PACKAGING, LABELING AND SHIPPING INFECTIOUS SUBSTANCES

INFECTIOUS SUBSTANCES

Federal and international regulations classify substances known or reasonably expected to cause infectious disease in humans or animals, and the materials or vectors that contain them, as “infectious substances” or “etiologic agents”. The international term “infectious substances” has replaced “etiologic agent” in Department of Transportation (DOT) and Public Health Service (PHS) regulations. However, “etiologic agent” may still be referred to in older regulations such as PHS 42 CFR and the United States Postal Service 39 CFR.

REGULATIONS

Federal and international regulations applicable to the shipment of infectious substances are listed in Appendix 1. The International Air Transport Association (IATA) Dangerous Goods Regulations apply to shipment of infectious substances via international and domestic air transportation. PHS 42 CFR, DOT 49, and United States Postal Service (USPS) regulations apply to domestic transportation by land, air, sea, and rail. IATA has the most stringent requirements for transportation of infectious substances. Additional requirements for the importation of infectious substances from foreign countries are covered in 42 CFR.

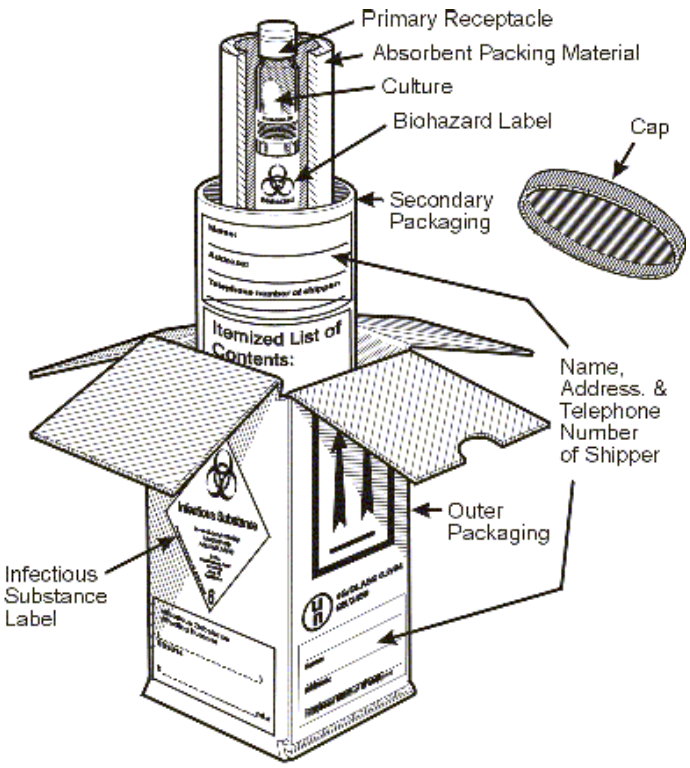
It is the responsibility of the shipper to ensure correct identification, classification, packaging, labeling, marking and documentation for all shipments of infectious substances. In addition, the shipper must make advance arrangements with the recipient (consignee) and operator (carrier), including acquisition of any permits for the importation of infectious substances from foreign countries. Failure to comply with federal and international regulations can result in refusal of the shipment by the airline, penalties of fines, jail, or both. Hand carriage of infectious substances by air is strictly prohibited by law.

PACKAGING

1. General

Proper packaging includes the classification, identification, packing, marking, labeling, and documentation of materials for shipment. Infectious substances must be packed according to specific instructions and specifications and the packaging material must be certified to meet rigorous performance tests as outlined in the DOT, USPS, PHS, and lATA regulations. Figure 1 depicts the principle of triple packaging (primary receptacle, water tight secondary packaging, durable outer packaging) upon which all regulations are built.

Figure 1. Packing and Labeling of Infectious Substances



1.1 Primary Receptacle. The primary receptacle contains the infectious substance and must be watertight to prevent leakage. Primary receptacles include those of glass, metal, or plastic and include screw-cap tubes, flame-sealed glass ampules, or rubber-stopped glass vials fitted with metal seals. Positive means of ensuring a leak-proof seal, such as a heat seal, skirted stopper, or metal crimp seal must be provided. Screw caps may be fastened with tape, shrink seals, or other comparable material. Although glass is allowed, it is preferable to use plastic primary receptacles if possible.

1.2 Secondary Packaging. One or more primary receptacles are placed in a watertight secondary packaging. The primary receptacle or the secondary packaging must withstand, without leakage, an internal pressure differential and temperature range as described in the United Nations (UN) packaging specifications and performance tests. The secondary packaging should also bear a label with the name, address, and telephone number of the shipper.

1.3 Absorbent Material. Absorbent material must be placed between the primary receptacle and secondary packaging. Multiple primary receptacles must be individually wrapped to prevent contact between them. The absorbent material must be sufficient to absorb the entire contents of the primary container(s).

1.4 Itemized List. lATA, DOT and PHS require that an itemized list of contents must be enclosed between the secondary packaging and the outer packaging.

1.5 Outer Packaging. An outer packaging must be of adequate strength for its capacity, mass, and intended use, and must be capable of meeting specific UN performance tests. Packaging that is certified to meet the test standards must be marked with a UN specification mark.

2. Classification

All hazardous materials are classified into 9 classes of Dangerous Goods. Infectious Substances belong to Class 6, Division 6.2. Dry ice is a Dangerous Good when shipped by air, and if packaged with an infectious substance, it must be declared as Class 9.

3. Identification

Infectious substances are assigned a "proper shipping name" and a unique UN number to identify the substance being shipped. This information is included on the Shipper's Declaration for Dangerous Goods and the outer package. For infectious substances, UN 2814 is used for "Infectious substance, affecting humans", and UN 2900 refers to "Infectious substance, affecting animals." The technical name of the infectious substance must also be included on the Shipper's Declaration, if known.

