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Packaging and Shipping Infectious Materials

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Course Instructions

Please proceed through the course by clicking on the blue arrows or text links. Use the table of contents to monitor your progress. Your progress will be saved automatically as you proceed through the course, and you may later continue where you left off even if you use a different computer. You may encounter practice questions within the course, which are not graded or recorded.

Course Info

This course carries the following continuing education credits:

- P.A.C.E. Contact Hours: 2.00 hour(s)
Course Number: 578-011-13
- Florida Board of Clinical Laboratory Science CE - Supervision/Administration, Quality Control/Quality Assurance, and Safety:
2.00 hour(s)
Course Number: 547871

Course level: Basic

Intended Audience: This course is designed for health care personnel who package, ship, and transport Division 6.2 hazardous materials such as patient specimens and cultures.

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Packaging and Shipping Infectious Substances

Safety is the main focus of all organizations who are responsible for packaging and shipping infectious substances. Protecting all persons involved in the process and protecting the environment are primary concerns that have prompted these specific requirements for training, packaging, and shipping materials that may be mildly to highly infectious. Protecting the integrity of the specimen is also a concern to the shipper so that accurate test results are obtained.

This course will discuss the classifications of infectious (Division 6.2) materials and how to properly pack and label these materials.

A certificate will be provided upon successful completion of the exam that must be maintained as evidence of training, if you are shipping Category A infectious substances.

Category A substances

If your laboratory routinely packages and ships **Category A** substances, you may choose to have at least one person with this responsibility attend a live, hands-on training course as further assurance of comprehensive training. However, this course provides all the required information that is needed to correctly package, label, and ship infectious materials.

Organizations Responsible for Regulating Transport of Hazardous Materials

In the United States

- The **US Department of Transportation (DOT)** establishes regulations and training requirements for transport of hazardous materials by land, water, or air within, from, or through the United States. These requirements are referred to as the Hazardous Materials Regulation and can be found in the Code of Federal Regulations (CFR), 49 CFR Parts 100-185.
- The **US Postal Service (USPS)** regulates transport of materials that are mailed to, from, or within the US. The USPS regulations are found in 39 CFR.
- The US **Occupational Safety and Health Administration (OSHA)** through the Bloodborne Pathogens Standard, regulates the packaging and labeling of specimens that may contain biohazardous materials.

Internationally

- The **International Civil Aviation Organization (ICAO)** is an agency of the United Nations that recommends practices for civil air transport internationally and publishes detailed instructions for safe international transport of dangerous goods by air.
- The **International Air Transport Association (IATA)** is an airline membership organization. IATA regulations must be followed, if the hazardous material will be shipped internationally on a [member airline](#). IATA regulations are at least as stringent as ICAO regulations, and are therefore often used by shippers who package and transport dangerous goods, regardless of the air carrier. Note that IATA rules must be followed when shipping via FedEx.

It is the responsibility of all workers who are involved in the packaging and shipping of hazardous materials to be aware of regulatory changes that may occur. These resources are available to offer assistance with understanding current regulations:

Hotlines:

- DOT 1-800-467-4922
- IATA 514-390-6770
- FedEx Dangerous Goods Hotline 1-800-463-3339, say "Dangerous Goods" or press "81"

Email

- DOT: dotcomments@dot.gov
- IATA: dangood@iata.org

Who Must Receive Training?

According to federal and international regulations, all personnel who are involved in the packaging and shipping of hazardous materials (eg, infectious materials and dry ice) are required to have training. Only persons who have been properly trained can legally participate in any aspect of the transport of hazardous materials. This includes anyone who:

- Packages, labels, and/or marks the package
- Is responsible for classifying the materials
- Is responsible for documenting the package contents on a shipper's declaration for dangerous goods form, air waybill, etc.
- Signs a shipper's declaration
- Transports hazardous materials by vehicle, plane, or vessel

If you perform any of these duties, you are classified as a HazMat employee and must receive training.

Category B infectious substance training

The training that is required for individuals who package and ship only category B infectious substances is not as comprehensive as the training required for individuals who may package and ship category A infectious substances.

If you are only responsible for packaging and shipping category B materials, your training requirement is limited to packaging category B infectious substances or exempt specimens, appropriate to the organization that oversees the mode of transport used to deliver those packages, ie, DOT, ICAO/IATA, and/or USPS.

Training Requirements for Packaging and Shipping Category A Substances and Dry Ice

In the United States, required training must be completed within 90 days of employment by all personnel who are involved in packaging and shipping category A infectious substances and/or dry ice (when shipped by air in quantities greater than 5.5 pounds). Relevant documented training from a previous employer is also acceptable.

Training requirements, which are stated in the Code of Federal Regulations at 49 CFR 172.704, include:

- General awareness/familiarization training
- Function-specific training
- Safety training
- Security awareness training (Category A substances)

Safety training

Safety training must be provided by the facility where the infectious materials are packaged and must include:

- Emergency response information
- Measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed in the work place, including specific measures the hazmat employer has implemented to protect employees from exposure
- Methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials

OSHA bloodborne pathogens training is generally sufficient to meet the safety requirement for packaging and shipping infectious materials.

Training Records and Frequency of Repeat Training

Training records must include:

- HazMat employee's name
- Completion date of most recent training
- Description, copy, or location of training materials
- Name and address of trainer
- Certification that the HazMat employee has been trained and tested

These records must be maintained throughout employment and 90 days thereafter, according to the U.S. Department of Transportation (DOT).

You will be able to print a certificate when you have completed this course that will certify your completion of training for packaging and shipping Division 6.2 (infectious) materials.

IATA requires repeat training every two years. DOT requires training every three years. Laboratory accrediting agencies also require documentation of training that reflects the DOT and ICAO/IATA requirements. The extent of training and the frequency of repeat training required by laboratory accrediting agencies are dependent on:

- The specimen types that are packaged and shipped by the laboratory (eg, Category A, Category B)
- Whether the packages are sent to or through the US (DOT regulated) or by air internationally (ICAO/IATA regulated)

Classifications of Hazardous Materials

Hazardous materials are classified according to the risks that they pose. These nine hazardous materials classifications are consistent across all agencies who regulate commercial shipping.

- Class 1: Explosives
- Class 2: Gases
- Class 3: Flammable liquids
- Class 4: Flammable solids
- Class 5: Oxidizers/organic peroxides
- Class 6: Toxic and infectious substances
- Class 7: Radioactive material
- Class 8: Corrosives
- Class 9: Miscellaneous hazardous materials



Within class 6 are two divisions:

- Division 6.1- poisonous material
- Division 6.2- infectious substance

A division 6.2 infectious substance is defined as a material known or reasonably expected to contain a pathogen. A pathogen is a microorganism or other agent (e.g., a prion) that can cause disease in humans or animals. The classification system for Division 6.2 Infectious Substances includes two categories, known simply as Category A and Category B. These will be defined and discussed in more detail later in the course.

The regulations that govern packaging and shipping a class 9, miscellaneous hazardous material, may also need to be reviewed by those who package and ship laboratory specimens. Dry ice is a class 9 hazardous material and, if used, requires special packaging and specific labels and markings on the outer package.

Definitions

Before further discussion of Category A and Category B, it is important to define two additional terms that are used in the classification process.

Culture

An infectious substance containing a pathogen that is intentionally propagated, eg, bacteria grown on bacteriological medium. An example of a culture is shown in the image below.



Patient specimen

Patient specimens are human/animal materials collected directly from humans/animals and transported for research, diagnosis, investigational activities, or disease treatment/prevention. Patient specimens include excreta, secretions, blood and its components, tissue and tissue swabs, body parts, and specimens in transport media (e.g., transwabs, culture media, and blood culture bottles).*



*It is important to note that this means specimens that have been collected into these transport media, but have not yet been incubated and micro-organisms are not actively growing in or on the media. If there is growth in the transport media, it is classified as a culture.

Category A Definition and Examples

A **category A infectious substance** is in a form that is capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs. Exposure would occur if the substance were released from its protective packaging and a human or animal came into contact with it.

Some examples of category A infectious substances are listed below. A more comprehensive list is included as a PDF attachment on this page.

- *Bacillus anthracis* (cultures only)
- *Brucella abortus* (cultures only)
- *Brucella melitensis* (cultures only)
- *Burkholderia mallei* (cultures only)
- *Clostridium botulinum* (cultures only)
- Creutzfeldt-Jakob disease (CJD) brain tissue specimens
- Dengue virus (cultures only)
- *Escherichia coli*, verotoxigenic (cultures only)
- Ebola virus
- *Francisella tularensis* (cultures only)
- Hantaviruses causing hemorrhagic fever with renal syndrome
- Herpes B virus (cultures only)
- Human immunodeficiency virus (cultures only)
- Lassa virus
- *Mycobacterium tuberculosis* (cultures only)
- Poliovirus (cultures only)
- Rabies and other lyssaviruses (culture only)
- *Shigella dysenteriae* type I (cultures only)
- West Nile virus (cultures only)
- *Yersinia pestis* (cultures only)

New and emerging pathogens should also be classified as category A until or unless additional information is received to move them to category B. For example, in 2009, shipments of Influenza A 2009 H1N1 subtype specimens were initially placed into category A until sufficient information allowed them to be moved to category B.

This is not an exhaustive list. Sometimes deciding on the classification of an infectious substance requires professional judgement and involves knowing the medical history or symptoms of the source patient or animal and/or knowing the local epidemiological conditions at the time the patient specimen or culture was obtained.

If there is doubt as to whether or not a substance meets the criteria of category A, it must be treated as a category A substance for shipping.



[Category A infectious substances indicative list](#) Adobe Acrobat PDF file

Category A UN Identification Numbers and Proper Shipping Names

The UN identification numbers and the proper shipping names for category A infectious substances are:

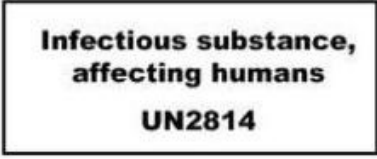
UN2814 Infectious substance, affecting humans

UN2900 Infectious substance, affecting animals

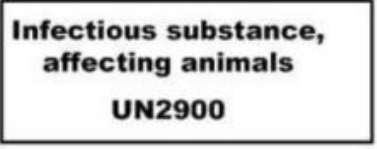
UN2814 Infectious substance, affecting humans is used if the substance qualifies as a category A infectious substance and the pathogens could affect humans or humans and animals both.

UN2900 is used if the substance qualifies as a category A infectious substance and the pathogens could affect only animals.

Note that the proper shipping names must be written exactly as shown; abbreviations are not acceptable.



**Infectious substance,
affecting humans**
UN2814



**Infectious substance,
affecting animals**
UN2900

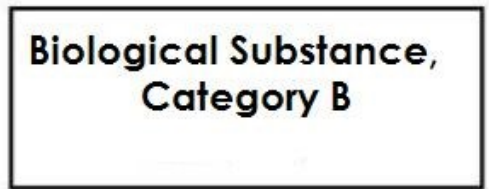
Category B Definition, Shipping Name, and Identification Number

A category B infectious substance is **not** in a form generally capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs.

The proper shipping name and UN Identification number are:

Biological substance, Category B, UN 3373

The proper shipping name must be written exactly as shown; abbreviations are not acceptable.

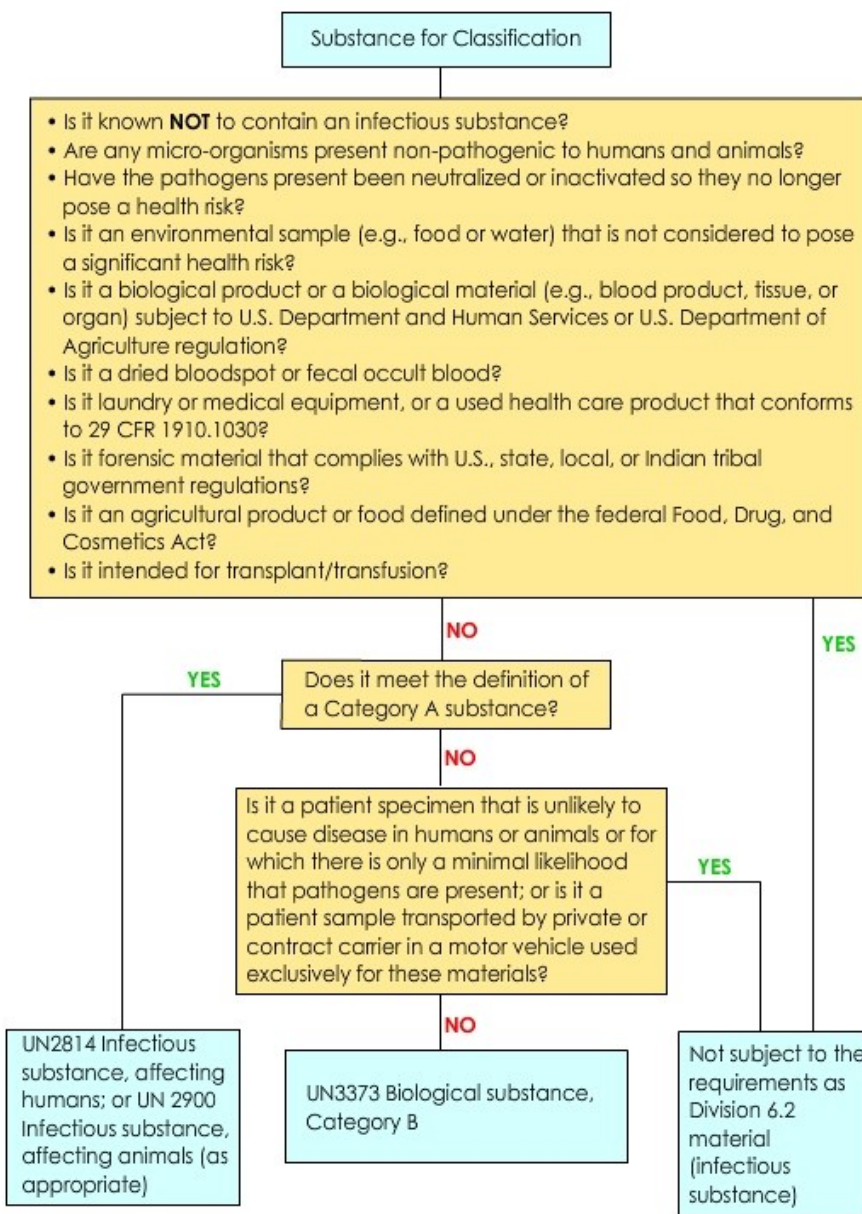


Department of Transportation (DOT) Classification Decision Tree

If you will be sending a potentially infectious substance by land, water, or air within, from, or through the United States, use this decision tree (flow chart) provided by the DOT to determine the proper classification for the substance. The decision tree shown below can also be found in the brochure, *Transporting infectious substances safely*, which is available through the U.S. Department of Transportation website. Available at:

http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Transporting_Infectious_Substances_brochure.pdf. Accessed February 22, 2016.

