tunnels with restrictions.

It is a contractual requirement that a sample of the substance is sent to the consignee for evaluation before delivery.

The consignor also wishes to explore the possibility of delivery of the substance in a dry, powdery form, as ammonium nitrate-based fertilizer in bulk to see if this is a cheaper option.

(a) What is the Class and UN number of the hot liquid substance?

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Solution: Class 5.1, UN2426 (1 mark)

(2)

Reference(s):	<i>2023 ADR: The Dangerous Goods List, Table A, columns (1) and (2), and Table B, Chapter 3.2 (1 mark)</i>
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(b) Is the transport of the ammonium nitrate liquid in tank-vehicles permitted? Explain how you reached your conclusion.

Solution: Yes. (1 mark). Because the tank code L4BV⁽⁺⁾ is given in column (12) of The Dangerous Goods List, Table A. (1 mark)

(3)

Reference(s):	<i>2023 ADR: The Dangerous Goods List, Table A, column (12), Chapter 3.2. (1 mark)</i>
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(c) (i) Show the dangerous goods information that should be stated in the transport document on the outward journey to Barcelona.

Solution: UN 2426 Hot Ammonium Nitrate Liquid, 5.1, (E). (2 marks: 1 mark for the details to 'Liquid' and 1 mark for the remainder)

(ii) In what language(s) should the transport document be prepared? Be as explicit in your answer as you can.

Solution: *In the language of the country of origin and, if that is not English, French or German, also in English, French or German. Therefore, as German is the official language in Austria, it is sufficient for the document to be written in German only. (2 marks)*

(iii) What should be done to the original transport document for the laden tank outbound to Vienna to allow it to be used for the return journey of the empty uncleaned tank-vehicle?

Solution: *The transport document for the outward journey may be used. The indication of the quantity to be eliminated and replaced by the words – ‘EMPTY, UNCLEANED RETURN’. (2 marks)*

(7)

Reference(s):	<i>2023 ADR: The Dangerous Goods List, Table A, columns (1), (2), (3a) and (4), Chapter 3.2 (1 mark)</i>
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(d) (i) What marking plates should be affixed to the tank-vehicles and where should they be affixed? Give full details of what is required for the tank-vehicles.

Solution: *Either:*

Two plain reflectorized orange-coloured plates, one at the front and one at the rear of the vehicle and two reflectorized orange-coloured plates, bearing the inscription 59 on the top part and 2426 on the lower part, on each side of the tank.

Or:

Two reflectorized orange-coloured plates, bearing the inscription 59 on the top part and 2426 on the lower part, one at the front and one at the rear of the vehicle. (3 marks for either solution, with 1 mark for the correct detail 59/2426).

(ii) What placards are required to be affixed to the tank-vehicles and where should they be affixed?

Solution: *An oxidizer No. 5.1 placard on each side and the rear of the vehicle. (2 marks: 1 mark for identifying the placard and 1 mark for stating the correct position.)*

(6)

Reference(s):	<i>2023 ADR: 5.3.2.1. 5.3.2.1.1, and 5.3.2.1.2 or 5.3.2.1.6 depending on which choice selected when a single substance is being carried. The Dangerous Goods List, columns (1) and (20), Table A, Chapter 3.2. (1 mark)</i>
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- (e) **During the journey to Barcelona, the driver of one of the tank-vehicles nears a tunnel and sees the road sign for a dangerous goods restricted tunnel with the letter ‘C’. Is the tank-vehicle allowed to pass through the tunnel laden with the UN 2426 HOT AMMONIUM NITRATE? Explain your answer as fully as you can.**

Solution: *The HOT AMMONIUM NITRATE has the tunnel code ‘E’ to it. (1 mark)*
This means the driver is allowed to take the tank-vehicle laden with the UN 2426 through the tunnel with the tunnel code ‘C’. (1 mark)

(3)

Reference(s):	<i>2023 ADR: The Dangerous Goods List columns (1).(2) Table A, Chapter 3.2 and 8.6.4, Chapter 8.6. (1 mark)</i>
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- (f) (i) **In addition to the transport document, name two other documents which must be carried on this tank-vehicle.**

Solution: *Any two from the following:*

Instructions in Writing;

Means of identification with a photograph for each member of the crew;

Certificate of approval for the transport unit;

Driver training certificate;(2 marks)

Note: competent authority approvals required under 5.4.1.2.1 (c) or (d) or 5.4.1.2.3.3 as referenced in 8.1.2.2 are not applicable in this case study and therefore no mark is awarded for stating this as a necessary document.