3.1 Quantity Limitations. When transported by passenger airline, DOT and lATA limit the quantity per package to 50 ml or 50 g. When transported by cargo airline, lATA limits the quantity per package to 4 liters or 4 kg.

4. Certified Packaging and Packing Instructions

If the infectious substance is transported by air, lATA regulations require a UN specification mark on the outer shipping packaging. The mark includes the United Nations packaging symbol, the type of packaging, the hazard class (6.2), the year of manufacture of the packaging, the authorizing agency and the manufacturer. Each package must be capable of passing the rigorous performance tests specified in lATA Dangerous Goods Regulations for Class 6.2 and DOT 49 CFR Part 178.609. Because performance testing is normally beyond the scope of shippers, it is strongly recommended that certified containers purchased from commercial suppliers be used, regardless of the mode of transportation.

Instructions for packing infectious substances are designated in UN Packing Instruction 620 listed in the lATA Dangerous Goods Regulations and DOT 49 CFR Part 173.196. These packing instructions also specify other requirements and limitations.

4.1 Size. Packages consigned as freight must be at least 100 mm (4 in) in the smallest overall external dimension. Thus, the outer packaging must be of sufficient size to bear the required markings and labels.

4.2 Ice and Dry Ice. Ice or dry ice must be placed outside the secondary packaging. Interior supports must be provided to secure the secondary packaging in the original position after the ice or dry ice has dissipated. If ice is used, the packaging must be leak-proof. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas. Dry ice is packed according to UN Packing Instruction 954 listed in the lATA Dangerous Goods Regulations.

4.3 Liquid Nitrogen. Special arrangements must be made with the carrier in advance to ensure the safe transport of liquid nitrogen. Plastic primary receptacles and secondary packaging capable of withstanding very low temperatures must be used, and special labels are required on the outer container (see Labeling below).

4.4 Overpacks. Overpacks are used to combine several triple packages into one outer unit. Each triple package inside the overpack must be properly labeled and marked and the outside of the overpack must bear the same labels and markings as the inner packages and be marked with the word "Overpack."

5. Marking and Labeling
Each package of infectious substances must be marked on the outside of the shipping container with the following:

a) The proper shipping name and corresponding UN Number.
b) The full name and address of the shipper and the consignee
c) Phone number of the person responsible for the shipment.
d) For dry ice, the net weight of the dry ice within the package.

The outer packaging must be of sufficient size to accommodate all labels placed on a single surface. Labels must not overlap. Labels required on the outside of the shipping container include:

a) Class 6, Division 6.2 "Infectious Substance" label. This diamond-shaped label should contain the telephone number of the CDC in Atlanta to which damaged or leaking packages should be reported.

b) Class 9 "Miscellaneous Dangerous Goods" label. This diamond-shaped label is used for dry ice.

c) "Package Orientation (This Way Up)" labels. Two package orientation labels are affixed on opposite sides of the package.

d) If liquid nitrogen is used, 2 labels are required: Division 2.2 “Non-flammable, non-toxic gas” and the “Cryogenic Liquid” handling label.

e) For USPS shipments, a biohazard label is required.

f) The Shipper's Declaration for Dangerous Goods document should be attached to the outside of the outer packaging

g) A current U.S. Public Health Service import permit for infectious substances imported from outside the United States.

h) "Cargo Aircraft Only" label for shipments that exceed the maximum quantity specified for passenger aircraft.

6. Documentation
Packages containing infectious substances that are transported by air must contain a "Shipper's Declaration for Dangerous Goods" form. This legal document must be fully and accurately completed by the shipper. Incomplete, illegible or inaccurate documents will result in refusal of the package by the carrier.
It must include a 24-Hour Emergency Response Number. Both DOT and lATA require that this number appear on the shipping document and be used whenever there is a spill or accident involving the shipment of an infectious substance. This number must be that of a person who is knowledgeable of the material being shipped and has emergency response and incident mitigation information. The number must be answered 24 hours a day for the entire time the package is in transit.

6.1 Confirmation of Receipt. The consignee should report to the shipper that they have received the shipment of infectious substances. Confirmation is always required for shipments of Select Agents.

6.2 Air Waybill. The shipper may or may not be required to fill out the air waybill for shipments by air.

7. Training
lATA and DOT require specific training of everyone directly involved in the shipping of dangerous goods. It is the responsibility of the employer to ensure that employees shipping dangerous goods are trained. lATA requires training and recertification every 2 years, or DOT requires training and recertification every 3 years.

OTHER CONSIDERATIONS

Importation of Agents of Human Disease

42 CFR Part 71 Foreign Quarantine. Part 71.54 Infectious Biological Agents, Infectious Substances and Vectors.
This regulation requires an import permit from the Centers for Disease Control and Prevention for importing etiologic agents of human disease and any materials, including live animals or insects, that may contain them. An application and information on importation permits may be on the Internet at:
https://www.cdc.gov/import-permit-program/php/index.htm