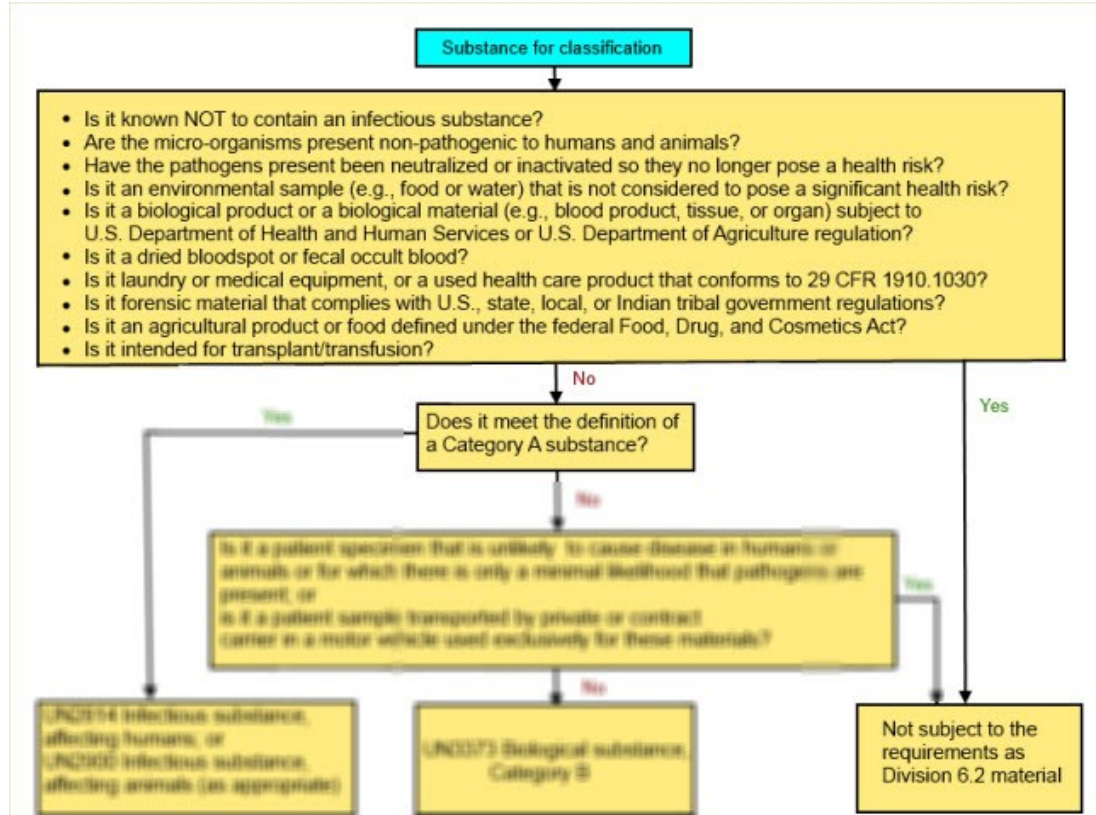
The decision tree is discussed in more detail on the following pages.



DOT Classification Decision Tree, continued

If you answer "Yes" to any of the bulleted questions shown on the right, follow the green **Yes** arrow. This substance is "Not subject to the requirements as Division 6.2 material," according to the DOT classification requirements.

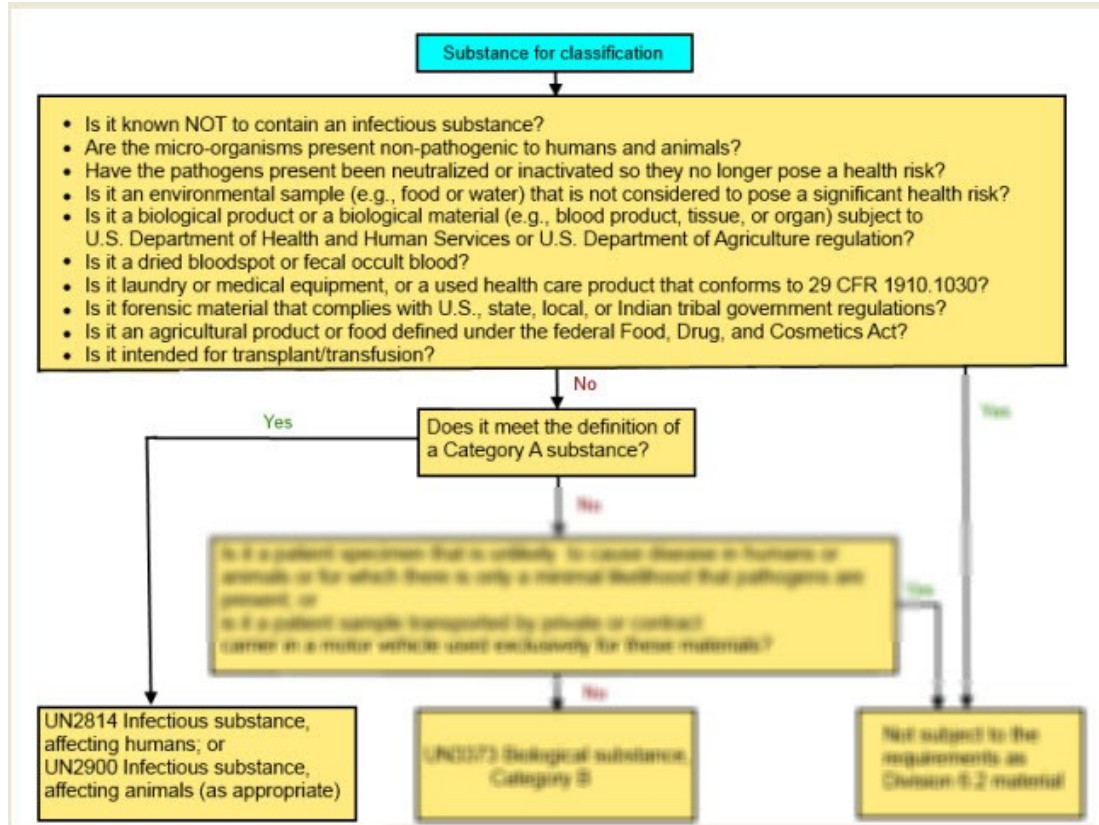
If you answer "No" to **ALL** of the questions, follow the red **No** arrow to the next box on the classification decision tree and determine if the substance meets the definition of a category A substance.



DOT Classification Decision Tree, continued

If you answered **Yes** to "Does it meet the definition of a Category A substance," you can see that it needs to be classified as either

- UN2814 Infectious substance, affecting humans. This classification is used if pathogens in the substance can affect humans or humans and animals both.
- UN2900 Infectious substance, affecting animals. This classification is used if pathogens in the substance can affect animals but not humans.



DOT Classification Decision Tree, continued

If you answered **No** to "Does it meet the definition of a Category A substance," you then have to determine if the specimen is unlikely to cause disease or if there is only a minimal likelihood that pathogens are present.

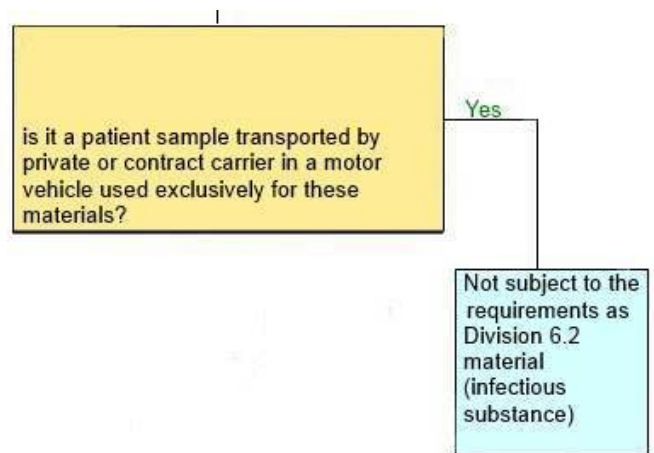
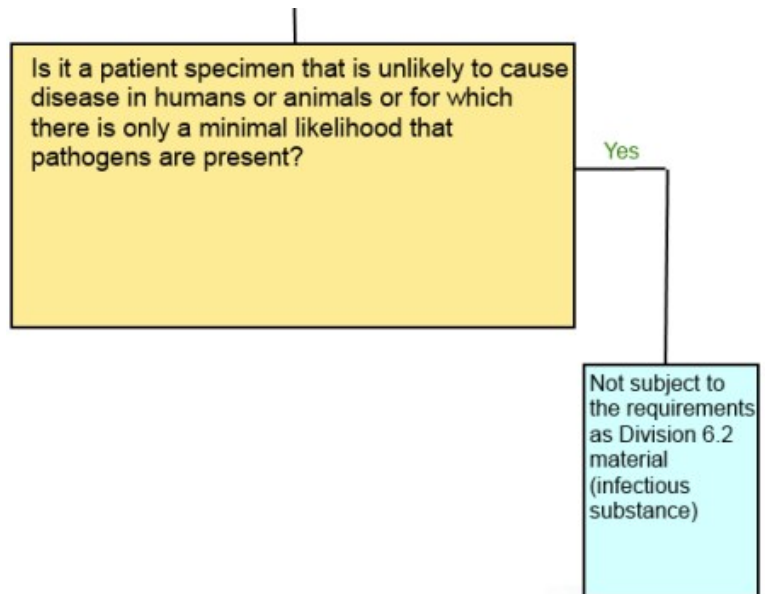
The DOT considers samples that are being transported for **noninfectious** testing that were collected from apparently healthy individuals as being unlikely to cause disease or contain pathogens. This includes:

- Blood or urine tests ordered as part of a routine medical examination on patients **who are not known to have an infectious disease** to monitor levels of:
 - cholesterol
 - blood glucose
 - hormones
- Blood or urine tests to monitor liver and kidney function (again, from those **not known to have an infectious disease**)
- Tests conducted for insurance or employment purposes, intended to determine the presence of alcohol or drugs
- DNA tests
- Pregnancy tests
- Samples for testing other than for the presence of pathogens, including
 - Biopsies for cancer detection
 - Antibody titers for noninfectious diseases (eg, PSA, ANA)

You are also asked in this box on the decision tree if the sample is being "transported by private or contract carrier in a motor vehicle used exclusively for these materials." An exclusive use vehicle is a motor vehicle (private or contract carrier) that is used exclusively for transport of patient specimens. However, other items are allowed to be transported with these materials, if they are protected against contamination. Items that can be transported along with patient specimens in an exclusive use vehicle include:

- Medical equipment
- Other laboratory specimens
- Medical records

If you answer **Yes** to either part of this question, the substance is not subject to the requirements as Division 6.2 material.



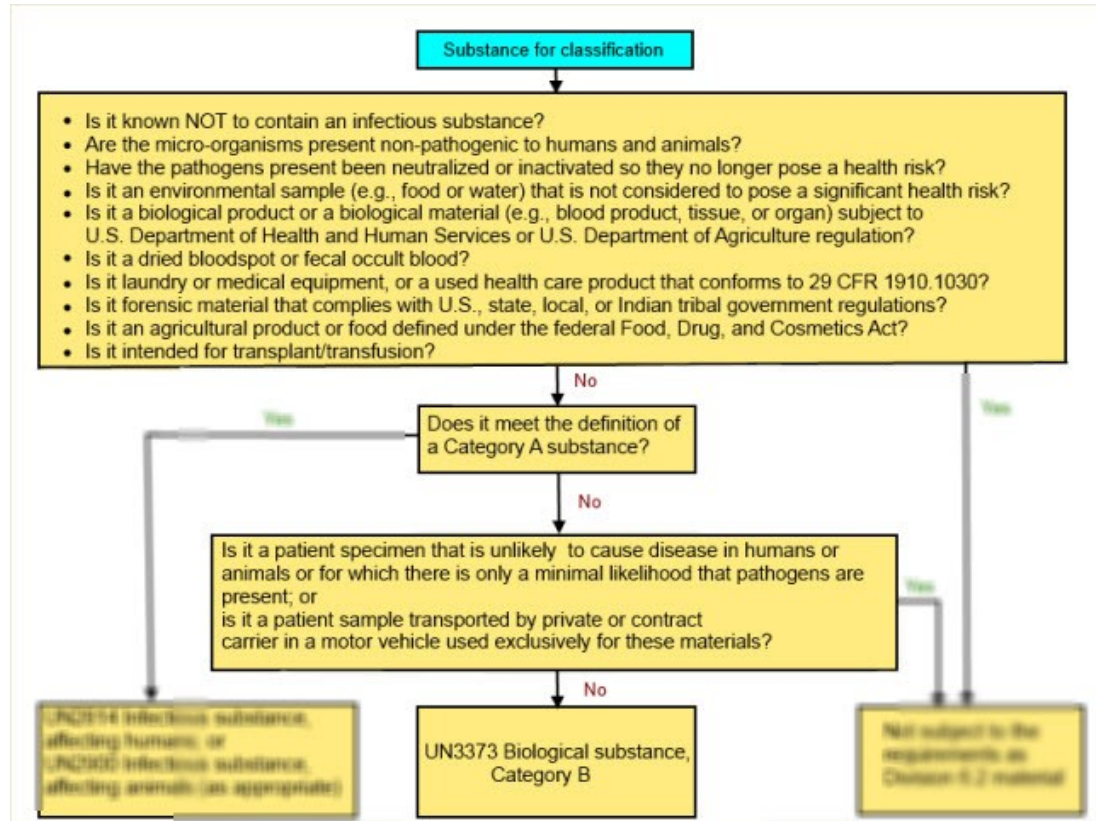
Other Packaging and Labeling Requirements that May Apply to DOT Nonregulated Specimens

Although the specimens that were discussed on the previous page are not subject to the Division 6.2 requirements for packaging and labeling, it is important to remember that there are other packaging and labeling requirements that may apply, such as OSHA requirements included in the Bloodborne Pathogens Standard, healthcare facility requirements, and laboratory regulatory agency requirements, such as those of the Joint Commission and the College of American Pathologists.

