# Chapter 17: Dangerous Goods

**TRUE/FALSE**

1. Dangerous goods are also called “hazmat” in the United States.

ANS: T DIF: Easy REF: page 608

2. There were only national regulations in the transport of dangerous goods until the 1950s.

ANS: T DIF: Easy REF: page 608

3. All international regulations in the transport of dangerous goods is based on the work of the *United Nations’ International Committee on the Classification of Chemicals*.

ANS: F DIF: Moderate REF: page 609

4. There are nine hazard classes in which dangerous cargo can be classified.

ANS: T DIF: Easy REF: page 612

5. The information used to classify a chemical is found in the *Periodic Table of Elements*.

ANS: F DIF: Moderate REF: page 610

6. Dangerous goods must be identified by a label and by a description of the type of hazard they present.

ANS: F DIF: Moderate REF: pager 610

7. The hazard class for flamable liquids is Class 3.

ANS: T DIF: Moderate REF: page 610

8. There are two different levels of hazard among goods that are classified as explosives.

ANS: F DIF: Moderate REF: page 614

9. Fireworks exported from China are transported to the remainder of the world mostly by ocean.

ANS: T DIF: Easy REF: page 616

10. Compressed gases (class 2) are identified by label of different colors, depending on the danger they represent.

ANS: T DIF: Moderate REF: page 617

11. Flammable liquids present the advantage that their common name are essentially the same in all languages.

ANS: F DIF: Moderate REF: page 619

12. Some flammable solids will ignite when in contact with air.

ANS: T DIF: Easy REF: page 619

13. Organic peroxides are flammable chemicals that contain both the fuel for the combustion and the oxygen to support the combustion.

ANS: T DIF: Moderate REF: page 621

14. The ValuJet tragedy happened despite the dangerous goods being transported being clearly identified and labeled.

ANS: F DIF: Moderate REF: page 622

15. The degree of hazard of a dangerous good is linked to its packaging requirements.

ANS: T DIF: Moderate REF: page 626

16. The boiling point of a substance is the temperature at which it changes from a liquid to a solid.

ANS: F DIF: Easy REF: page 626

17. Toxicity of dangerous goods is frequently tested on albino rats.

ANS: T DIF: Easy REF: page 627

18. The UN number of a dangerous substance is a six-digit code, recognized internationally.

ANS: F DIF: Moderate REF: page 629

19. Some dangerous goods can be loaded on cargo aircraft, but not on passenger aircraft.

ANS: T DIF: Easy REF: page 625

20. The determination of the type of packaging to use is based on the total quantity in the shipment, not the size of each individual container.

ANS: F DIF: Difficult REF: page 632

21. Drums of a dangerous goods can be placed on a pallet, as long as the pallet is labeled in the same manner as the individual drums, and an “overpack” label is added.

ANS: T DIF: Moderate REF: page 634

22. An “excepted quantity” shipment is a very large shipment of a dangerous good, similar to project cargo.

ANS: F DIF: Moderate REF: page 635

23. Packaging that can be used for dangerous goods is clearly labeled to ensure that it corresponds to the danger presented by the goods transported.

ANS: T DIF: Easy REF: page 636

24. Dangerous-goods labels are larger than dangerous-goods placards.

ANS: F DIF: Moderate REF: page 636

25. Shipping papers for dangerous goods sold on a letter-of-credit basis are sent by the exporter to the advising bank with the remainder of the paperwork related to that shipment.

ANS: F DIF: Moderate REF: page 640

**MULTIPLE CHOICE**

1. The first step in the process of shipping dangerous goods is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Classification. | d. | Conducting a chemical analysis. |
| b. | Identification. | e. | Determining its boiling point. |
| c. | Determining its UN number. |

ANS: A

The first step in shipping dangerous goods is classifying them into their hazard class.

DIF: Easy REF: page 610

2. Which of the following information would a logistician find on a dangerous product’s *Safety Data Sheet* :

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Its boiling point | d. | Its dermal toxicity |
| b. | Its flash point | e. | All answers in this set of responses are pieces of information that would be found on an SDS. |
| c. | Its oral toxicity |

ANS: E

The *Safety Data Sheet* contains all of the information which a logistician must have in his/her possession before determining the correct classification of a dangerous good.

DIF: Moderate REF: page 611

3. The label that identifies a flammable liquid must be red, include a flammable pictogram, the number 3, and:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | include the word “inflammable”. | d. | include the word “flammable.” |
| b. | include the common word that describes the flammable product, *e.g.* “gasoline.” | e. | include the words “flammable liquid.” |
| c. | it does not need to include anything else. |

ANS: C

The label that identifies a flammable liquid must be red, include a flammable pictogram, the number 3, and it does not need anything else. The common name of the product can be used, as well as the word “flammable,” but it cannot include the word “inflammable.”