Importation of Etiologic Agents of Livestock, Poultry and Other Animal Diseases

9 CFR Parts 92, 94, 95 96, 122 and 130. These regulations requires an import permit from the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services to import or domestically transfer infectious agents of livestock, poultry, other animals, and any materials that might contain these infectious agents. Information may be obtained at:

https://www.aphis.usda.gov/aphis/ourfocus/importexport

Importation and Exportation of Endangered Species of Animals and Plants

The U.S. Department of the Interior, U.S. Fish and Wildlife Service, Convention on International Trade in Endangered Species (CITES) protects many species of animals and plants to ensure that commercial demand does not threaten their survival in the wild. The Division of Management Authority administers CITES in the U.S. and processes applications for permits. Live animal shipments must meet the lATA Live Animal Regulations or the CITES guidelines for transport. In addition, the import of live mammals and birds must meet the humane shipment regulations in 50 CFR Part 14. For more information, contact United States Fish and Wildlife Service at:

http://www.fws.gov/permits

Transfer of Select Biological Agents of Human Disease

42 CFR Part 72.6 Additional Requirements for Facilities Transferring or Receiving Select Agents. Facilities transferring or receiving select agents must be registered with the CDC or USDA and each transfer of a select agent must be documented. Information may be obtained at:

http://www.selectagents.gov

Export of Etiologic Agents of Humans, Animals, Plants and Related Materials

Department of Commerce. 15 CFR Parts 730 to 799. This regulation requires that exporters of a wide variety of etiologic agents of human, plant and animal diseases, including genetic material will require an export license. Information may be obtained from the DOC Bureau of Export Administration at:

https://www.commerce.gov/

Damaged or Leaking Packages
If damage or leakage to a package containing infectious substances is discovered, avoid further handling of the package or keep handling to a minimum, and notify the shipper and consignee.

INFORMATION SOURCES

This document is for guidance purposes only. Information sources on regulations applying to the interstate and international transportation of infectious substances are shown in Appendix 1. Appendix 2 contains a partial list of manufacturers and suppliers of shipping materials and Appendix 3 lists some suppliers of Dangerous Goods Shipper's Declaration forms and labels.

Appendix 1. INFORMATION SOURCES FOR REGULATIONS ON THE TRANSPORTATION OF INFECTIOUS SUBSTANCES

Department of Transportation. 49 CFR Parts 171-180. Hazardous Materials Regulations.
Applies to the shipment of both biological agents and clinical specimens. Information may be obtained from the internet at:
http://phmsa.dot.gov/hazmat/regs

United States Postal Service. 39 CFR Part 113. Hazardous, restricted, and perishable mail.
Codified in the Domestic Mail Manual 131 (Publication 52). A copy of the Domestic Mail Manual may be obtained from the internet at:
http://pe.usps.com/ choose or search "Hazardous, Restricted and Perishable mail"

Occupational Health and Safety Administration (OSHA). 29 CFR Part 1910.1030.
Occupational Exposure to Bloodborne Pathogens. Provides minimal packaging and labeling requirements for transport of blood and body fluids within the laboratory and outside of it. Information may be obtained from your local OSHA office or from the internet at:
http://www.osha.gov

Dangerous Goods Regulations (DGR). International Air Transport Association (IATA). These regulations provide packaging and labeling requirements for infectious substances and materials, as well as clinical specimens that have a low probability of containing an infectious substance. These are the regulations followed by the airlines. These regulations are derived from the Committee of Experts in the Transport of Dangerous Goods, United Nations Secretariat, and the Technical Instructions for the Transport of Dangerous Goods by air which is provided by the International Civil Aviation Organization (ICAO). For assistance with the requirements of the regulation, visit:
http://www.iata.org search "Dangerous Goods Regulations"

Guidelines for the Safe Transport of Infectious Substances. World Health Organization. Visit:
https://www.who.int/ search for "Guidance on regulations for the Transport of Infectious Substances"

Appendix 2. MANFACTURERS OF UNITED NATIONS CERTIFIED SHIPPING CONTAINERS FOR 6.2 INFECTIOUS SUBSTANCES

Action Pak, Inc.
Keystone Industrial Park
2550 Pearl Buck Rd.
P.O. Box 557
Bristol, PA 19007
Tel: 215-785-4548
Web: http://www.actionpakinc.com/

AirSea USA
271 S Pleasant Street
Oberlin, OH 44074
Phone: 412 308 5888
Email: us@airseadg.com
http://www.airseadg.com
Web: http://www.airseadg.com/en-us/products

Air Sea Containers, Inc.
1850 NW 94th Ave.
Miami, FL 33172
Phone: 305-599-9123
Phone: 866-764-4148
Web: www.airseacontainers.com

The Compliance Center, Inc.
2150 Liberty Drive
Niagara Falls, NY 14304
Phone: 888-442-9628
Web: https://www.thecompliancecenter.com/

3/18/2026

Federal Industries Corp.
2550 Niagara Lane
Plymouth, MN 55447
Phone: 763-476-1500
Fax: 763-476-8155
Web: www.chem-tran.com

HAZMATPAC, Inc.
7905 Blankenship Drive
Houston, TX 77055
Phone: 800-923-9123
Web: www.hazmatpac.com

Inmark, Inc.(Saf-T-Pak)
675 Hartman Road Suite 100
Austell, GA 30168
Phone: 800-646-6275
Web: www.inmarkpackaging.com

Appendix 3. MANFACTURERS OF LABELS FOR SHIPPING OF INFECTIOUS SUBSTANCES

Label Master
5724 North Pulaski
Chicago, IL 60646
Phone: 800-621-5808
Web: www.labelmaster.com

Shamrock Specialty Systems, Inc.
2251 York Road, Suite 310
Oak Brook, IL 60523
Phone: 800-323-0249
Web: www.shamrocklabels.com

Uline
12575 Uline Drive
Pleasant Prairie, WI 53158
Phone: 800-295-5510
Fax: 800-295-5571
Web: https://www.uline.com/

International Export of Biological Materials

The United States places restrictions on the international export of numerous items, including some microorganisms, their products and associated scientific equipment. These restrictions are imposed for National Security, Economic security and trade sanctions. The federal agencies responsible for imposing and enforcing the restrictions are the Department of Commerce, Department of State, Department of the Treasury and the Census Bureau (Customs Service). Each agency issues its own licenses based on their specific set of restrictions.