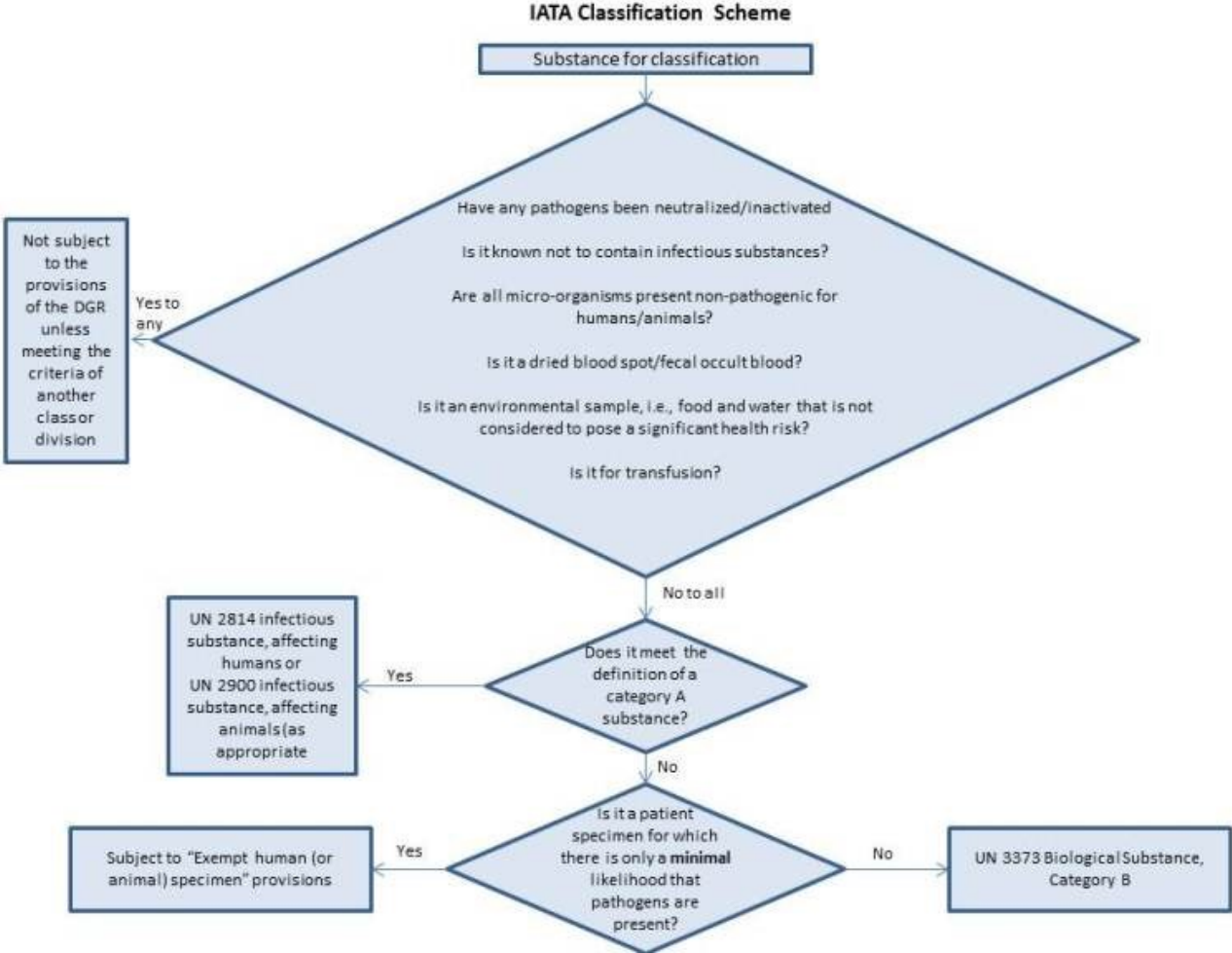


DOT Classification Decision Tree, continued

The substance is classified as UN3373 Biological substance, Category B, if you have answered **No** to every section of the decision tree as shown on the right.



IATA Classification Decision Tree



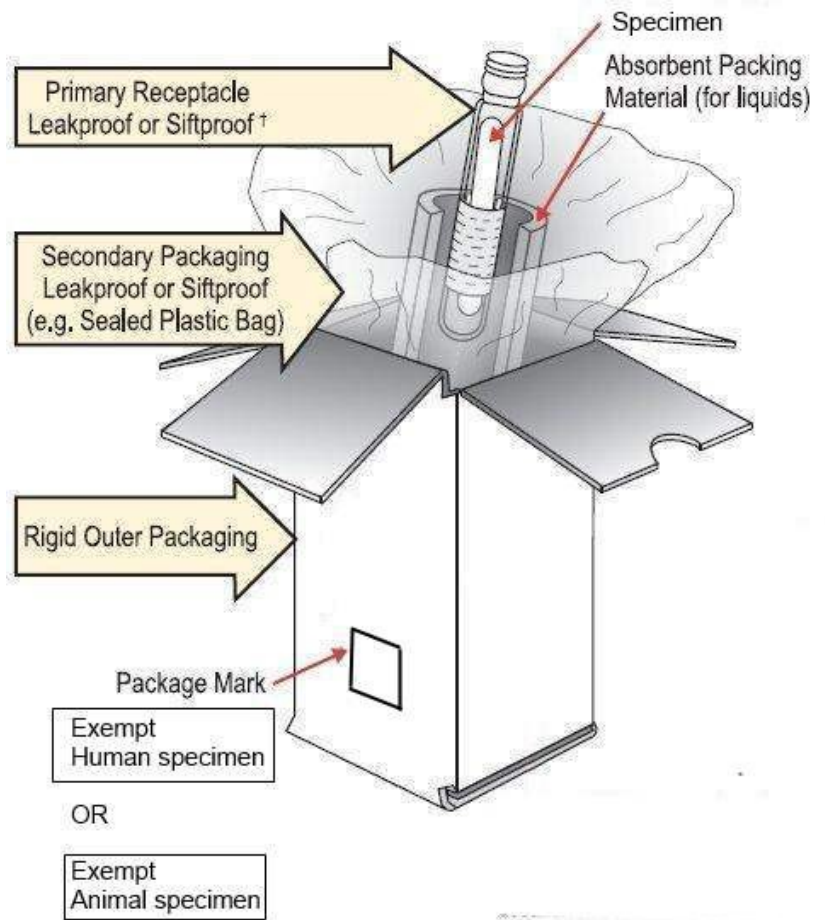
IATA also provides a decision tree (flow chart) that is similar to the one provided by the DOT. The IATA chart, shown on the right, differs from the DOT chart at the point where the question is asked if there is only a minimal likelihood that pathogens are present. If this question is answered as "yes" on the DOT decision tree, the material/specimen is not subject to requirements of Division 6.2 materials. However, on the IATA chart, if this question is answered "yes," the material/specimen is subject to "Exempt human (or animal) specimen" provisions.

Note that IATA rules apply to transport with the FedEx corporation.

IATA and US Postal Service Exempt Specimens

"Exempt specimen" is a specimen category that is used by both IATA and the US Postal Service (USPS) to indicate a patient specimen that is unlikely to cause disease in humans or animals or for which there is only a minimal likelihood that pathogens are present. Requirements for packaging exempt specimens are shown in the table below.

The US Department of Transportation (DOT) has no "Exempt Specimen" classification and there are no DOT guidelines for packaging non-regulated* specimens. According to the DOT, if a package is marked as "Exempt Human/Animal Specimen" the understanding is that it contains no infectious substance.



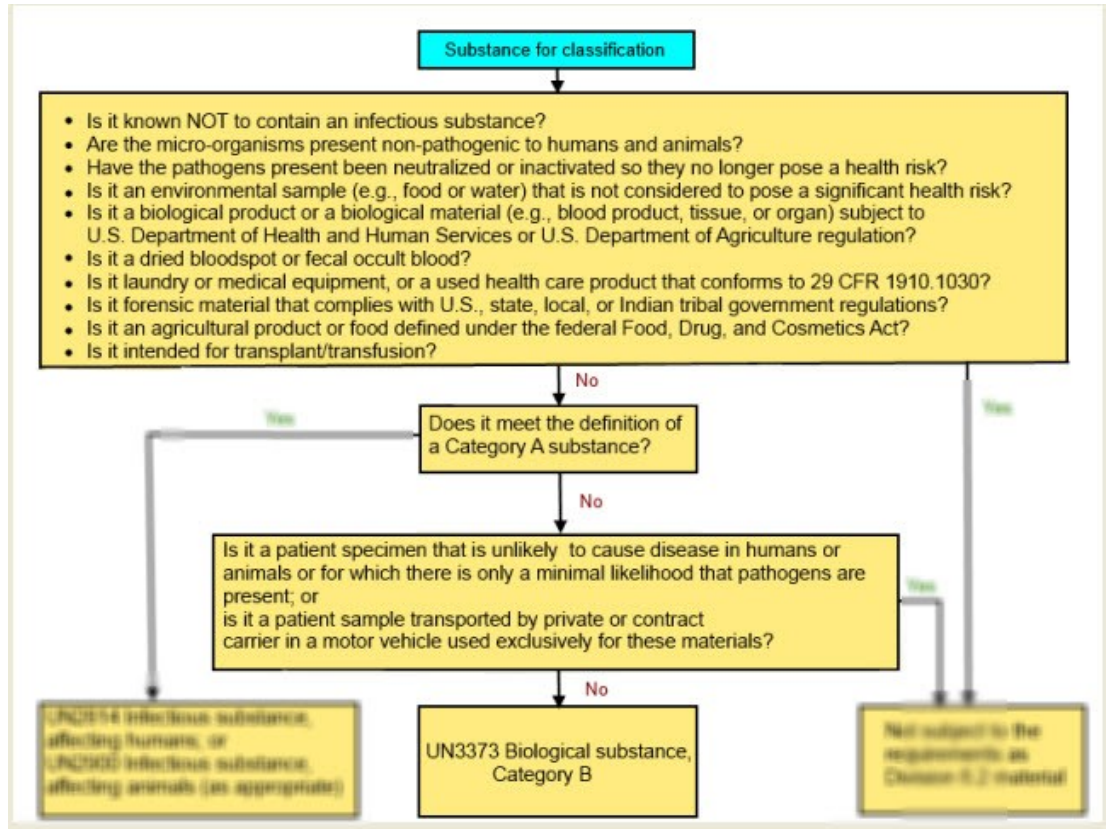
Packaging Issue	IATA	USPS
Type of packaging required	Triple packaging, as shown on the right	Triple packaging, as shown on the right
Outer container	<ul style="list-style-type: none"> One dimension must be a minimum of 100 mm X 100 mm (approximately 4 x 4 inches) Must be able to survive a drop test of 4 feet 	<ul style="list-style-type: none"> One dimension must be a minimum of 100 mm X 100 mm (approximately 4 x 4 inches) Must be able to survive a drop test of 4 feet
Quantity limits: outer container	None	None
Quantity limits: Primary receptacle	None	500 mL
Quantity limits: secondary packaging	None	500 mL

* Non-regulated specimens may become regulated because of preservatives, such as 10% formaldehyde (class 9) or 25% formaldehyde (class 8); or 25% ethanol (class 3). Note that 10% formalin, which is often used as a preservative in biopsy specimens, only contains 3-4% formaldehyde and is therefore not regulated.

Classification Scenario 1

A blood specimen is collected from a patient that is suspected of having Hepatitis B. The specimen will be sent via commercial carrier to a reference laboratory located in the United States for further testing. What classification should be used for appropriate packaging and labeling?

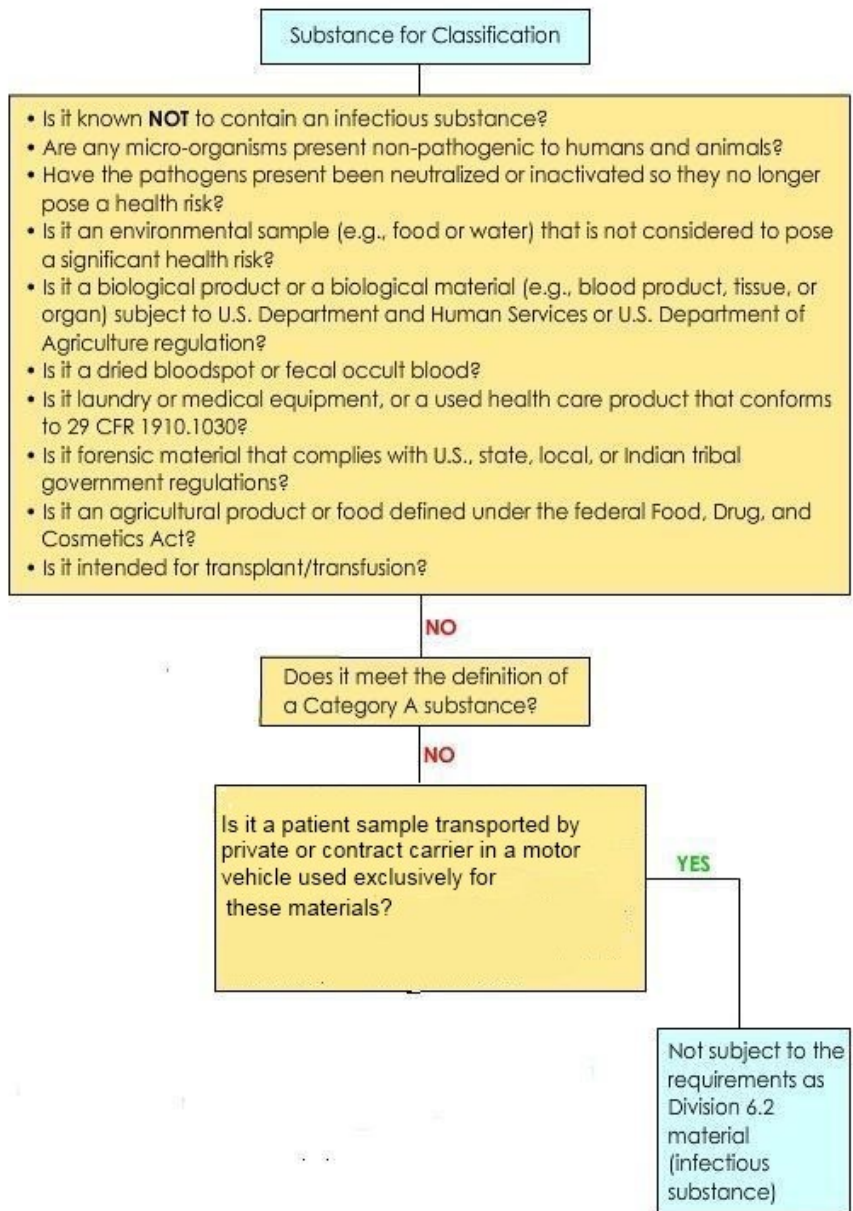
The specimen in this scenario is being sent to a facility in the US. Therefore, you will use the DOT classification decision tree. The specimen is likely to contain an infectious substance (hepatitis B virus). Follow the **No** arrow from the first box on the chart. This is a patient specimen and not a culture, it is not on the category A indicative list, and does not otherwise meet the definition of a category A substance. Follow the **No** arrow from the second box on the chart. In this scenario, it is a patient specimen that is likely to cause disease (hepatitis) and there is more than a minimal likelihood that pathogens are present (hepatitis B virus). It is not being transported by private or contract carrier in an exclusive-use vehicle. Again, follow the **No** arrow from the third box on the chart. You would classify this specimen as a UN3373 Biological substance, Category B.



Classification Scenario 2

A blood specimen is collected from a patient suspected of having Hepatitis B. The specimen will be taken to the testing laboratory by the laboratory's own courier service using an exclusive use motor vehicle. What classification should be used for appropriate packaging and labeling?

In this situation, the same specimen type would not be subject to the requirements as Division 6.2 material as it is being transported by private carrier in a motor vehicle used exclusively for these materials. However, it does need to be marked and packaged as a biohazard according to OSHA Bloodborne Pathogens requirements.