- (ii) **The driver of the tank-vehicle is Hungarian and speaks very little German (the language normally spoken in Austria) and cannot be relied upon to be able to use Instructions in Writing issued in German. What should the carrier do in such circumstances?**

Solution: *The carrier should re-issue the Instructions in Writing in a language the driver can understand such as Hungarian, (2 marks)*

(5)

Reference(s):	<i>2023 ADR: 8.1.2.1, 8.1.2.2, Chapter 8.1 and 5.4.3.2, Chapter 5.4. (1 mark)</i>
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- (g) **Can the samples of hot ammonium nitrate liquid be sent forward in advance of the tanker deliveries as Limited Quantities packages? Explain your answer as fully as you can.**

Solution: *No. (1 mark) because ‘0’ appears in column (7a) of the Dangerous Goods List, Table A, meaning that there is no Limited Quantities allowance for it. (1 mark)*

(3)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, column (7a), Chapter 3.2. 3.4.1. Chapter 3.4 (1 mark)</i>
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- (h) (i) **Is transport of UN 2067 Ammonium Nitrate Based Fertilizer in bulk allowed? Explain your answer as fully as you can.**

Solution: *Yes. (1 mark) because the codes BK1, BK2 and BK3 are in column (10) and VC1 and VC2 are in column (17) of the Dangerous Goods List, Table A, for this substance indicating that carriage in bulk is permitted. (2 marks)*

- (ii) **Explain the meaning of social provision for carriage in bulk AP7 applicable to dangerous goods of UN 2067.**

Solution: *AP 7 means that Carriage in bulk shall only be as a full load. (1 mark)*

(6)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, columns (10) and (17), Chapter 3.2. and / or 7.3.1.1 (1 mark), additional provisions AP6 and AP7 in 7.3.3.2.4 (1 mark)</i>
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Case Study 3

Lynch Haulage Ltd. is an international trailer operator based in County Meath. A driver returning to Ireland is asked to collect a mixed consignment of packaged dangerous goods. The dangerous goods are to be collected in Milan, Italy, and Zurich, Switzerland, to consignees in Mullingar and Dundalk. For the purposes of this case study, ignore any implications of a journey by sea.

(a) The consignment from Zurich consists of 100 x 50 kg gross palletised fibreboard drums of solid UN 1620.

(i) Identify this substance.

Solution: Lead cyanide (1 mark)

(ii) The drums are UN certified and have the detail '1G' in the code. Is this packaging authorised for filling with this substance? Explain your answer as fully as you can.

Solution: Yes. The '1G' in the UN Packaging Code indicates a fibreboard drum. Packing Instruction P002 applies to this substance. The use of fibreboard drums, with '1G' this UN Packaging Code, is authorised in P002. (2 marks)

(iii) What danger marks and labels should be shown on the drums? Be as specific as you can in your answer.

Solution: The drums should be marked with the UN number, i.e. UN 1620. (1 mark)

They should be labelled with a No. 6.1 toxic label. (1 mark)

(7)

Reference(s):	2023 ADR: The Dangerous Goods List, Table A, columns (1), (2), (5) and (8), Chapter 3.2, Chapter 4.1, packing instruction P002 in subparagraph 4.1.4.1, (1 mark) 5.2.1.1 and 5.2.2.1.1, Chapter 5.2. (1 mark)
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(b) The consignment from Milan consists of 20 palletised 10 litre drums of UN 1994. Each drum has a maximum gross mass of 15 kg.

(i) Identify this substance.

Solution: Iron pentacarbonyl (1 mark)

(ii) What danger marks and labels should appear on the drums? State your answer as fully as you can.

Solution: They should be marked with the UN number, i.e. UN 1994. (1 mark)

They should be labelled with a No. 6.1 toxic and a No. 3 flammable liquid label. (1 mark)

(4)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, columns (1) and (5), Chapter 3.2. 5.2.1.1 and 5.2.2.1., Chapter 5.4. (1 mark)</i>
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- (c) (i) **Show the dangerous goods information that should be shown in the transport document for the UN 1994 drums.**

Solution: *UN 1994 Iron Pentacarbonyl, 6.1(3), I, (C/D). (2 marks: 1 mark to ‘Pentacarbonyl’ and 1 mark for the remainder)*

- (ii) **In what language(s) should the transport document be prepared? Be as specific as you can in your answer and draw a conclusion.**

Solution: *In the language of country of origin and (if that is not English, French or German) also in English, French or German. Therefore, in Italian and English or French or German. (2 marks)*

(5)