Department of Commerce- Bureau of Industry and Security (BIS)
Implements and enforces the Export Administration Regulations (EAR) found in 15 CFR Parts 730-774. These regulations are concerned with the export of commercial items and items of "dual use". Dual use refers to items used for benign purposes which could be turned into weapons or used for other nefarious purposes. The BIS maintains a Commerce Control List and issues licenses based on the commercial classification of the item. They can assist in the proper classification of items. License applications are handled online, and most applications are approved for export. Consequences of EAR violations could include a criminal investigation with loss of export privileges, fines up to $1 million or imprisonment (up to ten years) or both.
https://www.bis.doc.gov/

Department of State- Directorate of Defense Trade Controls (DDTC)
Implements and administers the International Traffic in Arms Regulations (ITAR) found in 22 CFR Parts 120-130. This regulation generated the U.S. Munitions List, which has among the expected weaponry and weapon systems "Toxicological Agents and Equipment and Radiological Equipment". Toxicological agents could include any organism producing toxins or the toxins themselves. They could be classified as a "defense article" by the ITAR. Licenses are issued by the DDTC and enforced by the U.S. Immigration and Customs Enforcement (ICE). Fines and penalties can include Civil charges up to $500,000 each violation, Criminal charges of $1,000,000 each violation, 63-78 months imprisonment.
www.pmddtc.state.gov

Department of Treasury- Office of Foreign Assets Control (OFAC)
Enforces economic and trade sanctions against specific foreign counties and individuals or organizations engaged in weapons of mass destruction proliferation. The list of countries changes as sanctions are imposed or lifted. Sanctions may extend beyond the items for export to items carried into a country for a conference or meeting. Penalties and consequences range from a warning letter up to Civil and Criminal penalties.
https://ofac.treasury.gov/

Census Bureau- Customs Service
All export transactions must be tracked for foreign trade statistics. Every item exported is assigned a unique identification "Schedule B number". A Shippers Export Declaration (SED) may be required based on the value of the items exported. Some common media components and reagents are included in the Schedule B number identifications. The SED may also be required when any license is issued or when the item is going to a sanctioned country. The SED may be filed by your shipping company or by going directly to the web site below. Significant fines are associated with failure to file an SED.
www.census.gov/foreign-trade/www/index.html

University of Connecticut Office of the Vice President for Research- Export Control Compliance Program
A University official can work with you to ensure compliance with all export regulations.
https://ovpr.uconn.edu/services/research-security/export-control/

Annex 3: Indicative list of infectious substances sub-classified as Category A

Indicative examples of infectious substances included in Category A in any form unless otherwise indicated	
UN number and Proper Shipping Name	**Microorganism**
UN 2814 Infectious substance, affecting humans	*Bacillus anthracis* (cultures only)
	Brucella abortus (cultures only)
	Brucella melitensis (cultures only)
	Brucella suis (cultures only)
	Burkholderia mallei - *Pseudomonas mallei* - Glanders (cultures only)
	Burkholderia pseudomallei - *Pseudomonas pseudomallei* (cultures only)
	Chlamydia psittaci – avian strains (cultures only)
	Clostridium botulinum (cultures only)
	Coccidioides immitis (cultures only)
	Coxiella burnetii (cultures only)
	Crimean-Congo haemorrhagic fever virus
	Dengue virus (cultures only)
	Eastern equine encephalitis virus (cultures only)
	Escherichia coli, verotoxigenic (cultures only)
	Ebola virus
	Flexal virus
	Francisella tularensis (cultures only)
	Guanarito virus
	Hantaan virus
	Hantaviruses causing haemorrhagic fever with renal syndrome
	Hendra virus
	Hepatitis B virus (cultures only)
	Herpes B virus (cultures only)
	Human immunodeficiency virus (cultures only)
	Highly pathogenic avian influenza virus (cultures only)
	Japanese Encephalitis virus (cultures only)
	Junin virus
	Kyasanur Forest disease virus
	Lassa virus
	Machupo virus
	Marburg virus
	Monkeypox virus (cultures only)
	Mycobacterium tuberculosis (cultures only)
	Nipah virus
	Omsk haemorrhagic fever virus
	Poliovirus (cultures only)
	Rabies virus (cultures only)

	Rickettsia prowazekii (cultures only)
	Rickettsia rickettsii (cultures only)
	Rift Valley fever virus (cultures only)
	Russian spring-summer encephalitis virus (cultures only)
	Sabia virus
	Shigella dysenteriae type 1 (cultures only)
	Tick-borne encephalitis virus (cultures only)
	Variola virus
	Venezuelan equine encephalitis virus (cultures only)
	West Nile virus (cultures only)
	Yellow fever virus (cultures only)
	Yersinia pestis (cultures only)
UN 2900 infectious substance, affecting animals	African swine fever virus (cultures only)
	Avian paramyxovirus Type 1 – Velogenic Newcastle disease virus (cultures only)
	Classical swine fever virus (cultures only)
	Foot and mouth disease virus (cultures only)
	Goatpox virus (cultures only)
	Lumpy skin disease virus (cultures only)
	Mycoplasma mycoides – Contagious bovine pleuropneumonia (cultures only)
	Peste des petits ruminants virus (cultures only)
	Rinderpest virus (cultures only)
	Sheep-pox virus (cultures only)
	Swine vesicular disease virus (cultures only)
	Vesicular stomatitis virus (cultures only)

Examples of Marking, Labeling and Documentation

The following pages have examples of three possible shipping scenarios for biological agents. Keep in mind that these are just examples. Your situation may be different and your shipments may include other dangerous goods/hazardous materials that were not covered as part of the Shipping and Transporting of Biological Agents training. Each page shows the markings and labels required for Infectious Substance Category A, Biological substance Category B and Patient Specimens along with the associated package requirements.