DIF: Moderate REF: page 612

4. The only hazard class that requires a word mentioned on the hazard label is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | explosives (class 1), which must include the word “explosives” with an exclamation mark. | d. | radioactive products (class 7), which must include the word “radioactive.” |
| b. | toxic substances (class 6), which must include the word “poison.” | e. | other dangerous goods (class 9), which must include the nature of the danger, *e.g.* “magnetic.” |
| c. | corrosive materials (class 8), which must include the word “corrosive” or “corrosivo.” |

ANS: D

Class 7 products are the only ones for which the word “radioactive” is mandatory on the labels.

DIF: Moderate REF: page 612

5. Compressed gasses are classified as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Hazard Class 1 | d. | Hazard Class 5 |
| b. | Hazard Class 6 | e. | Hazard Class 4 |
| c. | Hazard Class 2 |

ANS: C

Compressed gases are classified as Hazard Class 2.

DIF: Easy REF: page 612

6. Compressed gasses can be inert, such as nitrogen or carbon dioxide, or flammable, like propane or acetylene. How do the labels vary in order to identify the danger associated with the compressed gas?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | The larger the size of the label, the greater the danger. | d. | Compressed gasses that are flammable have a red label, and compressed gasses that are inert have a green label. |
| b. | Compressed gasses that are flammable are marked 2.1, and the inert gasses are marked 2.2. | e. | There is no differentiation made between these gasses, since the danger is that they are compressed. |
| c. | Compressed gasses must include the name of the gas contained in the cylinder. |

ANS: D

The nature of the danger of compressed gasses is identified by labels of different color: green for inert, red for flammable, yellow for oxidizer, and white (with skull and bones) for toxic.

DIF: Moderate REF: page 617

7. To which hazard class does the dangerous good that is the most frequently transported belong?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Class 8, corrosives. | d. | Class 4, flammable solids. |
| b. | Class 6, toxic goods. | e. | Class 1, explosives. |
| c. | Class 3, flammable liquids. |

ANS: C

Flammable liquids (class 3), such as gasoline, diesel fuel, and petroleum derivatives are the most frequently transported dangerous goods.

DIF: Easy REF: page 618

8. In international logistics, what is one of drawbacks of identifying the product transported by its common name?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | The same product can have different names in different countries, even if they share a language. | d. | All of the answers in this answer set are reasons to avoid identifying a dangerous good by its common name. |
| b. | Different products can have the same name in different languages. |  |  |
| c. | Some products have names that can be confusing. |

ANS: D

Because different product can have similar-sounding names (benzene in English is very close to Benzin in German, where it means “gasoline”) and the same product can have different names (“gasoline” in US English is “petrol” in UK English, “kerosene” in US English is “paraffin” in UK English, whereas “paraffin” in US English is something else altogether), it can be confusing to use the common name of a product.

DIF: Moderate REF: page 619

9. What is the term used to describe a flammable solid that ignites when placed in contact with air?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | instantanously flammable | d. | cryptophoric |
| b. | inflammable | e. | pyrophoric |
| c. | pyrogeneric. |

ANS: E

Pyrophoric materials burst into flame when in contact with air.

DIF: Moderate REF: page 620

10. Oxidizers (Class 6 materials) are identified by a label that is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | orange | d. | purple |
| b. | yellow | e. | green |
| c. | blue |

ANS: B

Class 6 products (oxidizers and peroxides) are identified with a label that is yellow (oxidizers) or yellow and red (peroxides).

DIF: Moderate REF: page 621

11. Some dangerous products cannot be transported on passenger aircrafts, but can nevertheless be transported on airfreighters. How are these products identified?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | with a red label stating “not for passenger aircraft.” | d. | with an orange label stating “cargo aircraft only.” |
| b. | with an orange label stating “dangerous to life.” | e. | Any of the labels on this answer set would indicate that the goods cannot be loaded on a passenger aircraft. |
| c. | with a red label stating “not to be loaded on passenger aircraft.” |

ANS: D

Cargo that cannot be loaded on a passenger aircraft has to be identified by an orange label with the words “cargo aircraft only” and a pictogram showing a ramp agent gesturing “stop” with his hand.

DIF: Moderate REF: page 625

12. Toxic substances are identified with a white label. Which toxic substances are transported in small quantities?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 6.1 toxic materials, such as nicotine and chlorine derivatives. | d. | 6.2 infectious substances, such as bacteria and viruses. |
| b. | 6.3 toxic materials, such as cyanide and derivatives. | e. | 6.5 lethal materials, such as poisons and venoms. |
| c. | 6.4 intoxicating materials, such as alcohol and cannabis. |

ANS: D

There are only two types of toxic substances: 6.1 toxic materials, and 6.2 infectious substances. Infectious substances are transported in very small quantities.