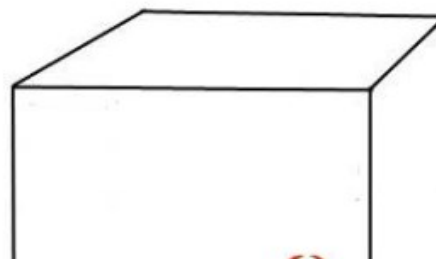
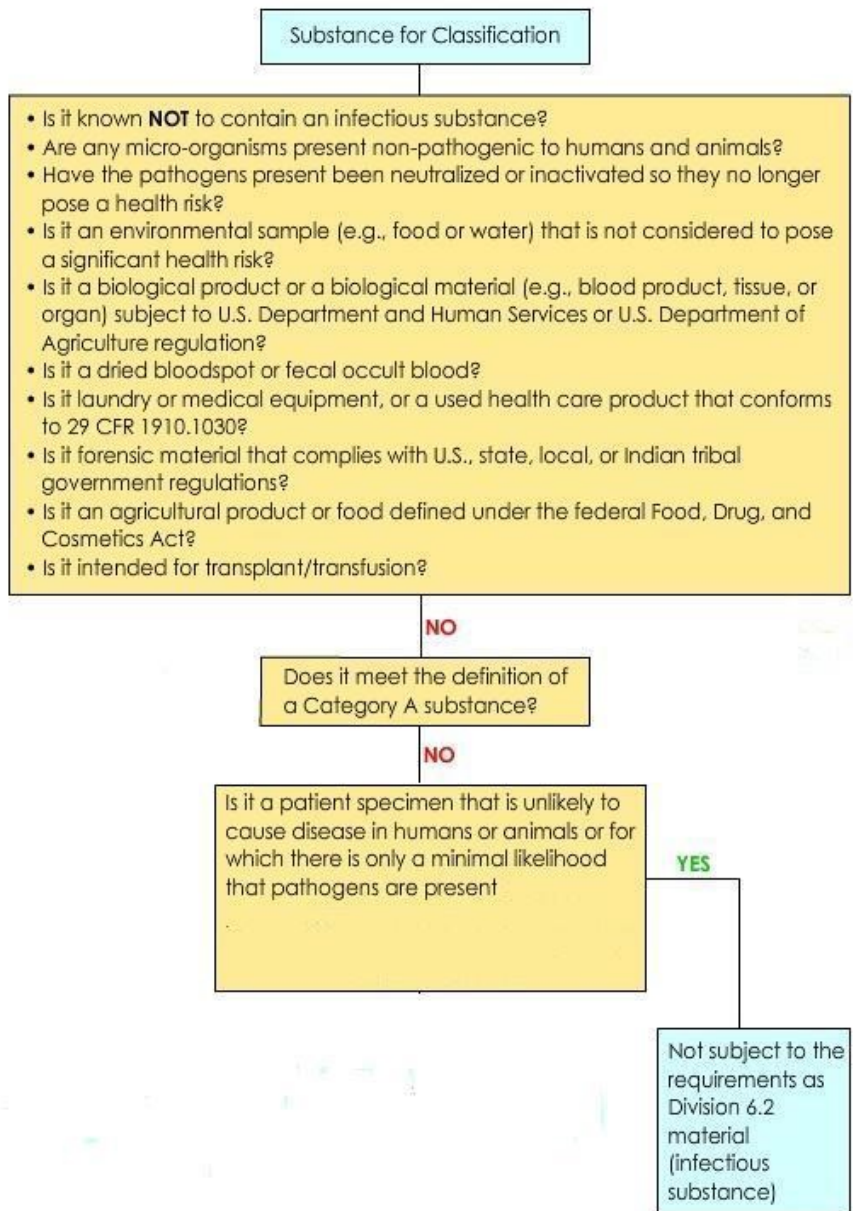
Classification Scenario 3

An outpatient who is being seen by her physician for a routine yearly physical has a blood specimen collected for cholesterol screening. The specimen is being sent to a reference laboratory that is about 30 miles away. The sample will not be transported by private or contract carrier in an exclusive use vehicle. What classification should be used for appropriate packaging and labeling?

Remember that the DOT considers samples that are being transported for **noninfectious** testing that were collected from apparently healthy individuals as being unlikely to cause disease or contain pathogens. This includes:

- Blood or urine tests ordered as part of a routine medical examination on patients **who are not known to have an infectious disease** to monitor levels of:
 - cholesterol
 - blood glucose
 - hormones
- Blood or urine tests to monitor liver and kidney function (again, from those **not known to have an infectious disease**)
- Tests conducted for insurance or employment purposes, intended to determine the presence of alcohol or drugs
- DNA tests
- Pregnancy tests
- Samples for testing other than for the presence of pathogens, including
 - Biopsies for cancer detection
 - Antibody titers for noninfectious diseases (eg, PSA, ANA)

Even though the sample is being transported in a motor vehicle that is not used exclusively for patient specimens, it is still **NOT** subject to the requirement as Division 6.2 material because you were able to answer **Yes** to the first part of this criteria. However, as in the previous scenario, it does need to be marked and packaged as a biohazard according to OSHA Bloodborne Pathogens requirements.





If the blood sample in Scenario 3 that was collected for routine cholesterol screening is being sent by air on an IATA [member airline](#) (such as Fed Ex) to the reference laboratory, what classification should be used for appropriate packaging and labeling?

- Category B
- Exempt human specimen
- Not regulated: No classification

If the blood sample in Scenario 3 that was collected for routine cholesterol screening is being sent by air on an IATA [member airline](#) (such as Fed Ex) to the reference laboratory, what classification should be used for appropriate packaging and labeling?

- Category B
- Exempt human specimen
- Not regulated: No classification

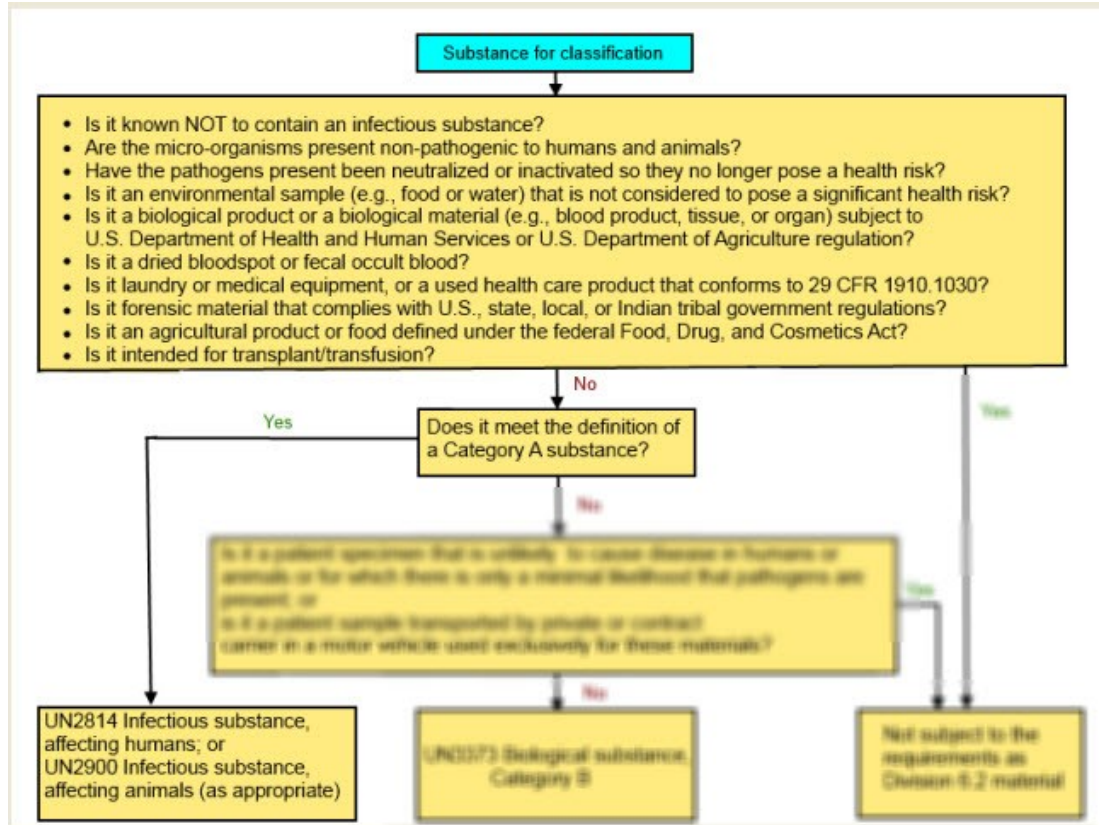
Feedback

Classification Scenario 4

A culture of *Mycobacterium tuberculosis* is to be sent to the Public Health Laboratory. FedEx will be picking up the package. What classification should be used for appropriate packaging and labeling?

Working through the Classification Decision Tree, you can conclude that this is a UN 2814, Category A infectious substance affecting humans. *Mycobacterium tuberculosis* (culture only) is a category A substance.

[Category A infectious substances indicative list](#) Adobe Acrobat PDF file



Packaging Considerations

Several things need to be considered when you are determining how to package a laboratory specimen. These considerations include:

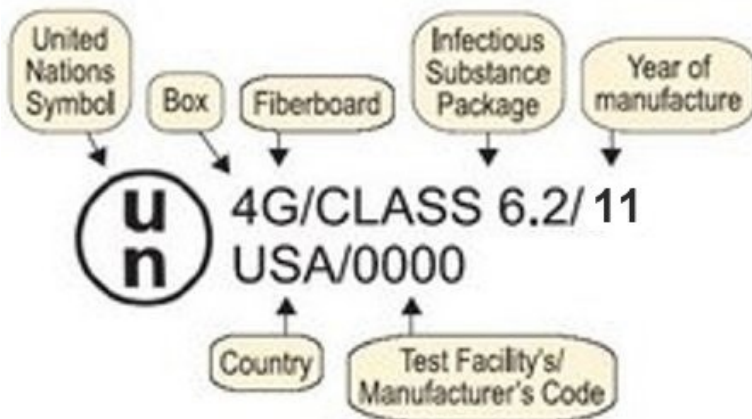
- Type of specimen
 - Solid
 - Liquid
- Classification
 - Category A
 - Category B
 - Exempt
- Weight or volume of the specimen
- Temperature at which the specimen must be held during shipping
 - Will dry ice be included in the package?
- The specimen components
 - Does the specimen contain a preservative that may be regulated?
- Mode of transportation
 - Commercial ground
 - Passenger air
 - Cargo air
 - Postal service
 - Motor vehicle

Selecting the Shipping Container

Manufactured packaging

Follow the manufacturer's instructions if you are using manufactured packaging. The components of the packaging system that are provided by the manufacturer are designed to be used together to ensure a safe transport. Therefore, packaging components from different manufacturers should not be used together. The instructions provided by the manufacturer must be retained for at least one year.

Outer packaging that is used to ship Category A substances must meet manufacturing and performance specifications set by the United Nations. Packaging that meets these specifications are marked by a "UN" in a circle, a series of letters and numbers that indicate the type of package, class of goods the package is designed to carry, manufacturing date, authorizing agency, and the manufacturer. An example is shown below. This packaging is available from commercial sources with preprinted UN information. The strict, outer packaging regulations do not apply to Category B packages.



Reusing a container

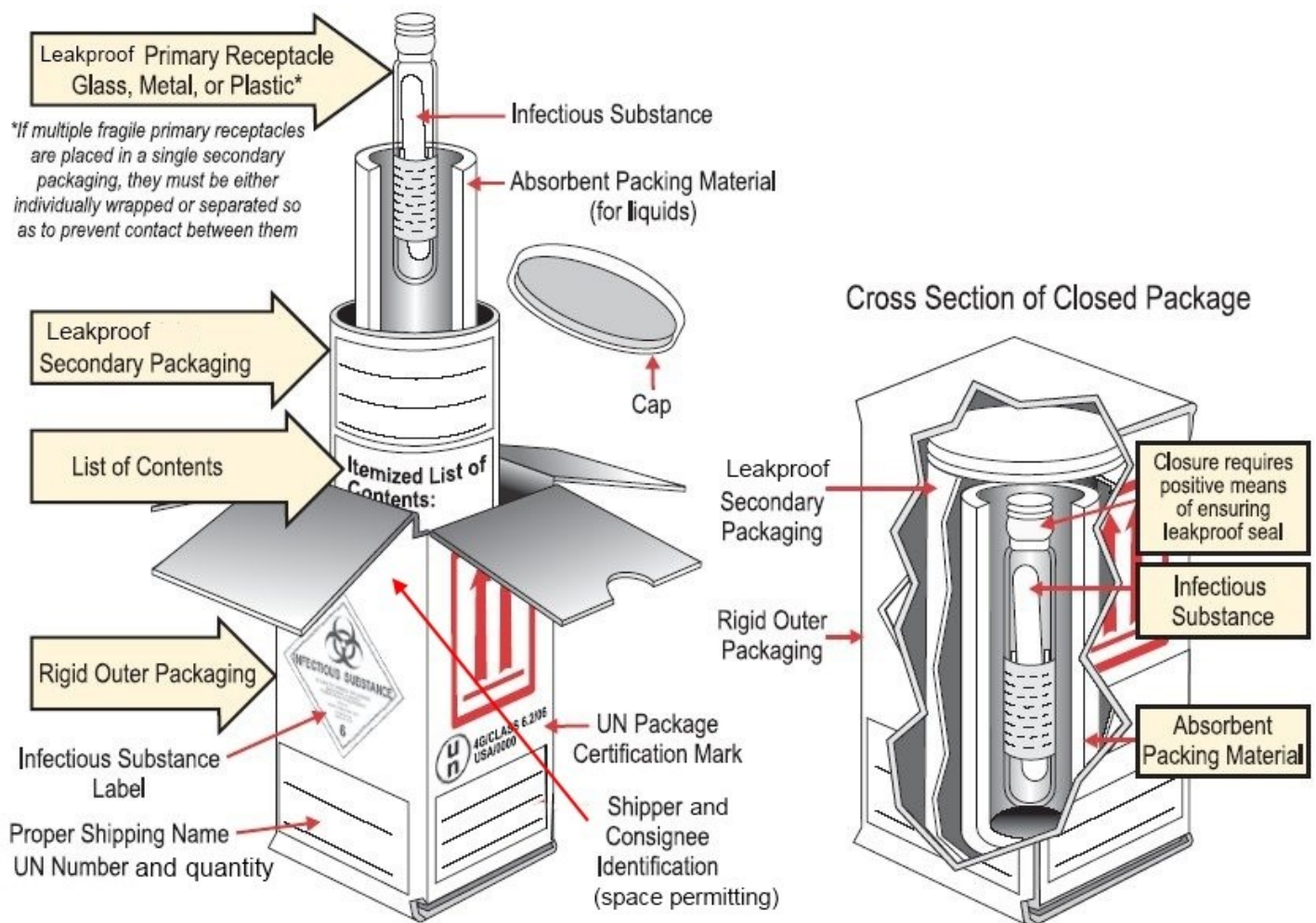
If you will be reusing a container, remove all irrelevant labels and markings. A package can be reused if it is intact, clean, and disinfected. A package **CANNOT** be reused if it is damaged, contaminated, or cannot be labeled properly.

Packaging for Category A Specimens

Triple packaging is required for category A substances.