Documentation for a biological agent shipment will always include a packing list, see below for examples. Any and all shipments may require a copy of a Material Transfer Agreement. An Infectious Substance Category A shipment must have three copies of the Shipper's Declaration for Dangerous Goods (one for you, two that go with the package), and any permits required by CDC or USDA. Biological Substance Category B may also require permits from CDC or USDA. For shipments outside the U.S., you must include copies of any permits issued by the receiving nation and Department of Commerce permits if required.

Example Packing list for Infectious Substance Category A 5 Plastic tubes with 1 ml of *Mycobacterium tuberculosis* Dry Ice	Example Packing list for Biological Substance Category B 5 Plastic tubes with 1 ml of *Escherichia coli* Dry Ice
Example Packing list for Patient Specimens 2 tubes human blood 5 cheek swabs	

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

EXAMPLE ONLY

Shipper

Joseph L. Shipper
UConn Environmental Health and Safety Laboratory
1 Husky Way, Unit 4097
Storrs, CT 06269-4097 USA

Air Waybill No.

Page 1 of 1 Pages

Shipper's Reference No. (optional)

Consignee

Mark R. Consignee
State University Molecular and Cell Biology Laboratory
3700 State Highway, Box 1101
Atlanta, GA 01010 USA

Two completed and signed copies of this Declaration must be handed to the operator

WARNING

Failure to comply in 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)

PASSENGER AND CARGO AIRCRAFT	XXX CARGO AIRCRAFT ONLY

Airport of Departure (optional):

Airport of Destination (optional):

Shipment type: *(delete non-applicable)*

NON-RADIOACTIVE	XXXXXXXXXXXX

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (subsidiary hazard)	Packing Group	Quantity and Type of Packing	Packing Inst.	Authorization
UN2814	Infectious Substance, affecting humans (Mycobacterium tuberculosis)	6.2		5 ml	620	
UN1845	Dry Ice	9		1 kg All packed in one fiberboard box	954	

Additional Handling Information

24 hour Emergency Telephone Number: 1-800-321-9876

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 of Signatory

Joseph L. Shipper

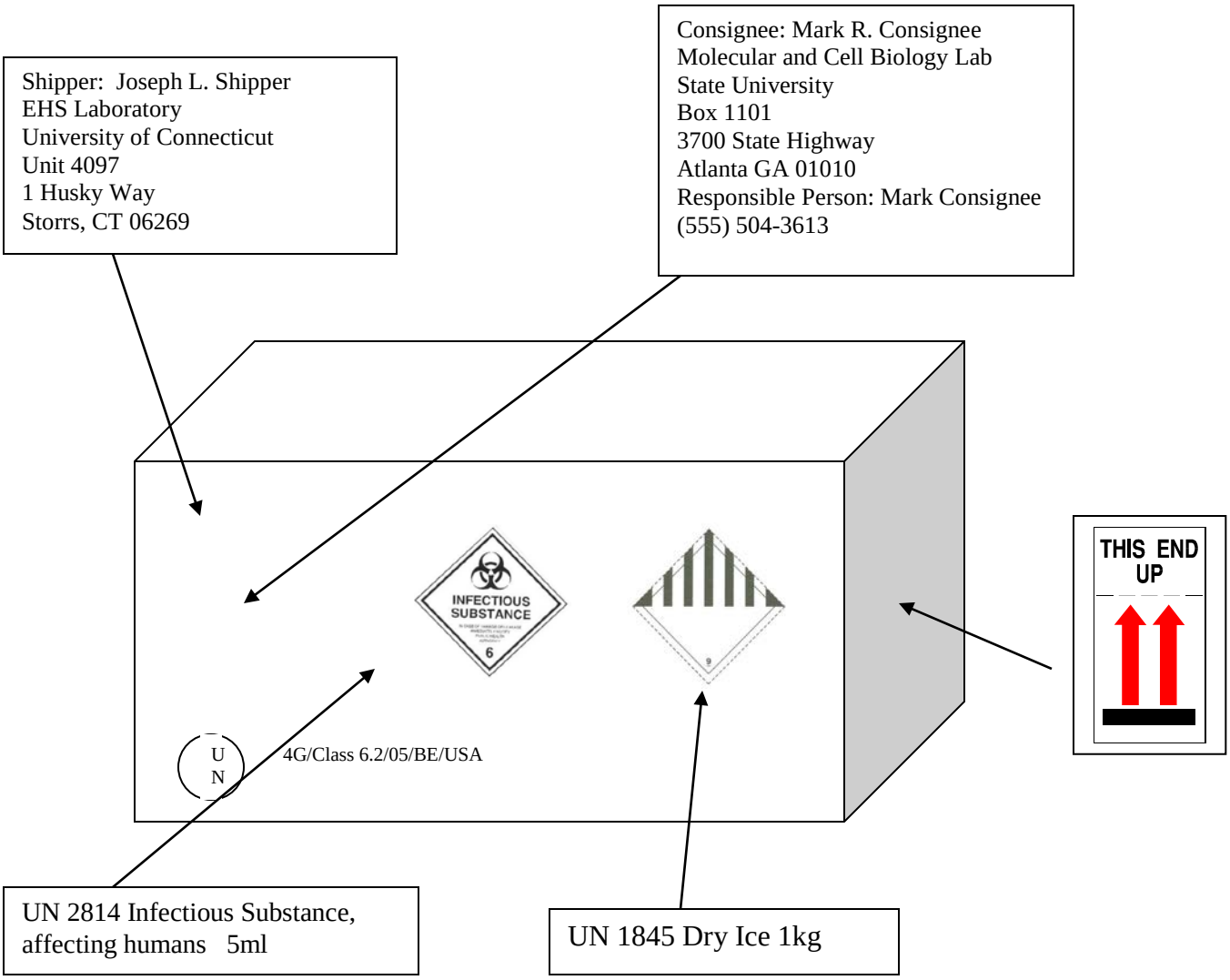
Date February 12, 2019

Joseph L. Shipper

Signature
(See warning above)