DIF: Moderate REF: page 624

13. In addition to being labeled in function of the risk(s) they pose to humans, dangerous goods must also be labeled when they are:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | dangerous to other goods transported. | d. | dangerous to themselves (self-destructive). |
| b. | dangerous to the containers in which they are transported. | e. | there is no other risk that must be identified. |
| c. | dangerous to the environment. |

ANS: C

Goods that are dangerous to the environment must be identified with the so-called “dead tree-dead fish” white label.

DIF: Easy REF: page 625

14. How is the degree of hazard of a dangerous goods identified?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | They are labeled with more than one label or placard. | d. | They are marked with labels that are surrounded by red for the most dangerous goods, orange, and yellow for least dangerous goods. |
| b. | The labels for most dangerous goods are larger than the labels for less dangerous goods. | e. | There is no system to identify the degree of hazard for dangerous goods, just one to identify the type of hazard they present. |
| c. | They are placed in packing groups, from PG I (most dangerous) to PG III (lowest level of danger). |

ANS: C

The degree of hazard presented by a dangerous good is identified by its packing group, from PG I for the most dangerous goods to PG III for the least dangerous goods.

DIF: Moderate REF: page 625

15. What are the criteria used in the classification of flammable liquids between packing groups?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | boiling point and flammable point | d. | boiling point and flash point |
| b. | flash point and flammable point | e. | evaporating point and flash point |
| c. | boiling point and evaporation point |

ANS: D

Both the boiling point and flash points are used to determine the classification of a flammable liquid between PG I, PG II, and PG III.

DIF: Moderate REF: page 626

16. The *Safety Data Sheet* of a product you are planning to ship has an LC50 of 200 mg per liter. What does this mean?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the product presents a dermal contact risk | d. | the product presents a corrosive risk |
| b. | the product presents an inhalation risk | e. | the product presents a conflagration risk |
| c. | the product presents an ingestion risk |

ANS: B

LC50 refers to the air concentration of a product that kills 50 percent of a population of albino rats. It is therefore a product that presents an inhalation risk.

DIF: Easy REF: page 627

17. When a product presents more than one risk, which should be listed?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the risk with the most lethal consequence. | d. | the risk with the highest degree of hazard. |
| b. | the risk with the greatest relevant risk to first responders. | e. | all risks should be listed, and the highest degree of hazard determines the packing group. |
| c. | it’s up to the shipper to determine. |

ANS: E

All risks should be listed, in an order prescribed by the *Model Regulations*.The packing group is the one dictated by the hazard class that has the highest degree of hazard.

DIF: Moderate REF: page 628

18. In addition to the classification of the product, the shipping papers of a dangerous good must also include:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | its chemical name | d. | its *Safety Data Sheet*. |
| b. | its concentration | e. | its common name. |
| c. | its Proper Shipping Name |

ANS: C

The shipping papers of a dangerous good must include its Proper Shipping Name, which may be its chemical name, it common name, or some other description.

DIF: Moderate REF: page 639

19. In addition to the classification of the product, the shipping papers of a dangerous good must also include:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | its United Nations number | d. | its molecular weight |
| b. | its Periodic Table of Elements’ number | e. | its chemical composition |
| c. | its molecular number |

ANS: A

Shipping papers must include the UN number of dangerous good.

DIF: Moderate REF: page 639

20. Packaging suitable for a dangerous liquid that includes glass bottles, intermediate packaging of molded paperboard and an outer package of cardboard is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | amalgam package | d. | fusing package |
| b. | compound package | e. | mixed package |
| c. | combination package |

ANS: C

Combination packaging can be made up of glass bottles with intermediate packaging of paperboard placed in a cardboard box.

DIF: Moderate REF: page 635

21. A shipment of dangerous goods that is called “excepted quantities” is one that involves:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a very large quantity of the goods, shipped in bulk (vessel size) | d. | any non-traditional quantity of the goods |
| b. | an unusual quantity of the goods. For example goods that are shipped in plastic gallon jugs when they are normally shipped in one-liter glass bottles. | e. | a quantity of the goods that the carrier is not accustomed to handling |
| c. | a very small quantity of the goods |

ANS: C

Excepted quantities are very small quantities of dangerous goods that can be shipped with fewer regulatory requirements.

DIF: Moderate REF: page 635

22. Packaging suitable for dangerous goods is identified with a packaging code that is dictated by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the International Air Transport Association | d. | the International Maritime Organization |
| b. | the U.S. Department of Transportation | e. | the United Nations |
| c. | the International Trade Commission |

ANS: E

Packaging for dangerous goods must comply with requirements established by the United Nations.