The image on this page illustrates the correct packaging scheme. Packaging must include:

- A leakproof primary receptacle that is glass, plastic, or metal
- A leakproof secondary packaging
- Absorbent material in sufficient quantity to absorb the entire contents, if the primary receptacle were to leak or break. (This is not required if the infectious substance is a solid.) The absorbent material is to be placed between the primary receptacle and the secondary packaging
- An itemized list of contents, enclosed between the secondary packaging and the outer packaging (preferably enclosed in a zip lock bag).
- UN specification packaging



Restrictions Applying to Category A Substances Transported By Air

A package that contains a category A substance cannot be transported on a passenger aircraft if it exceeds 50 mL or 50 gm.

If a category A substance exceeds 50 mL or 50 gm, it must be transported on a cargo only aircraft. The black-on-orange label, shown on the right, must be affixed to the package. **This is the only label that is in compliance for cargo-only packages.**

A package containing category A substances that will be sent by cargo aircraft is limited to no more than 4L or 4 kg. This volume/weight does not include ice, dry ice, or liquid nitrogen, if any of these are used as refrigerants.

Category A substances cannot be mailed via the United States Postal Service (USPS) or sent via United Parcel Service (UPS).



Packaging for Category B Substances

Category B substances also require triple packaging that includes:

- A primary receptacle
- Secondary packaging
- Rigid outer packaging

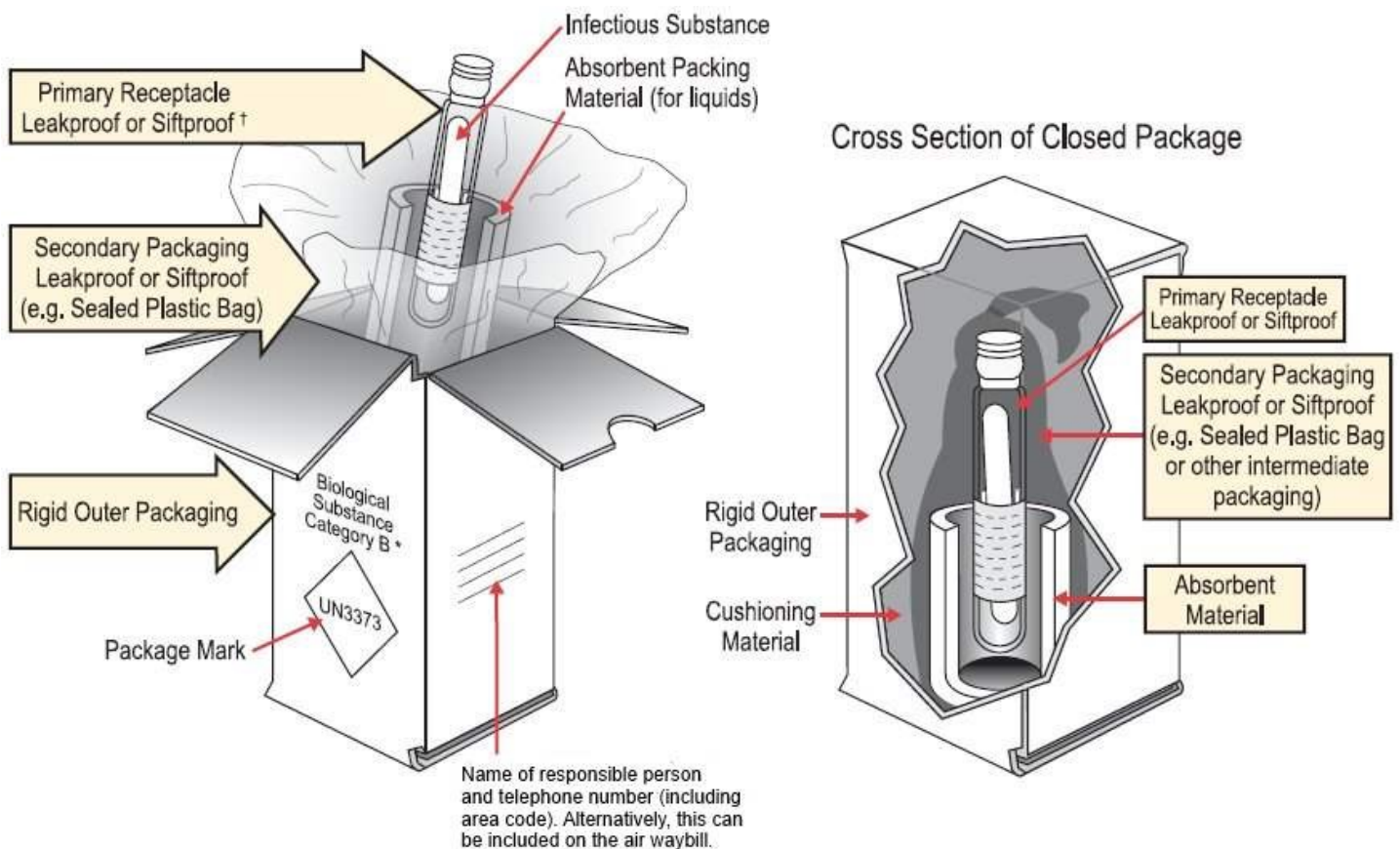
An itemized list of contents should be enclosed between the secondary packaging and the outer packaging.

The primary receptacle must be leakproof or siftproof (to prevent leakage if the specimen is dry particulate material) and packaged in such a way that, under normal circumstances, it will not break.

Secondary packaging must also be leakproof or siftproof (such as a sealed plastic bag). For liquids, absorbent material must be placed between the primary receptacle and the secondary packaging, and it must be in sufficient quantity to absorb the entire contents of the primary receptacle to prevent compromising the integrity of the outer packaging if breakage or leakage occurs.

Each primary receptacle(s) must be limited to a volume of 1000 mL (1 L). The package containing category B substances that will be sent by aircraft must be limited to no more than 4L or 4 kg. This excludes ice or dry ice, if either of these are used as refrigerants.

The completed package must be able to survive a drop test of 4 ft.



Additional Packaging Requirements for Category A and Category B Substances

If multiple primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated so as to prevent contact between them.

The primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure producing a pressure differential of not less than 95 kPa (13.8 lbs/in²) because the package may be placed into an unpressurized storage compartment in a cargo aircraft. This must be verified when choosing packaging for shipping either category A or category B substances by aircraft. It is also recommended if shipping by ground. An evacuated blood collection tube that has remained unopened qualifies as a 95 kPa container.

The smallest surface of the outer packaging must be at least 100 mm X 100mm (4 inches x 4 inches).

Other dangerous goods must not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for preservation of the specimen (e.g., formaldehyde). A quantity of 30 mL or less of formaldehyde or other dangerous goods included in hazard Classes 3, 8, or 9 (flammable liquids such as alcohol; corrosives such as acids or bases; or miscellaneous hazardous materials) may be packed in each primary receptacle containing infectious substances. A quantity greater than 30 mL will require appropriate hazard labels on the package.

Materials of Trade

Materials of Trade (MOT) are defined as hazardous materials that are carried in a motor vehicle which supports a principle business. However, the principle business cannot be a transportation business (e.g., taxi cab, bus, independent courier vehicle*). A patient specimen can be transported by motor vehicle as an MOT, if the specimen is not regulated or is classified as a category B infectious substance (cultures cannot be transported as MOTs).

Businesses whose employees can transport patient specimens as MOTs include:

- Clinical or reference laboratories (laboratory's own couriers)
- Home health care agencies
- Physician's offices

*UN3373 Category B infectious substances can be transported by cab, bus, or independent courier vehicle, but not as MOTs.

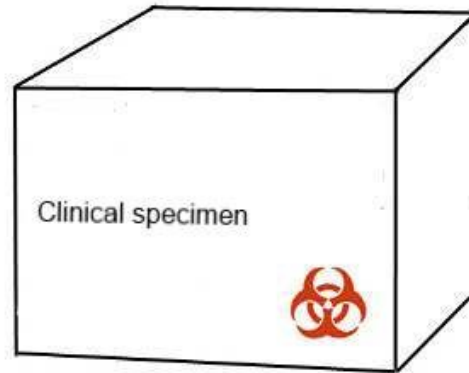
Exceptions for Category B Substances When Transported by Motor Vehicle as Materials of Trade (MOTs)

MOT packaging requirements:

- Combination packaging
 - Inner packaging must be leakproof (liquids) or siftproof (solids)
 - Outer packaging must be strong, tight, secured against movement; absorbent (liquids)
- Quantity limits
 - ≤ 200 kg (440 lb) per motor vehicle

MOT labeling requirements

- Use either Proper Shipping Name (Biological substance, Category B) or common name that identifies package content (e.g., blood, clinical specimen, human specimen)
- If package contains blood or other potentially infectious material (OPIM), OSHA requires the biohazard symbol on inner or outer packaging



General Labeling Requirements

- If the secondary or outer package is being reused (allowed if the package is intact and has been disinfected), all irrelevant labels and markings must be removed.
- Use durable, standard-sized (4 x 4) labels.
 - IATA allows half-size labels when packages are too small for standard-sized labels
 - DOT does **NOT** allow half-size labels
- Affix hazard labels securely to one side
- Do not overlap labels or box edge

Labeling and Marking a Package Containing a Category A Substance

Packages that contain category A substances must exhibit these labels and markings.

Proper shipping name and UN number as shown below:

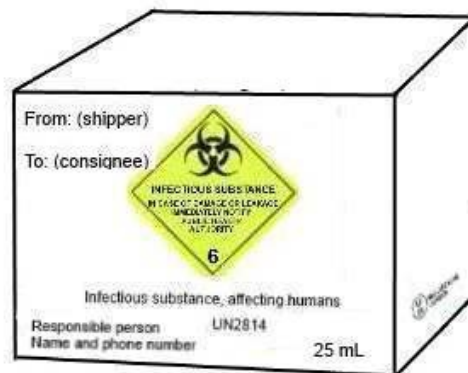
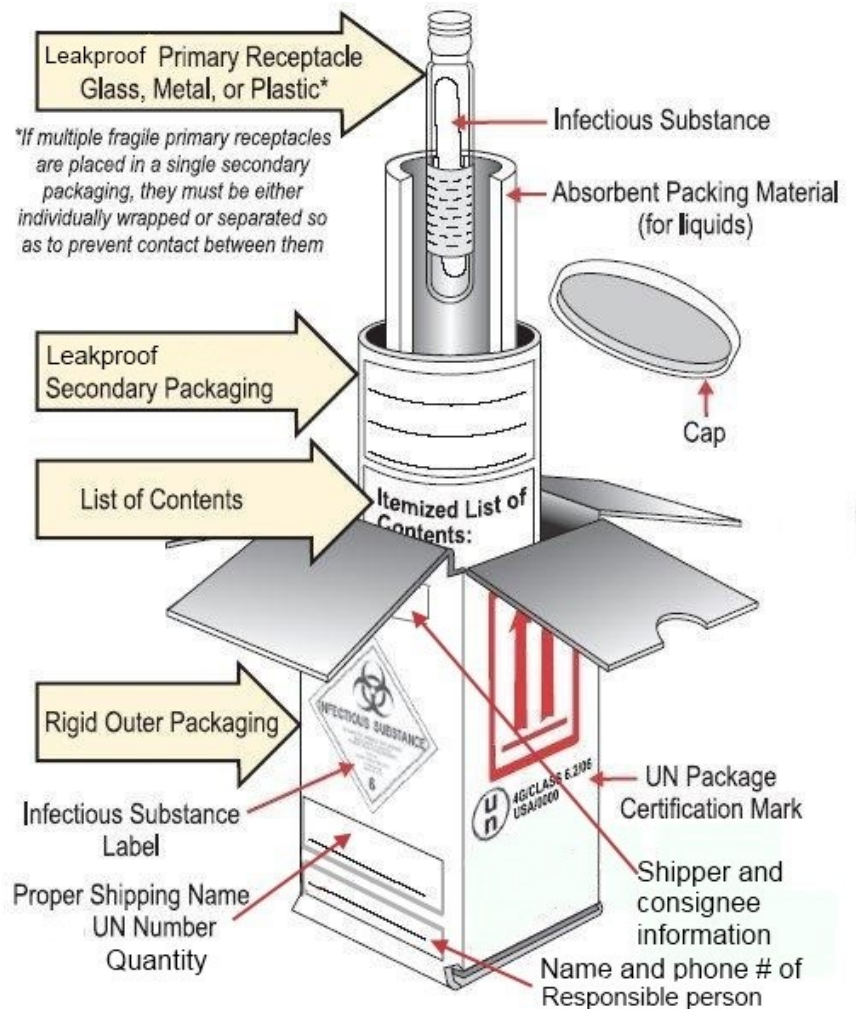
**Infectious substance,
affecting humans
UN2814**

or

**Infectious substance,
affecting animals
UN2900**

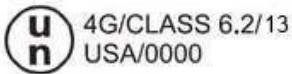
Do **NOT** include the technical name (organism name) with the Proper Shipping Name or write it anywhere on the outside of the package. The technical name is printed on the shipper's declaration for dangerous goods that accompanies the package.

Hazard class 6 infectious substance label:





UN package certification mark (This is preprinted on the box by the manufacturer)



Orientation arrows (if greater than 50 mL of a category A substance in the primary receptacle). Either red or black orientation arrows may be used. Apply orientation arrows to two opposite sides of the outer packaging, if they are not already printed on the fiberboard box. Be sure the content of the primary receptacle is orientated in the direction indicated by the arrows.



Responsible person: Name and phone number

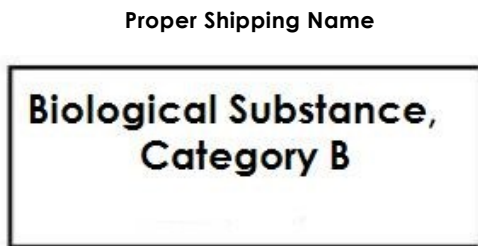
The contact person (usually the shipper), referred to as the "responsible person" by IATA, must be someone who can be reached 24 hours a day, seven days a week (24/7) and can answer questions about the content of the package. The 24/7 number must reach that person directly and not a pager or answering machine/service. If the contact person that you are listing is the person receiving the specimen, be certain that the person is aware you are listing him/her as the contact person and has consented to it.

Additional IATA requirements for labels on outer packaging

The name and address of the shipper and consignee should be on the same surface as the marking for the UN number and proper shipping name when the package size is large enough to allow this. If space is not adequate, the information would be placed on the top of the box. The net quantity of dangerous goods must be shown on all packages regardless of the class of the dangerous goods.