EXAMPLE ONLY

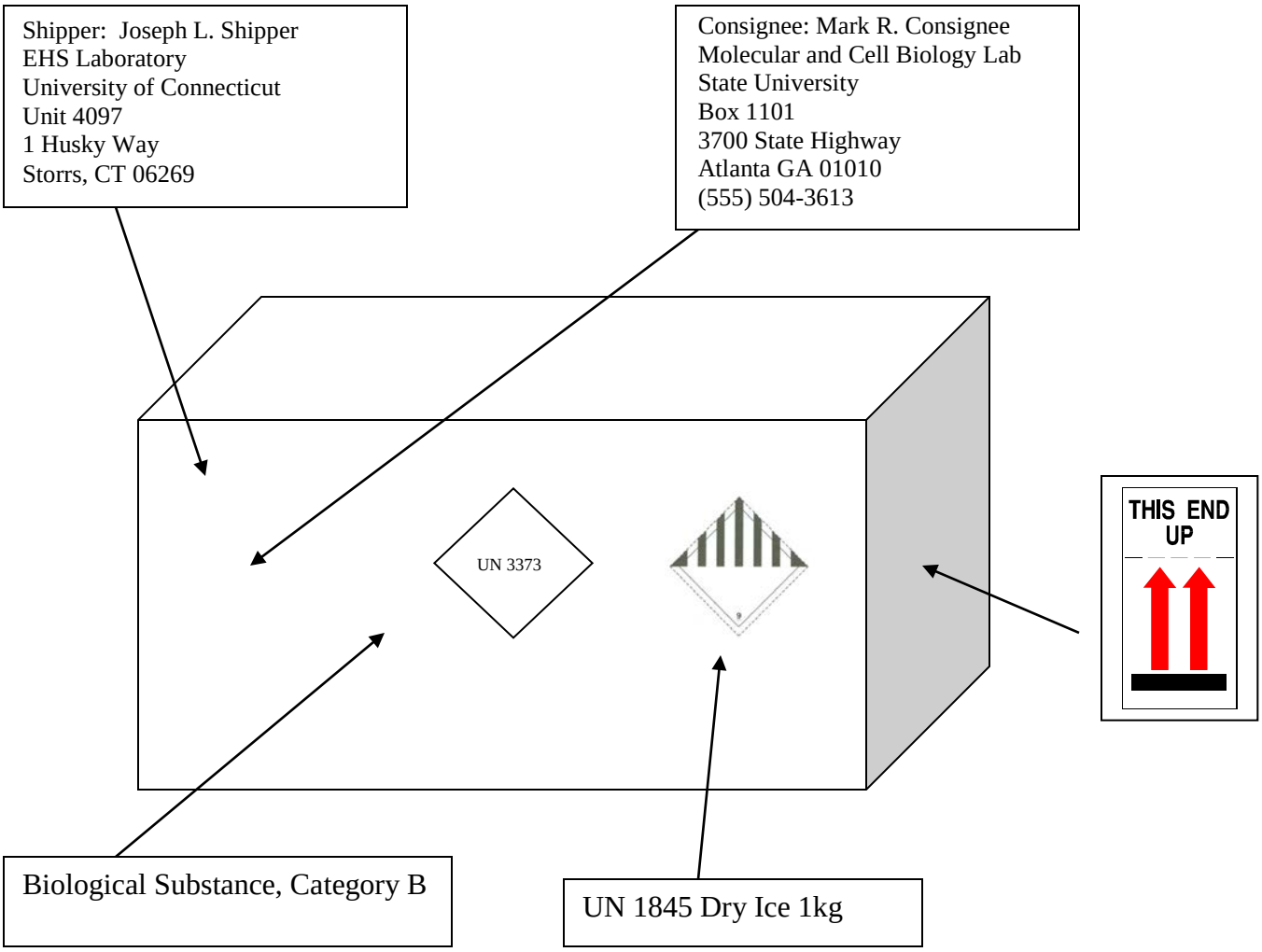
Infectious Substance Category A- Dry Ice



This package must:
Comply with packing instructions 620 Infectious Substance and 954 Dry Ice

- Water tight primary container
- Water tight secondary container
- Absorbent material sufficient to contain any liquids
- Wrapped primary-to prevent breakage/damage
- Outer package with a dimension of at least 100mm x 100mm (4 inches x 4 inches)
- Pressure capable and tested per UN specifications
- Designed and constructed to permit the release of carbon dioxide gas