DIF: Moderate REF: page 636

23. The International Maritime Organization requires that markings and placards:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | survive three months of complete immersion and be legible | d. | be larger than those used for road or air transportation by 25 percent |
| b. | be made of materials that are fireproof | e. | be written in English, Chinese, and Arabic |
| c. | be printed with fluorescent ink |

ANS: A

The IMO requires that placards and markings be able to withstand three months of complete immersion and be legible.

DIF: Moderate REF: page 638

24. Training requirements for shipments of dangerous goods:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | are the same for the US Department of Transportation, the International Maritime Organization, and the International Air Transport Association | d. | are regulated by the importing country and vary from country to country |
| b. | are different between the US Department of Transportation, the International Maritime Organization, and the International Air Transport Association, and they have different renewal requirements | e. | are regulated by the exporting country, and vary from country to country |
| c. | are universal and required by the United Nations |

ANS: B

USDOT, IATA, and IMO have different requirements.

DIF: Moderate REF: page 640

COMPLETION

1. Dangerous goods are classified into nine hazard \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ANS: classes

DIF: Easy REF: page 612

2. The temperature at which a liquid turns into a gas is its \_\_\_\_\_\_\_\_\_ point.

ANS: boiling

DIF: Easy REF: page 610

3. The \_\_\_\_\_\_\_\_\_ point is the temperature at which vapors from a liquid ignite.

ANS: flash

DIF: Moderate REF: page 610

4. All of the information about a dangerous goods (its physical characteristics, as well as its chemical characteristics and toxicity) is found in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ANS: Safety Data Sheet, Material Safety Data Sheet, SDS, MSDS

DIF: Difficult REF: page 611

5. Dangerous goods classified as Class 3 products are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ liquids.

ANS: flammable

DIF: Moderate REF: page 612

6. A shipment of fireworks would be classified as Class \_\_\_\_\_\_\_, identified with an orange label.

ANS: 1, one

DIF: Moderate REF: page 614

7. A shipment of nitrogen (an inert gas) that is transported as a compressed gas would be identified as a Class-2 product, with a label that would be \_\_\_\_\_\_\_\_\_ in color.

ANS: green

DIF: Moderate REF: page 617

8. Pyrophoric materials are identified with a red and white label. They are flammable solids that ignite when in contact with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ANS: air, atmosphere, oxygen

DIF: Hard REF: page 619

9. Organic peroxides are labeled with a yellow and red placard because their chemical composition includes both fuel and \_\_\_\_\_\_\_\_, which makes them burn very rapidly.

ANS: oxygen

DIF: Hard REF: page 621

10. ValueJet flight 592 crashed because dangerous goods onboard the aircraft were not \_\_\_\_\_\_\_\_ properly.

ANS: labeled, identified, marked

DIF: Moderate REF: page 622

11. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of hazard of a dangerous good determines whether it is in packing group PG I, PG II, or PG III.

ANS: degree

DIF: Moderate REF: page 625

12. The ingestion LD50 of a dangerous good is the quantity of the product that will kill 50 percent of a population of \_\_\_\_\_\_\_\_\_\_\_\_\_ within 14 days.

ANS: rats, albino rats

DIF: Moderate REF: page 627

13. A dangerous good cannot be shipped using its common name. It must be identified with its \_\_\_\_\_\_\_ shipping name.

ANS: proper

DIF: Moderate REF: page 629

14. A dangerous good is identified with a \_\_\_\_\_-digit UN number.

ANS: four, 4

DIF: Easy REF: page 629

15. The ADR and HazChem system display information on trucks to communicate the hazards of a shipment to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ANS: first responders

DIF: Moderate REF: page 631

16. A container of dangerous goods that weighs more than 400 kilograms constitutes a \_\_\_\_\_\_\_\_\_\_

shipment.

ANS: bulk

DIF: Moderate REF: page 632

17. Cardboard boxes that are approved for the transportation of dangerous goods are identified with a UN \_\_\_\_\_\_\_\_ that displays its compliance with packaging standards.

ANS: code

DIF: Moderate REF: page 636

18. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is placed on the outside of a truck to notify first responders of the hazard class presented by the dangerous goods transported.

ANS: placard

DIF: Moderate REF: page 638

19. Each package of a dangerous good must include a \_\_\_\_\_\_\_\_\_\_ with the hazard class presnted by the dangerous goods transported.

ANS: label

DIF: Moderate REF: page 638

20. The shipping papers of a dangerous good must include a \_\_\_\_\_\_\_\_\_\_ where someone can answer questions about the specifics of the shipment.

ANS: phone number

DIF: Moderate REF: page 640