Labeling and Marking a Package Containing a Category B Substance

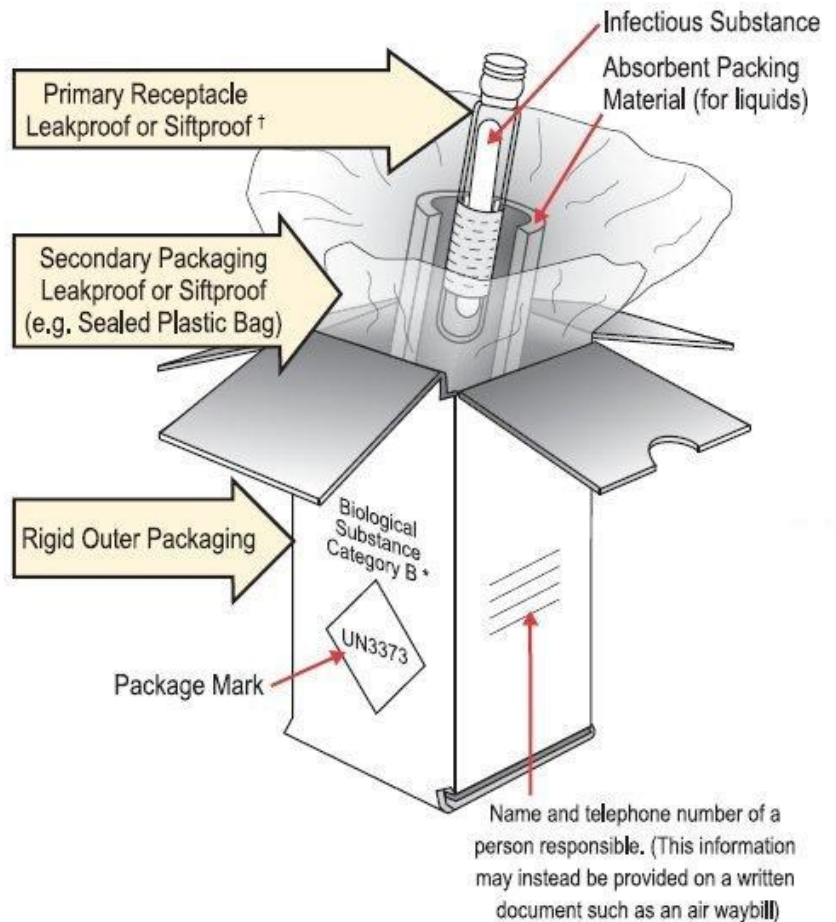
Packages that contain category B substances must exhibit these markings and labels:



Package Mark (UN 3373 Label)



**Contact person ID and
phone number
Available business hours**



The emergency contact must be available during regular business hours. Placing this information on the package is optional with category B substances. The information may instead be provided on the air waybill. The person designated as the emergency contact must be:

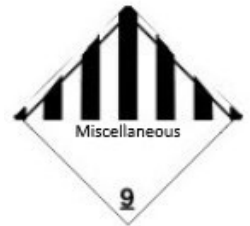
- Knowledgeable of package contents
- Available during business hours of the employer
- Able to provide emergency response information to prevent an incident

Dry Ice

If dry ice is used as a refrigerant, it must be placed outside the secondary container. Interior supports must be provided to secure the secondary packaging in the original position after the dry ice has dissipated. The packaging must be designed and constructed to permit the release of carbon dioxide gas to prevent a buildup of pressure that could rupture the packaging. A styrofoam-lined box is considered a vented outer container.

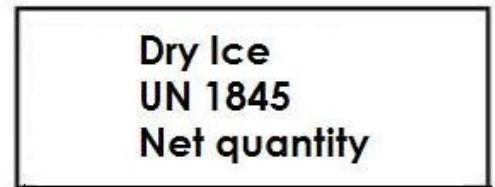
Labels and markings for air transport of dry ice

- Class 9 label, as shown in the top image on the right (miscellaneous hazardous materials)-- this is an IATA requirement.
- Proper shipping name (either "Dry ice" or "Carbon dioxide, solid")
- UN designation: UN 1845 (IATA requirement)
- The net quantity (weight) of the dry ice



Quantity limits for dry ice in outer packaging

- USPS (category B or exempt substance): 5.5 lbs
- IATA/DOT (air): 200 kg/441 lbs



Requirement when transporting under DOT regulations

- Make advanced arrangements with the carrier if the quantity of dry ice per package exceeds 2.5 kg (5.5 lbs).

Overpack

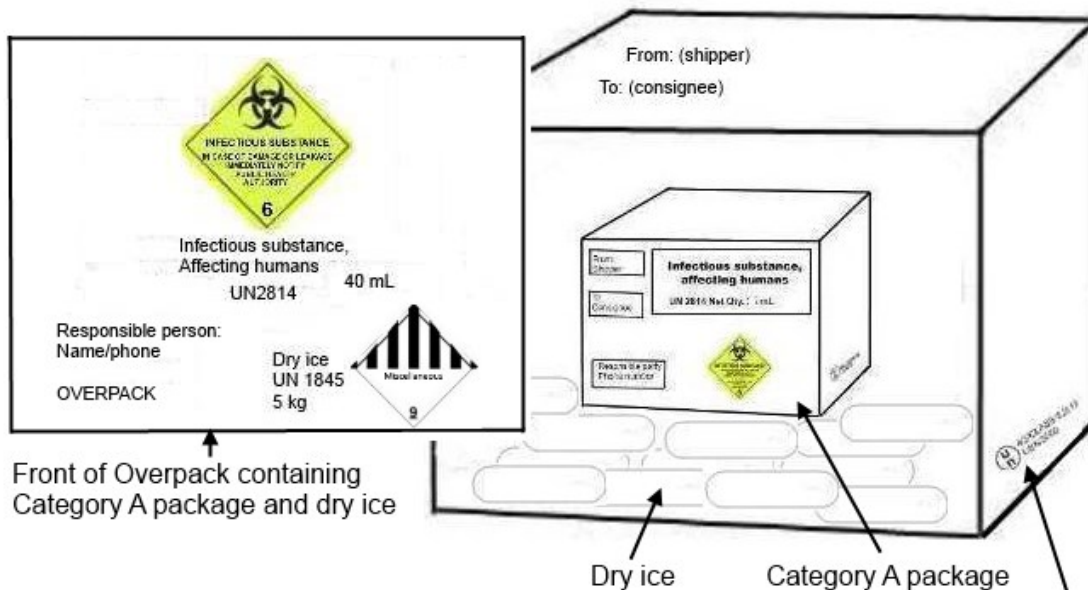
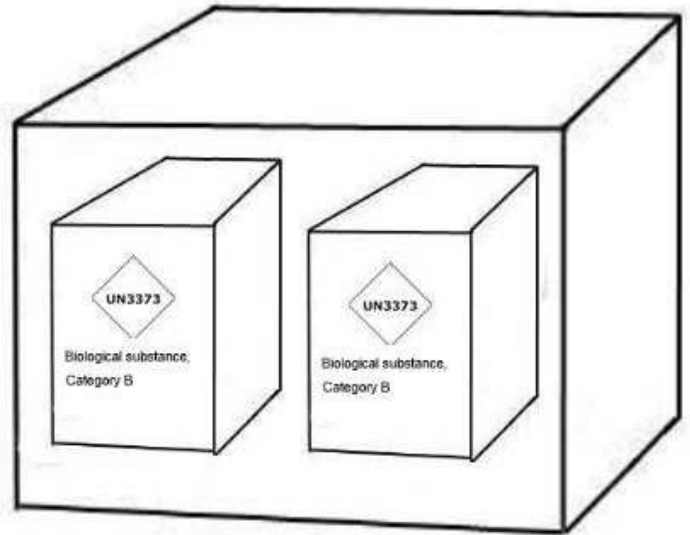
An overpack is a container that is sometimes used by shippers to send multiple packages to the same recipient, or a single package that needs to be packed with dry ice to keep the substance cold during shipping. If using an overpack, the inner packages must be properly marked, labeled and packaged according to the appropriate regulations, depending on the classification of the substances being shipped.

The overpack must have the same markings and labels as the inner packages. These additional labels and marking must also be added:

- Quantity of class 6.2 hazardous material
- Additional hazard label and marking, if dry ice is used
- Mark as "Overpack"

Some carriers may have overpacks available for use that contain the appropriate labels and markings. However, it is your responsibility as the shipper to ensure all the labels and markings are appropriate for the substances you are sending.

Note that an overpack containing dangerous goods may also contain packages of goods not subject to the dangerous goods regulations.



A rigid non-UN specification overpack may also be used; however, inner package must be UN specification packaging.

Category A Packages: Shipper's Declaration For Dangerous Goods

A "shipper's declaration for dangerous goods" form must be filled out for category A packages, but is **NOT** required for category B or exempt packages.

The shipper's declaration must be handed to the courier picking up the package; do not place it inside the box.

Fed Ex requires that the Dangerous Goods Declaration forms be filled out using compliance checking software. Either FedEx Ship Manager Software or another FedEx approved software may be used.

If dry ice is included in a package containing a category A substance, it should also be listed on the shipper's declaration for dangerous goods. However, it is **NOT** necessary to fill out this form if dry ice is included in category B or exempt packaging; details about the dry ice are included instead on the air waybill.

Preparing the Shippers Declaration For Dangerous Goods: FedEx Ship Manager Software

Compliance checking software helps to prevent errors in paper work so that fewer dangerous goods shipments will need to be returned due to non-compliance with regulations.

- FedEx Ship Manager Software is available through the FedEx website.

How to Download FedEx Ship Manager Software

1. Go to **FedEx.com**
2. If the next screen asks you to select a country, select **United States**
3. In the search box at the top of the next page, type "**Hoffix**" and then click on the Search (magnifying glass) icon, or select "Go"
4. On the next screen, select "**FedEx Ship Manager Software Patch**"
5. Follow the instructions on the next page to begin using Ship Manager software

Printing completed forms

Completed forms must have red hatchings on the sides, whether preprinted or printed via computer. If you only have a black and white printer, FedEx provides templates designed for use on black-and-white printers. These forms require the use of special FedEx form blanks, called LZR DG DEC. These blank forms contain preprinted red vertical hatchings. When these templates are used, they will print the Shipper's Declaration within the red hatchings. Customers in the U.S. can order LZR DG DEC blanks part #157295 by calling 1.800.GoFedEx (1.800.463.3339)

FedEx requires three copies of the forms.

At least two of these copies must be printed in color.

Keep a copy of the completed form. Shippers are required to keep a copy of the Shipper's Declaration for two years.

Completed Shipper's Declaration For Dangerous Goods Form

This is an example of a Shippers Declaration form that has been completed correctly. Compliance checking software will guide you through each step. However, errors could still occur. Here are some examples of errors that could cause the package to be rejected by the carrier:

- Omitting part of the emergency response information-- ensure you have included the first and last name of the responsible person and the emergency telephone number, including area code.
- Using abbreviations, acronyms, or codes for packaging descriptions. For example, fiberboard box would be the correct way to describe this type of packaging and not "4G," which is the identification code for a fiberboard box.
- Unacceptable technical names
 - If the pathogen is known, use the scientifically accepted name of the disease causing agent. For example, as shown on the form on the right, spell out Mycobacterium tuberculosis rather than writing it as M. tuberculosis or Tb.
 - If the pathogen is unknown, use the exact wording of this phrase in the exact order that is shown: For UN2814, write the proper shipping name as, Infectious substance, affecting humans (suspected category A infectious substance); for UN2900, write the proper shipping name as, Infectious substance, affecting animals (suspected category A infectious substance).

SHIPPER'S DECLARATION FOR DANGEROUS GOODS						
Shipper Mytown Community Hospital Laboratory 2311 18th St. City, State Zip code			Air Waybill No. 31215 Page 1 of 1 Pages Shipper's Reference Number (optional)			
Consignee State Public Health Laboratory 24 16th St. City, State Zip code						
<i>Two completed and signed copies of this Declaration must be handed to the operator</i>			WARNING Failure to comply with all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.			
TRANSPORT DETAILS This shipment is within the limitations prescribed for: (delete non applicable) Airport of Departure Airport of Destination:			Shipment type: (delete non-applicable) <input type="checkbox"/> NON-RADIOACTIVE <input checked="" type="checkbox"/> RADIOACTIVE			
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or division	Pack- ing Group	Quantity and type of packaging	Packing Inst.	Authorization
UN 2814	Infectious Substance Affecting Humans, (Mycobacterium tuberculosis)	6.2		1 x 5ml. tube in one fiberboard box	620	
Additional Handling Information						
Responsible person: Shirley Brown (678) 555-1212						
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met.				Name/Title of Signatory Shirley Brown, MT Place and Date 1/31/2011 City, state, zip code Signature (see warning above)		
(678) 555-1212			Emergency Telephone Number		Shirley Brown, MT	

Air Waybills and Shipping Labels

Air waybills

Air waybills are completed by the shipper to provide information to the carrier. Air waybills must contain dangerous goods information for:

- Category A
- Category B
- Dry ice, if used

Air waybill: Information to include in the special handling information section (This will be section #6 on the FedEx waybill as shown in the bottom image on the right)



Category A Infectious Substances

- State "Dangerous Goods as per attached Shipper's Declaration," or "Dangerous Goods as per attached DGD" (dangerous goods declaration). On a FedEx Air Bill, a box under the heading, "Does this shipment contain

5. Packaging

Indicate your choice of packaging.

5 Packaging

- FedEx Envelope
 FedEx Pak
 FedEx Box
 FedEx Tube
 Other
 FedEx 10kg Box*
 FedEx 25kg Box*

6a. Special Handling

Tick the appropriate box to choose the special service needed. Indicate whether your shipment contains dangerous goods or dry ice by ticking the appropriate box.

6a Special Handling

- HOLD at FedEx Location
 SATURDAY Delivery Available to select locations for FedEx Int. Priority and FedEx Int. Priority Freight only
- Does this shipment contain dangerous goods? One box must be checked/ticked
- No
 Yes As per attached Shipper's Declaration
 Yes Shipper's Declaration not required
- Dry Ice Dry Ice #UN1845 _____ x _____ kg
 Cargo aircraft only
- Dangerous goods (including Dry Ice) cannot be shipped in Fed Ex packaging

dangerous goods?" can be checked "Yes, as per attached Shipper's Declaration"

- If the package contains more than 50 grams or 50 mL of category A infectious substances, mark "cargo aircraft only."

Category B Infectious Substances

- Biological Substance, Category B
- UN number (UN3373)
- Number of packages
- Emergency contact information, if not on package (IATA requirement)
- On a FedEx Air Bill, under the heading, "Does this shipment contain dangerous goods?" the box must be checked that says "Yes, Shipper's declaration not required."

Dry Ice Documentation

- UN number (UN1845)
- Proper shipping name (Dry ice or carbon dioxide, solid)
- Hazard class number (Class 9)
- Number of packages

- Net quantity (weight) of dry ice per package
- On a FedEx Air Bill, under the heading, "Does this shipment contain dangerous goods?" the box must be checked that says "Yes, Shipper's declaration not required."

Shipping labels

Customers who contract with either FedEx or UPS have access to software into which this information is entered and a shipping label with a barcode is generated. This label is then affixed to the outer surface of the package. Barcoded labels are used in place of the manually completed air waybills.