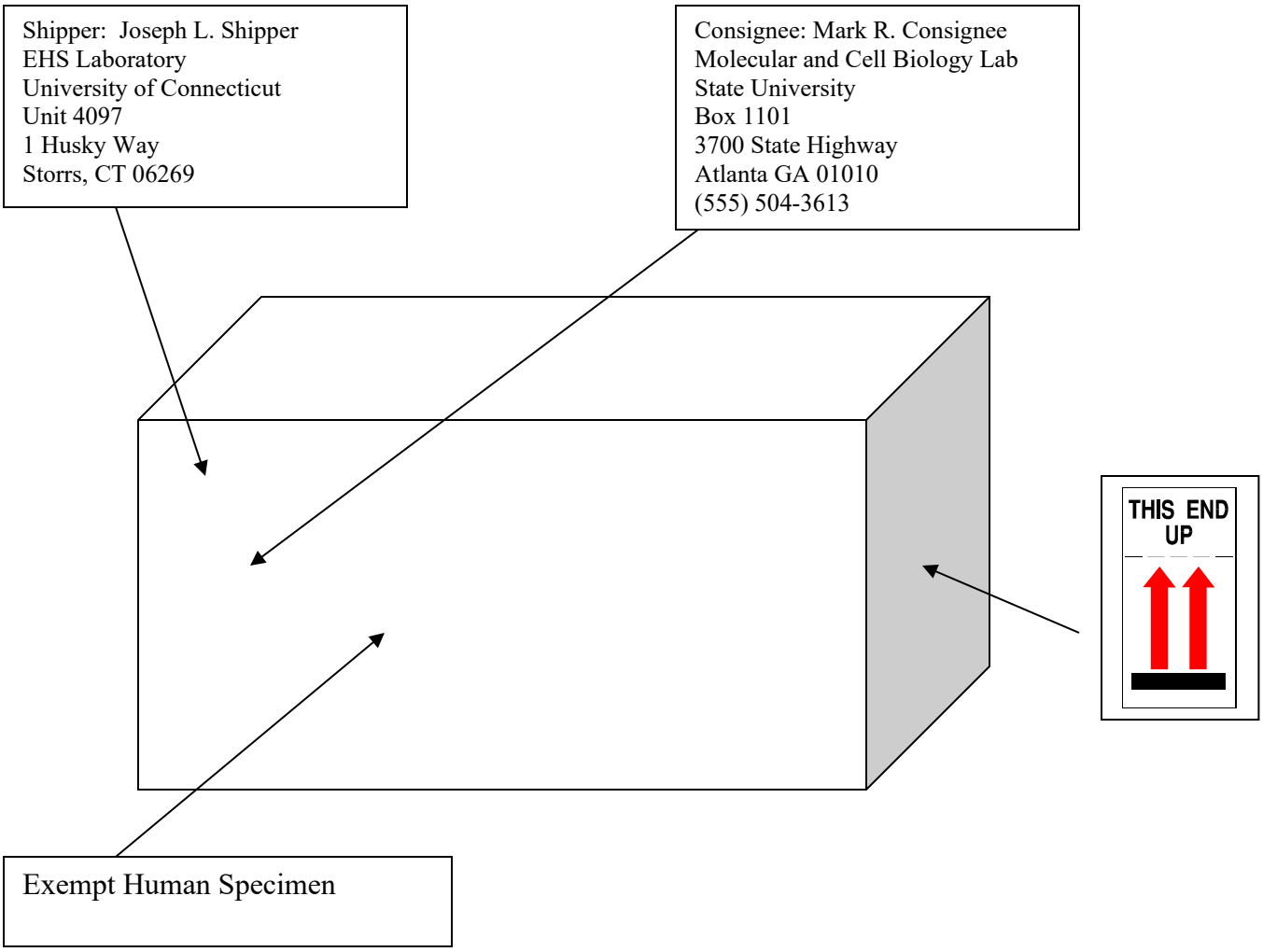
Biological Substance Category B-Dry Ice



This package must:
Comply with packing instructions 650 Infectious Substance and 954 Dry Ice

- Water tight primary container
- Water tight secondary container
- Absorbent material sufficient to contain any liquids
- Wrapped primary-to prevent breakage/damage
- Outer package with a dimension of at least 100mm x 100mm (4 inches x 4 inches)
- Pressure capable and tested per UN specifications
- Designed and constructed to permit the release of carbon dioxide gas

Patient Specimens



This package must have:
A leak-proof primary receptacle
A leak-proof secondary packaging
An outer packaging of adequate strength for the intended use and with one surface having minimum dimensions of 100mm X 100mm (4 inches x 4 inches)
Absorbent material in sufficient quantity to absorb any liquid contents