Reference(s):	2023 ADR: <i>The Dangerous Goods List, Table A, columns (1), (2), (3a), (4) and (5), Chapter 3.2. 5.4.1.1.1 and 5.4.1.4.1. Chapter 5.4. (1 mark)</i>
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- ((d) (i) **During the journey, back from Milan to Ireland having collected both consignments, the driver is unable to find a depot, factory or supervised parking to leave the vehicle overnight. What further choices are open to the driver? Justify your answer fully with reference to the quantities of both of the substances forming the load and any relevant thresholds. The driver has already made both collections when this problem arises.**

Solution: *The UN 1994 drums weigh a total of 300 kg. Special operating provision S14 applies to the carriage of the UN 1994 substance. Special Operating Provision S14 stipulates that the provisions of Chapter 8.4, concerning the supervision of vehicles, applies to a vehicle carrying any amount of this substance. (1 mark)*

The UN 1620 drums weigh a total of 5000 kg. Special operating provision S19 applies when more than 5,000 kg of UN 1620 substance is carried in the load; and hence the provisions of Chapter 8.4 do not apply to the carriage of this substance. However, because of the presence of UN 1994 substance in the load, the provisions of Chapter 8.4 applies to the overnight parking of the vehicle. (1 mark)

The only options left to the driver are to find, in order of preference are:

- (a) *A public or private vehicle park, where the vehicle is not likely to suffer damage from other vehicles; (1 mark)*

or

- (b) *A suitable open space separated from the public highway and from dwellings, where the public does not normally pass or assemble. (1 mark)*

- (ii). Are there any circumstances when the Competent Authority has to be involved in any of the decisions taken by the driver concerning places where to stop? Explain your answer as fully as you can.

Solution: As special operating provision S9 applies (it in fact applies to both substances), the permission of the Competent Authority is needed if the stopping place is near any inhabited or frequented places. (1 mark)

(6)

Reference(s):	2023 ADR: The Dangerous Goods List, Table A, column (19), Chapter 3.2. 8.4.1, Chapter 8.4 and 8,5,1; Chapter 8.5 for the meaning of S9, S14 and S19 in Chapter 85. (1 mark)
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- (e) The driver employed by Lynch Haulage Ltd. is Romanian. He does not understand the instructions in writing provided by the employer in English. What action should the employer take?

Solution: The instructions in writing must be provided by the carrier to the driver in a language that he or she can read and understand, i.e. in Romanian in this case. (1 mark)

(2)

Reference(s):	ADR: 5.4.3.2 (1 mark)
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- (f) (i) What marking plates should appear on the vehicle and where should they be placed?

Solution: Two reflectorized orange-coloured plates, one at the front and one at the rear of the vehicle. (1 mark)

- (ii) What are the minimum dimensions of the plates, noting that it is a large vehicle?

Solution: 40 cm base x 30 cm high, with a 15 mm black border. (1 mark)

(3)

Reference(s):	ADR: 5.3.2.1.1 and 5.3.2.2.1 (or 5.3.2.2.3) (1 mark)
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- (g) (i) State the three items of miscellaneous equipment that must be carried on the vehicle for all danger label numbers noting the label numbers of the two substances forming the load).

Solution: At least one-wheel chock

Two self-standing warning signs

Eye rinsing liquid (1 mark)

- (ii) **State any two items of equipment for the personal protection of the vehicle crew that must be carried on board the vehicle.**

Solution: Any two from:

A warning vest

Portable lighting apparatus

A pair of protective gloves

Eye protection. (1 mark)

- (iii) **Why is it necessary for each member of the vehicle crew to be equipped with an emergency escape mask?**

Solution: *Because both substances require the No. 6.1 toxic label (1 mark)*

- (iv) **For which of the two substances is it necessary for a collecting container and why?**

Solution: *UN 1994, as it requires a No. 3 flammable liquid label. (1 mark)*

(5)

Reference(s):	<i>ADR: 5.4.3.4, 8.1.5.2 and 8.1.5.3. (1 mark)</i>
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- (h) **After unloading the UN 1620, some of the substance is noticed on the floor of the trailer. The driver still has to make a second delivery of UN 1994 to Dundalk. What should be done next?**

Solution: *Loading, Unloading and Handling Special Provision CV13 applies to both substances. CV13 stipulates that, if any substance to which CV13 has been assigned has leaked and been spilled in the vehicle, the vehicle may not be reused until it has been thoroughly cleaned and, if necessary, disinfected or decontaminated; and the other goods carried in the vehicle examined for possible contamination. (2 marks)*

(3)

Reference(s):	<i>2023 ADR: 3.2, Table A, column (18); 7.5.11 for loading, unloading and handling special provision CV13. (1 mark)</i> <i>[Note: Answers based on subparagraph 7.5.8.1 are not acceptable.]</i>
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[END OF QUESTION PAPER].