Transporting Category A Infectious Substances by Motor Vehicle

If a Category A infectious substance is transported by motor vehicle, a shipper's declaration form is required. There is no specific form or coloring that is required, but this information must be included:

- A basic description of the material that includes in this order (an easy way to remember the order is to use the acronym, **ISHP**)
 - **I**dentification/UN number
 - **S**hipping name
 - **H**azard class or division
 - **P**acking group, if applicable
- Number of packages that are included
- Total quantity (by mass or volume)
- Emergency response phone number, including area code
- Additional information, if needed
- Shipper's certification statement, if applicable

Unless the driver is an employee of your facility, you must include a shipper's certification statement. This statement must be signed by the shipper or an employee of the shipper. Here is an example of a shipper's certification statement, provided by the Department of Transportation (DOT):

"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

Ungraded Practice Question

Four scenarios will now be presented to evaluate your understanding of the material that has been presented on classifying, packaging, and labeling laboratory specimens for shipment. The scenarios are for your practice and will not be graded.



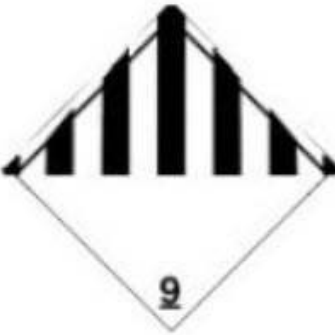



Choose all the appropriate labels and markings from the table on the right that must be used when packaging the substances described in the following scenarios:

Scenario One

Three serum samples for hepatitis testing need to be sent via courier. The courier is an employee of your health care system. The specimens will be transported in a motor vehicle used exclusively for transporting specimens. What packaging labels are required?

Please select the single best answer

- A
- A, D
- C, L
- L

Marking	Label
<p style="text-align: center;">Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p style="text-align: center;">Infectious substance, affecting humans UN2814</p> <p>C</p>	 <p>D</p>
<p style="text-align: center;">Dry Ice UN 1845 Net quantity</p> <p>E</p>	 <p>F</p>
<p style="text-align: center;"> 4G/CLASS 6.2/13 USA/0000</p> <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

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Choose all the appropriate labels and markings from the table on the right that must be used when packaging the substances described in the following scenarios:

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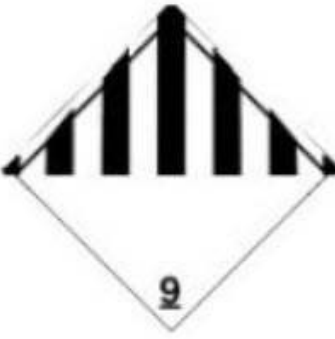
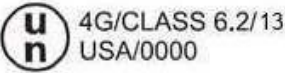


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Please select the single best answer

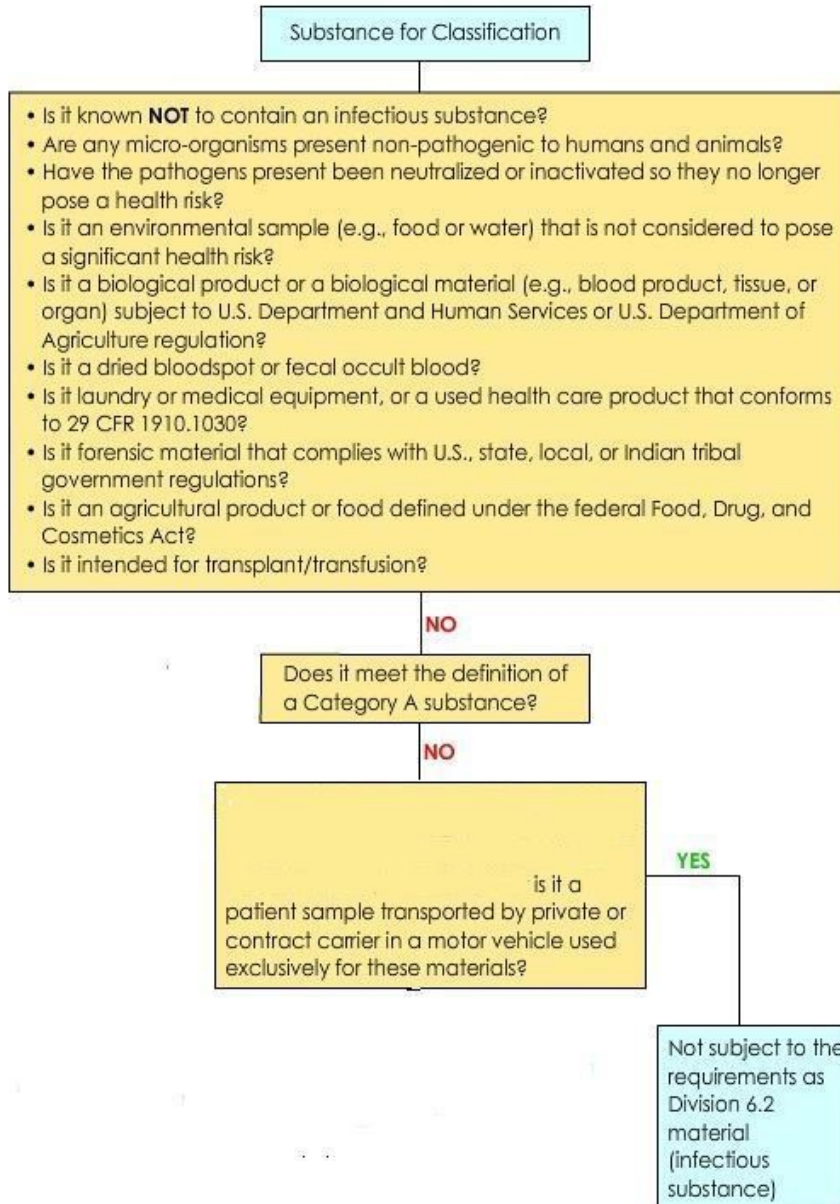
- A
- A, D
- C, L
- L

Feedback

These are category B substances, but there is an exception to the packaging and labeling requirements if the specimens are transported via an exclusive use motor vehicle. The only labeling that is required is the OSHA-required biohazard label, which is placed on the secondary or outer packaging.

Marking	Label
<p>Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p>Infectious substance, affecting humans</p> <p>UN2814</p> <p>C</p>	 <p>D</p>
<p>Dry Ice</p> <p>UN 1845</p> <p>Net quantity</p> <p>E</p>	 <p>F</p>
 <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p> 
<p>K</p> <p>Emergency Contact: Name and phone number</p>	<p>L</p> 



Ungraded Practice Question



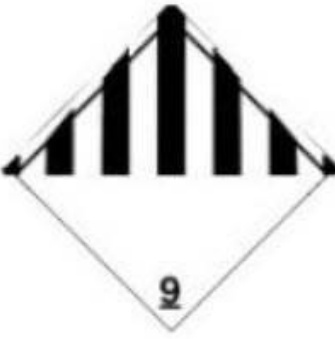
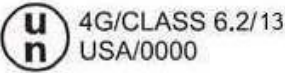


Scenario 2

A sputum specimen from a patient suspected of having tuberculosis is being sent by commercial ground carrier to a reference laboratory. The package does not require a refrigerant.

Which of these labels must be used on the outer packaging?

Please select the single best answer

- B, C, K
- B, C, G, K, L
- A, D, L
- A, D, I

Marking	Label
<p>Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p>Infectious substance, affecting humans UN2814</p> <p>C</p>	 <p>D</p>
<p>Dry Ice UN 1845 Net quantity</p> <p>E</p>	 <p>F</p>
 <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on airwaybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

Ungraded Practice Question

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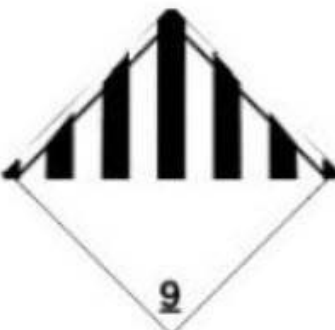
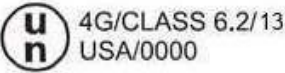


Please select the single best answer

- B, C, K
- B, C, G, K, L
- A, D, L
- A, D, I

Feedback

This is a Category B substance. Although the specimen is from a person suspected of having tuberculosis, it would only be considered a Category A substance if it were an actively growing culture of *Mycobacterium tuberculosis*. The appropriate labels for the outer package are A, D, and I.

The biohazard label ("L" in the table) should be placed on either the primary receptacle or the secondary packaging, but should **not** be placed on the outer packaging container.

Marking	Label
<p>Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p>Infectious substance, affecting humans</p> <p>UN2814</p> <p>C</p>	 <p>D</p>
<p>Dry Ice</p> <p>UN 1845</p> <p>Net quantity</p> <p>E</p>	 <p>F</p>
 <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	



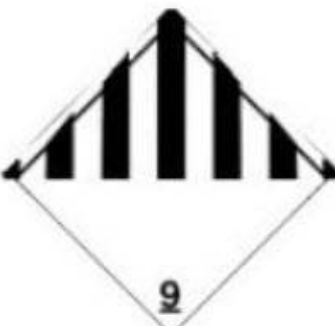



<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

Ungraded Practice Question

A specimen that is classified as a category A substance affecting humans is being transported by aircraft at ambient temperature (does not require refrigerant). The volume of the specimen is 75 mL. What labeling is required on the outer container?

Please select the single best answer

- C, D, G, I
- B, C, G, I
- B, C, G, K, L
- B, C, G, H, J, K

Marking	Label
<p>Biological Substance, Category B</p>	
<p>Infectious substance, affecting humans UN2814</p>	
<p>Dry Ice UN 1845 Net quantity</p>	
<p> 4G/CLASS 6.2/13 USA/0000</p>	
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

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A specimen that is classified as a category A substance affecting humans is being transported by aircraft at ambient temperature (does not require refrigerant). The volume of the specimen is 75 mL. What labeling is required on the outer container?



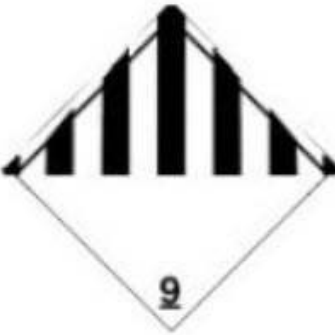
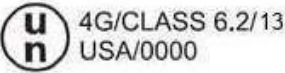


Please select the single best answer



- C, D, G, I
- B, C, G, I
- B, C, G, K, L
- B, C, G, H, J, K

Feedback

B, C, G, H, J, K are all required. The orientation arrows must be placed on any Category A package that is greater than 50 mL. A package that is greater than 50 mL or 50 grams can only be transported on cargo aircraft (not passenger aircraft) and must be labeled with the black-on-orange "cargo aircraft only" label shown on the table.

The biohazard label should not be placed on the outer container.

Marking	Label
<p style="text-align: center;">Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p style="text-align: center;">Infectious substance, affecting humans UN2814</p> <p>C</p>	 <p>D</p>
<p style="text-align: center;">Dry Ice UN 1845 Net quantity</p> <p>E</p>	 <p>F</p>
 <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	



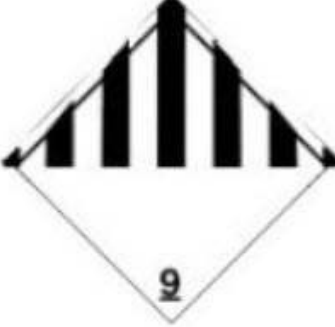
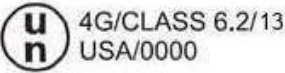


<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 



Ungraded Practice Question

What additional markings/labels would be added if the specimen needed to be kept cold, and dry ice is used as a refrigerant?

Please select the single best answer

- E only
- F only
- E and F
- No additional markings/labels are needed

Marking	Label
<p>Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p>Infectious substance, affecting humans UN2814</p> <p>C</p>	 <p>D</p>
<p>Dry Ice UN 1845 Net quantity</p> <p>E</p>	 <p>F</p>
 <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on airwaybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

Ungraded Practice Question

What additional markings/labels would be added if the specimen needed to be kept cold, and dry ice is used as a refrigerant?



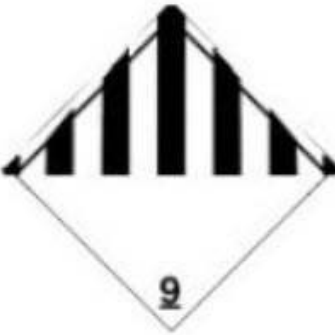



Please select the single best answer



- E only
- F only
- E and F
- No additional markings/labels are needed

Feedback

Dry ice is a Class 9 (miscellaneous) hazard and requires the Class 9 label. You will also include the UN classification for dry ice, "UN 1845", and the quantity (weight) of the dry ice that is used.

These labeling requirements apply to packages containing category A, category B, and exempt specimens if dry ice is used. Dry ice would be included on a Shipper's Declaration For Dangerous Goods form if a category A substance is being shipped. A Shipper's Declaration would not be required for a category B substance that included dry ice as a refrigerant. Instead, the dry ice would be noted on the air waybill.

Marking	Label
<p style="text-align: center;">Biological Substance, Category B</p> <p>A</p>	 <p>B</p>
<p style="text-align: center;">Infectious substance, affecting humans UN2814</p> <p>C</p>	 <p>D</p>
<p style="text-align: center;">Dry Ice UN 1845 Net quantity</p> <p>E</p>	 <p>F</p>
<p style="text-align: center;"> 4G/CLASS 6.2/13 USA/0000</p> <p>G</p>	 <p>H</p>
<p>Emergency Contact: Name and phone number (optional on outer package; may be written on air waybill instead)</p>	

<p>written on air waybill instead)</p> <p>I</p>	<p>J</p>  <p>FORBIDDEN IN PASSENGER AIRCRAFT</p>
<p>Emergency Contact: _____ Name and phone number _____</p> <p>K</p>	<p>L</p> 

Security Awareness

A category A infectious substance is in a form that is capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs. Exposure would occur if the substance were released from its protective packaging and a human or animal came into contact with it. Therefore, it is critical that a category A infectious substance does not end up in the hands of an unauthorized individual who may purposely or unknowingly release the substance from its protective packaging and endanger humans or animals.

Being aware of the people that you interact with in the process of packaging and sending category A substances is vital to the safety of the transport and prevention of a health disaster.

An outsider with limited access and system knowledge could constitute a threat, but be aware that insiders could also be a threat, e.g., a disgruntled employee or a person who is angry with his or her supervisor or job or the government. Anyone desiring to do harm could potentially seize the opportunity to steal a hazardous material.

Follow these precautionary procedures:

- When you are questioned about an infectious substance that you are packaging for shipment, it is important that you know the person that is asking **AND** that he or she has a need to know. If you do not know the person and if you are not aware that the person needs to know about the substance that is being shipped, do not answer the questions. You could refer him or her to your supervisor.
- Watch for unusual behavior.
- Secure the package until it is picked up.
- Check the identification of the courier who will be picking up the package.
- Use an intralaboratory chain of custody procedure if the specimens are transferred within the facility or system.
- Track the package once it has been sent to be sure it arrives safely. Notify the Responsible Official or federal authority if the package does not arrive at its destination.

Security Training Resource

Security awareness training, required for personnel who package and ship Category A specimens, can also be fulfilled by completing the DOT "Hazardous Materials Transportation Security Module" on line using this link:

http://www.phmsa.dot.gov/staticfiles/PHMSA/Hazmat/digipak/training_module.html.

A free DVD (Haxmat Digipack 7.2) can also be ordered:

https://hazmatonline.phmsa.dot.gov/services/Pub_Free.aspx.