Shipping Biological Agents with Dry Ice

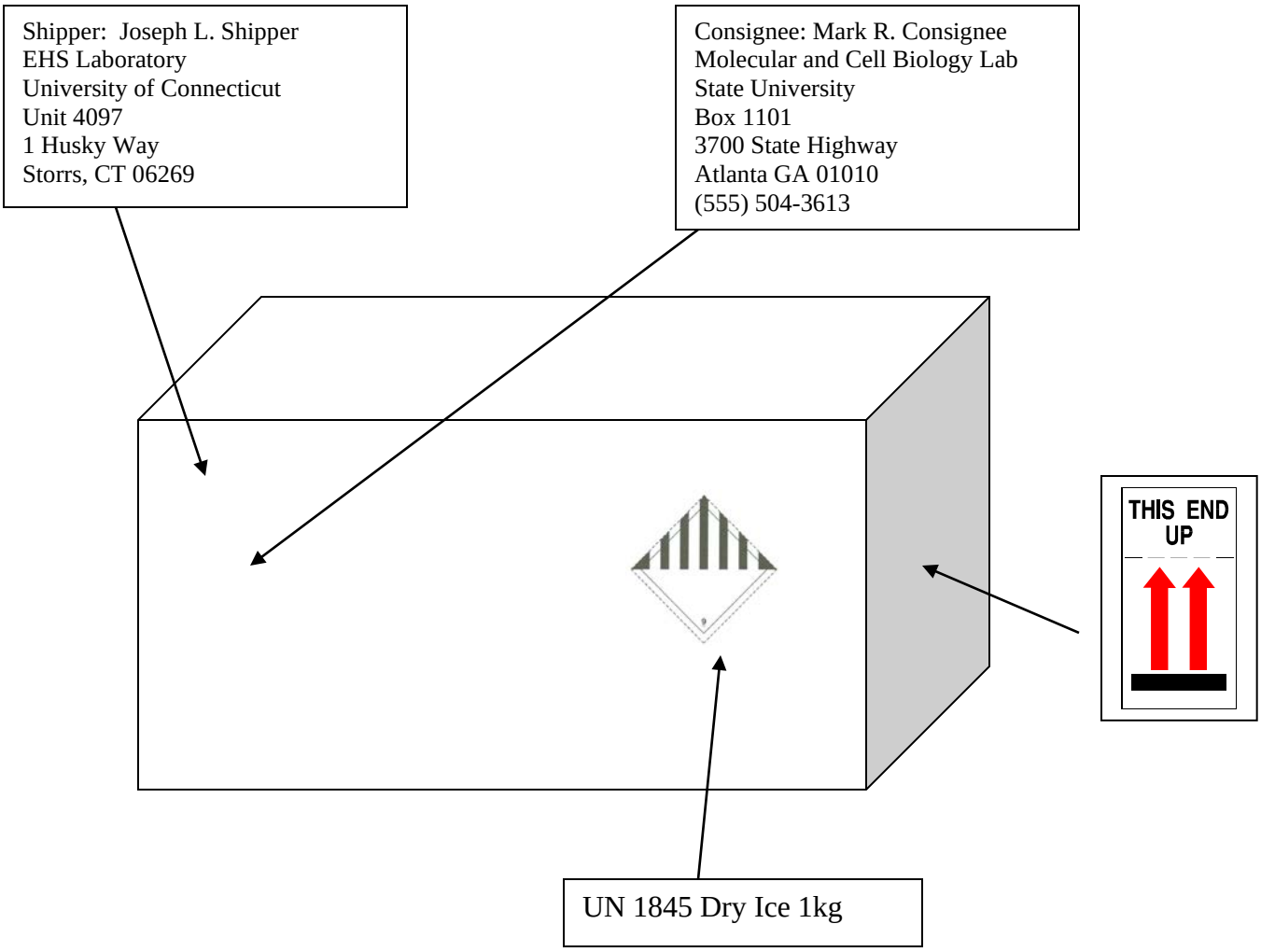
Dry ice is regulated as a Hazardous Material or Dangerous Good by the U.S. Department of Transportation (DOT) and the International Air Transport Association (IATA). It is considered dangerous because it can cause an explosion when packaged incorrectly, it can damage skin on contact and it can cause suffocation in a confined space. This document covers shipping of dry ice with biological agents that are not classified as a hazardous material or dangerous good (infectious/pathogenic agents). If you are not sure about how to classify your biological agents, contact Biological Health and Safety before shipping.

Dry ice is classified as a Class 9 Miscellaneous Dangerous Good. IATA and DOT regulations have specific requirements for packaging and labeling all dangerous goods, including dry ice used as a refrigerant for other materials. The package must:

- Be designed to release the carbon dioxide as the dry ice sublimates. You cannot completely seal a package
- Have internal supports to maintain the orientation of samples during shipping when the dry ice has sublimated.
- Be able to withstand the forces/stresses of being shipped.
- Be labeled with a Class 9 hazard label and identified as UN 1845 with the weight of dry ice at time of packing.

No special dangerous goods documentation is required for dry ice. A document called a Shippers Declaration would be required if other dangerous goods are present in the package. You must, however, report the dry ice on the shipping documents. The documents are the airway bill if you are shipping by air or the bill of lading if you are shipping by ground only. Biological agent shipments will always include a packing list of the agents. Any and all shipments may require a copy of a Material Transfer Agreement. Some of the biological agents you ship may require a permit from a federal or state agency; include copies of the permits if they are required. For shipments outside the U.S., you must include copies of any permits issued by the receiving nation and Department of Commerce permits if required.

Biological Materials -Dry Ice



This package must:
Comply with packing instructions 954 for Dry Ice

- Water tight primary container
- Water tight secondary container
- Absorbent material sufficient to contain any liquids
- Wrapped primary-to prevent breakage/damage
- Outer package with a dimension of at least 100mm x 100mm (4 inches x 4 inches)
- Designed and constructed to permit the release of carbon dioxide gas

Packaging Checklist

Use this checklist to ensure that your package has been properly prepared. Check the box as you complete each step.

	Category A	Category B	Exempt Human/Animal Specimen
Good Quality Packaging	☐	☐	☐
Outer packaging displays the UN Specification Mark UN 4G/CLASS 6.2 YYYY/CCC/MFG	☐	N/A	N/A
Manufacturer's instructions read and followed	☐	☐	N/A
Primary receptacles sealed and watertight	☐	☐	☐
Multiple fragile primaries wrapped individually	☐	☐	☐
Sufficient absorbent inside each secondary	☐	☐	☐
Secondary packaging properly sealed and watertight	☐	☐	☐
Primary/secondary 95kPA pressure tested	☐	☐	N/A
Itemized list enclosed inside the package but outside the secondary	☐	☐	N/A
Rigid outer packaging	☐	☐	N/A
Check minimum dimensions	All dimensions at least 100 mm ☐	Two sides at least 100 mm x 100 mm ☐	Two sides at least 100 mm x 100 mm ☐

Marking and Labeling Checklist

Use this checklist to ensure that your package has been properly marked and labeled. Check the box as you complete each step. *Note the only marking that is required for an Exempt patient specimen package is the following: "Exempt Human Specimen" or "Exempt Animal Specimen" as appropriate.*

	Category A	Category B	Dry Ice
Hazard Label Affixed	☐	☐	☐
Proper Shipping Name	Infectious substance, affecting humans or Infectious substance, affecting animals	Biological substance, category B	Dry Ice or Carbon dioxide, solid
Technical name	☐ Note: Optional on the package (see A140)	N/A	N/A
UN Identification Number	UN 2814 ☐	N/A (already on label)	UN 1845 ☐
Weight/quantity of dangerous good	☐ (Optional in most cases)	N/A	☐
Name and phone number of a person responsible	☐	☐ Note: Optional if on air waybill	N/A
Address of shipper	☐	☐	☐
Address of consignee	☐	☐	☐