These sites were last accessed February 22, 2016.

References

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http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Transporting_Infectious_Substances_brochure.pdf. Accessed February 22, 2016.

Exam Instructions

On the following pages, you will find a exam based on the material contained within this course. Please answer each question. When you click "OK" on each question, the exam question will be graded -- you will not be able to revise your answer once you click "OK." Your progress through the exam will be bookmarked, so you can continue from the last question you answered at a later date. At the end of the exam, your final score will be displayed, and you can print a certificate of completion.

Graded Question

Which of the following laboratory specimens **cannot** be sent through the United States Postal Service mail?

Please select the single best answer

- Category A specimens
- Category B specimens
- Exempt specimens
- None of the above specimens can be sent through the mail.
- All of the above specimens can be sent through the mail.

Graded Question

Which of these labels should be used on the **rigid outer package** for a category B substance that is being sent by commercial ground carrier (FedEx ground or UPS for example)?

Please select the single best answer

Label A



Label B



Label C



Graded Question

Match each of the following definitions to the term that it defines:

Select the correct match for each item from the drop-down box

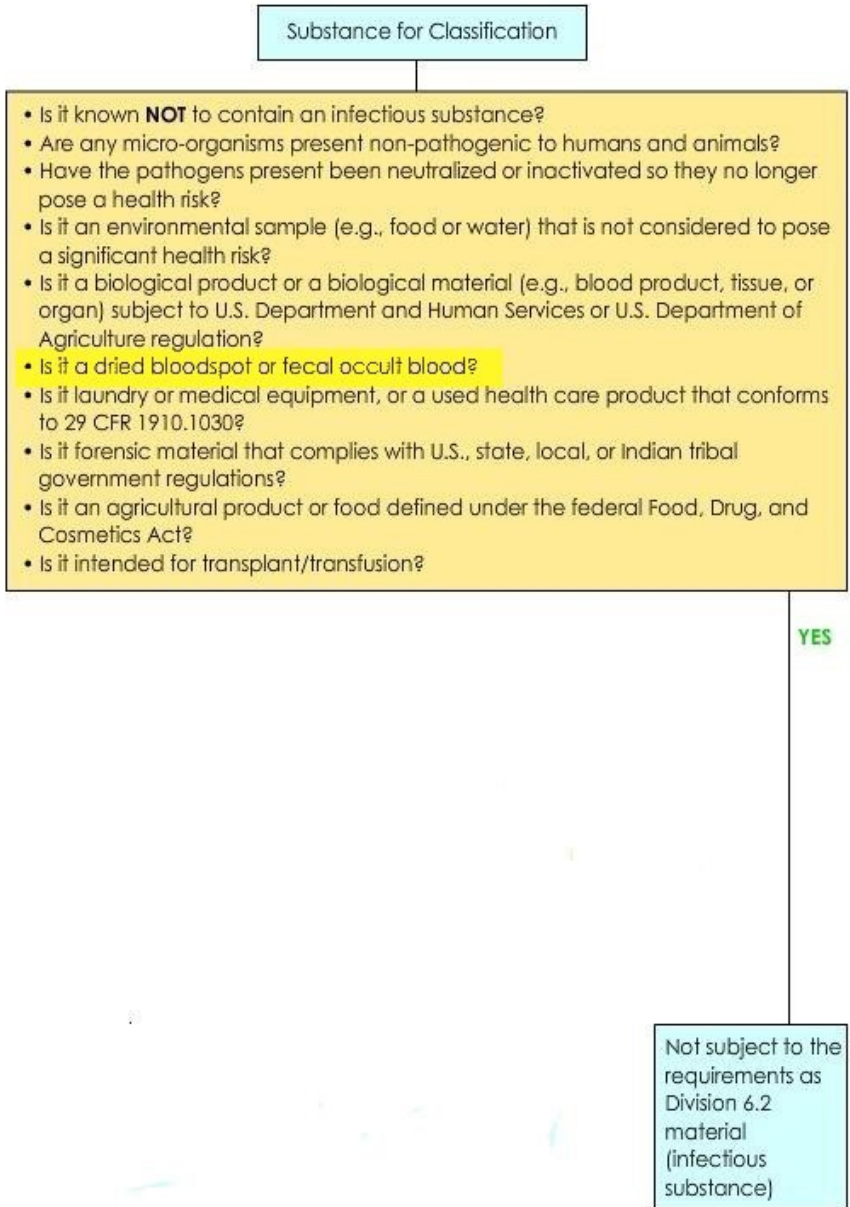
- An infectious substance that is not in a form generally capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs.
- An infectious substance that is in a form that is capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs.
- A substance that is unlikely to cause disease and is being transported for routine testing not related to the diagnosis of an infectious disease.

Graded Question

How would you classify a fecal occult blood card for packaging and shipping purposes?

Please select the single best answer

- Category A infectious substance
- Category B infectious substance
- Not subject to division 6.2 regulation
- Exempt specimen



Graded Question

A blood specimen from a healthy individual that is being sent by aircraft from your laboratory to a reference laboratory for a routine cholesterol test is classified as a category A substance.

Select true or false

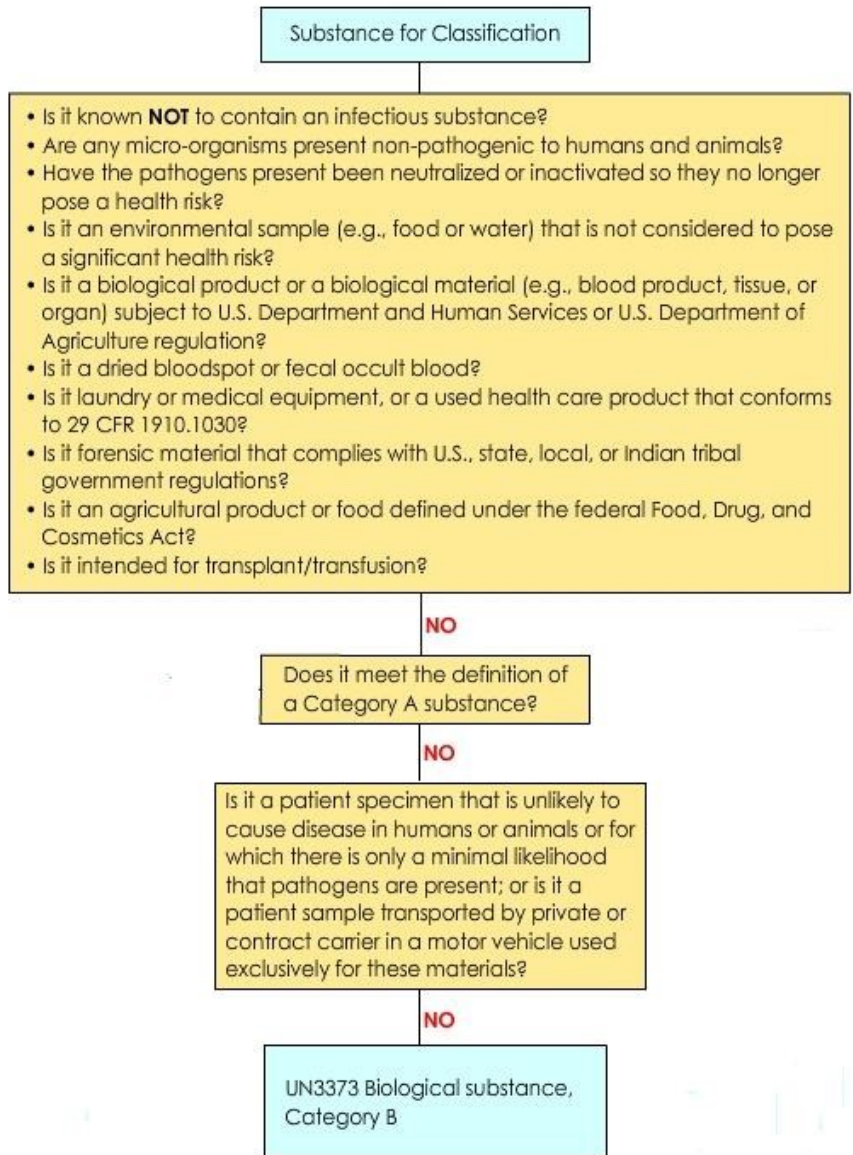
- True
- False

Graded Question

A blood specimen for HIV testing is being sent to a reference laboratory within the United States. How should it be classified for packaging and shipping purposes?

Please select the single best answer

- Category A specimen
- Category B specimen
- Exempt specimen

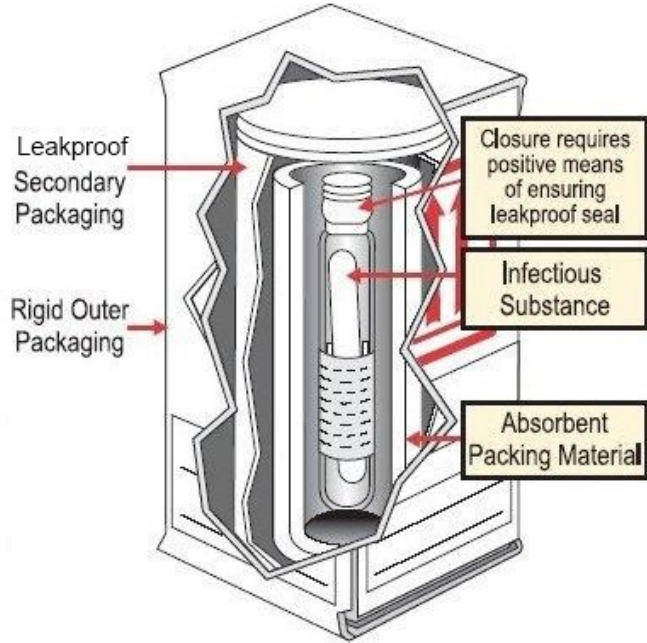


Graded Question

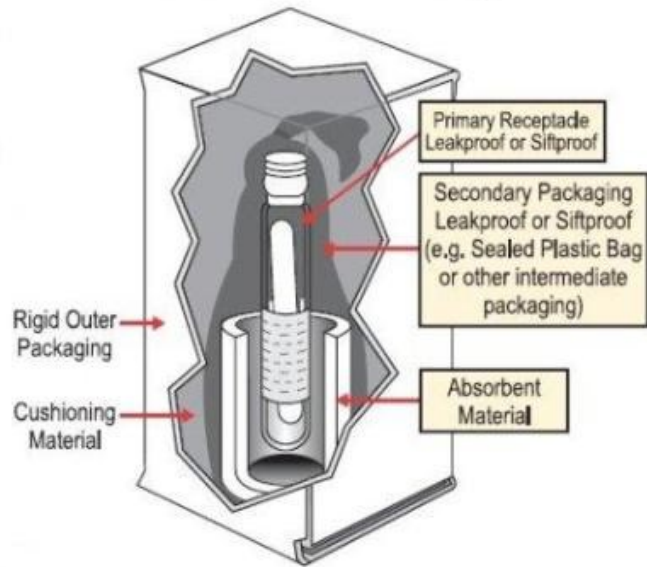
Match each of these cross sections of packages containing infectious substances to the classification of package that they represent.

Select the correct match for each item from the drop-down box

Package #1



Package #2



Graded Question

Which of the following would be an example of a category A substance?

Please select the single best answer

- A routine urine specimen for urinalysis
- A blood specimen for hepatitis A virus testing
- A blood specimen for glucose testing
- A culture suspected to be *Bacillus anthracis* (anthrax)

Graded Question

For which of the following specimens would this form be required?

Please select the single best answer

- Category A
- Category B
- Category B with dry ice
- Exempt

SHIPPER'S DECLARATION FOR DANGEROUS GOODS						
Shipper: Mytown Community Hospital Laboratory 333 A Street Mytown, GA 30122				Air Waybill No. 31215 Page 1 of 1 Pages Shipper's Reference Number (optional)		
Consignee: State Public Health Lab 21 Halper St. Digtown, NY 12020						
Two completed and signed copies of this Declaration must be handed to the operator.				WARNING Failure to comply with all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.		
TRANSPORT DETAILS This shipment is with the limitations prescribed for: (select one or applicable)						
<input type="checkbox"/> PASSENGER AIR CARGO AIRCRAFT			Airport of Departure:			
<input checked="" type="checkbox"/> AIR CARGO AIRCRAFT			Airport of Destination:			
Shipment type: (select one or applicable) <input type="checkbox"/> NON-HAZARDOUS <input checked="" type="checkbox"/> HAZARDOUS						
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification				Quantity and type of packaging	Packing Inst.	Authorization
LIN ID No.	Proper Shipping Name	Class includes Substanc. Risk	Pack. Inst. Group	1 x 5ml. tube in one fiberboard box.		
Additional Handling Information Responsible person: Shirley Brown (876) 525-1212						
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met.				Name/Title of Signatory: Shirley Brown, MT Place and Date: 1/28/2008 Mytown, GA 30122 Signature: (see marking above)		
(876) 525-1212			Emergency Telephone Number:			

Graded Question

What is the **MAXIMUM** volume of a category B liquid that can be contained in **EACH** primary receptacle if the specimen will be transported by air?

Please select the single best answer

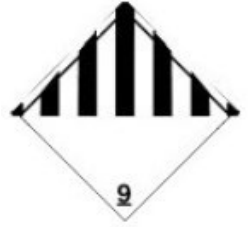
- 10 mL
- 1000 mL (1 L)
- 10,000 mL (10 L)

Graded Question

This label would be used for which of these materials?

Please select the single best answer

- Infectious substance, category A
- Infectious substance, category B
- Exempt specimen
- Dry ice



Graded Question

What amount of absorbent material must be included between the primary receptacle and secondary packaging for either a category A or category B liquid specimen?

Please select the single best answer

- At least enough to surround the primary receptacle
- Enough to completely absorb the specimen if the container leaked or broke
- Enough to fill the space between the primary receptacle and the secondary container
- There is no requirement for absorbent material

Graded Question

It is acceptable to package several primary receptacles together into the same secondary container if you individually wrap each of the primary receptacles.

Select true or false

- True
- False

Graded Question

Which of these labels are appropriate for the outer or secondary package containing a blood specimen for Hepatitis C virus testing that is being picked up by courier and transported in an exclusive use motor vehicle from your laboratory to your main testing laboratory?

Please select the single best answer

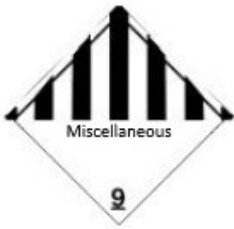
Label A



Label B



Label C



Graded Question

Where should an itemized list of contents be placed in the packaging for a category A substance?

Please select the single best answer

- Wrapped around the primary receptacle
- Between the primary receptacle and secondary packaging
- Between the secondary packaging and the outer packaging
- Taped to the outside of the rigid outer package.

Graded Question

Hazardous materials are least vulnerable when in transit.

Select true or false

- True
- False

Graded Question

If someone asks you questions about a category A infectious substance that you are packaging for shipment, it is acceptable to answer the questions if the person is someone that you recognize.

Select true or false

- True
- False